Semester 1		
Office Organization and Informatization obligatory courses		
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education I	ECTS:1.0
P: Tihana Strmečki A: Andrea Katarić	Mathematics I	ECTS:6.0
P: Bojan Nožica dipl. ing, v.pred. L: Bojan Nožica dipl. ing, v.pred. L: Andor Gužvanj L: Domagoj Tuličić	Programming basics	ECTS:6.0
P: Vesna Uglješić dipl. dizajner L:mag.des. Ulla Leiner Maksan L: Vesna Uglješić dipl. dizajner L: Ana Hoić L: Darija Ćutić , mag. ing. graph. techn. L: Zorana Andrić mag. ing. graph. techn.	Computer Typography	ECTS:6.0
P: Danijela Pongrac , prof. P:dr. sc. Roman Domović , prof. L:dr. sc. Roman Domović , prof. L: Željka Širanović mag.inf.zn. L: Nataša Uzelac	Office Automation	ECTS:6.0
P: Sanja Kraljević , dipl.ing., v. pred. L:dr. sc. Roman Domović , prof. L: Petar Osterman L: Sanja Kraljević , dipl.ing., v. pred. L: Renata Kramberger	Introduction to (X)HTML and CSS	ECTS:4.0
E-business obligatory courses		
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education I	ECTS:1.0
P: Tihana Strmečki A: Andrea Katarić	Mathematics I	ECTS:6.0
P: Bojan Nožica dipl. ing, v.pred. L: Bojan Nožica dipl. ing, v.pred. L: Andor Gužvanj L: Domagoj Tuličić	Programming basics	ECTS:6.0
P: Vesna Uglješić dipl. dizajner L:mag.des. Ulla Leiner Maksan L: Vesna Uglješić dipl. dizajner L: Ana Hoić L: Darija Ćutić , mag. ing. graph. techn. L: Zorana Andrić mag. ing. graph. techn.	Computer Typography	ECTS:6.0
P: Danijela Pongrac , prof. P:dr. sc. Roman Domović , prof. L:dr. sc. Roman Domović , prof. L: Željka Širanović mag.inf.zn. L: Nataša Uzelac	Office Automation	ECTS:6.0
P: Sanja Kraljević , dipl.ing., v. pred. L:dr. sc. Roman Domović , prof. L: Petar Osterman L: Sanja Kraljević , dipl.ing., v. pred. L: Renata Kramberger	Introduction to (X)HTML and CSS	ECTS:4.0
IT Design obligatory courses		

A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education I	ECTS:1.0
P: Tihana Strmečki A: Andrea Katarić	Mathematics I	ECTS:6.0
P: Bojan Nožica dipl. ing, v.pred. L: Bojan Nožica dipl. ing, v.pred. L: Andor Gužvanj L: Domagoj Tuličić	Programming basics	ECTS:6.0
P: Vesna Uglješić dipl. dizajner L:mag.des. Ulla Leiner Maksan L: Vesna Uglješić dipl. dizajner L: Ana Hoić L: Darija Ćutić , mag. ing. graph. techn. L: Zorana Andrić mag. ing. graph. techn.	Computer Typography	ECTS:6.0
P: Danijela Pongrac , prof. P:dr. sc. Roman Domović , prof. L:dr. sc. Roman Domović , prof. L: Željka Širanović mag.inf.zn. L: Nataša Uzelac	Office Automation	ECTS:6.0
P: Sanja Kraljević , dipl.ing., v. pred. L:dr. sc. Roman Domović , prof. L: Petar Osterman L: Sanja Kraljević , dipl.ing., v. pred. L: Renata Kramberger	Introduction to (X)HTML and CSS	ECTS:4.0

Semester 2		
Office Organization and Informatization obligatory courses		
P:mr.sc. Sanja Bračun dipl.oec. L: Brigitta Cafuta	e-Business	ECTS:6.0
P:prof.vis.šk. Ivica Levanat P: Alemka Knapp L: Alemka Knapp L:prof.dr. Dubravko Horvat L: Diana Šaponja-Milutinović dipl.ing.fizike, pred.	Physics	ECTS:6.0
P:dr.sc.rač. Ivica Dodig , prof.v.š. P:dr.sc.rač. Davor Cafuta , prof.v.šk. A:dr.sc.rač. Ivica Dodig , prof.v.š. A: Jelena Kapelac	Devices Design	ECTS:5.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education II	ECTS:1.0
P: Tihana Strmečki A: Andrea Katarić	Mathematics II	ECTS:6.0
P:Prof.dr.sc. Slavica Ćosović Bajić P: Bojan Nožica dipl. ing, v.pred. L: Bojan Nožica dipl. ing, v.pred. L:Prof.dr.sc. Slavica Ćosović Bajić L: Andor Gužvanj L: Domagoj Tuličić	Programming	ECTS:7.0
E-business obligatory courses		
P:mr.sc. Sanja Bračun dipl.oec. L: Brigitta Cafuta	e-Business	ECTS:6.0
P:prof.vis.šk. Ivica Levanat P: Alemka Knapp L: Alemka Knapp L:prof.dr. Dubravko Horvat L: Diana Šaponja-Milutinović dipl.ing.fizike, pred.	Physics	ECTS:6.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education II	ECTS:1.0
P: Tihana Strmečki A: Andrea Katarić	Mathematics II	ECTS:6.0
P:Prof.dr.sc. Slavica Ćosović Bajić P: Bojan Nožica dipl. ing, v.pred. L: Bojan Nožica dipl. ing, v.pred. L:Prof.dr.sc. Slavica Ćosović Bajić L: Andor Gužvanj L: Domagoj Tuličić	Programming	ECTS:7.0
P:mr.sc. Sergej Lugović MBA L:mag.oec Kristina Perec L: Dinko Horvat struč.spec.ing.techn.inf.	Market Communication	ECTS:5.0
IT Design obligatory courses		
P: Feđa Vukić P: Aleksandra Bernašek Petrinec L: Aleksandra Bernašek Petrinec L: Iva Kostešić	Design and Visual Meaning	ECTS:6.0

P:prof.vis.šk. Ivica Levanat P: Alemka Knapp L: Alemka Knapp L:prof.dr. Dubravko Horvat L: Diana Šaponja-Milutinović dipl.ing.fizike, pred.	Physics	ECTS:6.0
P: Vjeran Bušelić viši predavač A: Vjeran Bušelić viši predavač	Information literacy and critical thinking	ECTS:6.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education II	ECTS:1.0
P: Tihana Strmečki A: Andrea Katarić	Mathematics II	ECTS:6.0
P:Prof.dr.sc. Slavica Ćosović Bajić P: Bojan Nožica dipl. ing, v.pred. L: Bojan Nožica dipl. ing, v.pred. L:Prof.dr.sc. Slavica Ćosović Bajić L: Andor Gužvanj L: Domagoj Tuličić	Programming	ECTS:7.0

Semester 3		
Office Organization and Informatization obligatory courses		
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education III	ECTS:1.0
P:prof. Marta Alić A:prof. Marta Alić A: Nataša Uzelac	Advanced e-Business	ECTS:4.0
P:Prof. dr. sc. Miroslav Slamić profesor visoke škole L: Željko Kovačević , struč.spec.ing.techn.inf. L: Martina Petrovečki struč.spec.ing.techn.inf. L: Danko Ivošević pred.	Object Oriented Programming I	ECTS:5.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. L: Brigitta Cafuta	Operating Systems	ECTS:5.0
Office Organization and Informatization elective courses		
P:Mr.sc. Vladimir Lebinac dipl.ing. A: Vjeran Šimunić L: Vjeran Šimunić A: Lea Gagulić	Communication Systems and Networks	ECTS:6.0
P:dr.sc. Igor Urbiha prof.vis.šk. A:dr.sc. Igor Urbiha prof.vis.šk.	Probability and Statistics	ECTS:4.0
P:Pred. Ida Popčević prof. A: Sara Slamić Tarade struč.spec. rel.publ. A:Pred. Ida Popčević prof.	Communication Skills	ECTS:4.0
Office Organization and Informatization elective courses		
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Lamia Egartner prof. A: Zoran Vulelija	English Language for IT	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	German for IT	ECTS:3.0
E-business obligatory courses		
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. L:mag.oec Kristina Perec L: Vida Senci	Social Networks	ECTS:5.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education III	ECTS:1.0
P:prof. Marta Alić A:prof. Marta Alić A: Nataša Uzelac	Advanced e-Business	ECTS:4.0
P:Prof. dr. sc. Miroslav Slamić profesor visoke škole L: Željko Kovačević , struč.spec.ing.techn.inf. L: Martina Petrovečki	Object Oriented Programming I	ECTS:5.0

struč.spec.ing.techn.inf. L: Danko Ivošević pred.		
P: Ivan Rajković A: Višen Tadić struč.spec.art A: Ivan Rajković A: Dinka Radonić	Picture, Sound and Video Processing	ECTS:4.0
E-business elective courses		
P:Mr.sc. Vladimir Lebinac dipl.ing. A: Vjeran Šimunić L: Vjeran Šimunić A: Lea Gagulić	Communication Systems and Networks	ECTS:6.0
P:dr.sc. Igor Urbiha prof.vis.šk. A:dr.sc. Igor Urbiha prof.vis.šk.	Probability and Statistics	ECTS:4.0
P:Pred. Ida Popčević prof. A: Sara Slamić Tarade struč.spec. rel.publ. A:Pred. Ida Popčević prof.	Communication Skills	ECTS:4.0
E-business elective courses		
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Lamia Egartner prof. A: Zoran Vulelija	English Language for IT	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	German for IT	ECTS:3.0
IT Design obligatory courses		
P:Prof. dr. sc. Jana Žiljak Gršić , mag. design L: Alan Divjak	3D design	ECTS:5.0
P: Aleksandra Bernašek Petrinec A: Aleksandra Bernašek Petrinec	Graphics Techniques	ECTS:4.0
P:dr.sc. Maja Turčić pred. P:prof.dr.sc. Klaudio Pap L:prof.dr.sc. Klaudio Pap L:dr.sc. Maja Turčić pred. L: Darija Ćutić , mag. ing. graph. techn.	Graphics Programming Languages	ECTS:5.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education III	ECTS:1.0
P: Ivan Rajković L: Višen Tadić struč.spec.art L: Ivan Rajković L: Dinka Radonić	Video production Processes	ECTS:4.0
P:Prof. dr. sc. Jana Žiljak Gršić , mag. design P: Feđa Vukić A: Iva Kostešić	Theory and Design Development	ECTS:6.0
IT Design elective courses		
P:Mr.sc. Vladimir Lebinac dipl.ing. A: Vjeran Šimunić L: Vjeran Šimunić A: Lea Gagulić	Communication Systems and Networks	ECTS:6.0

P:dr.sc. Igor Urbiha prof.vis.šk. A:dr.sc. Igor Urbiha prof.vis.šk.	Probability and Statistics	ECTS:4.0
P:Pred. Ida Popčević prof. A: Sara Slamić Tarade struč.spec. rel.publ. A:Pred. Ida Popčević prof.	Communication Skills	ECTS:4.0
IT Design elective courses		
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Lamia Egartner prof. A: Zoran Vulelija	English Language for IT	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	German for IT	ECTS:3.0

Semester 4		
Office Organization and Informatization obligatory courses		
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger A: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Brigitta Cafuta	Databases	ECTS:5.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education IV	ECTS:1.0
P:dr.sc. Goran Salamunićcar A: Željko Kovačević , struč.spec.ing.techn.inf. A:Dr. sc. Aleksandar Stojanović pred.	Object Oriented Programming II	ECTS:5.0
P: Vesna Uglješić dipl. dizajner P: Mia Čarapina dipl. ing., pred. L: Mia Čarapina dipl. ing., pred.	Project Programming	ECTS:3.0
P: Danijela Pongrac , prof. A: Danijela Pongrac , prof. A:prof. Marta Alić	Spreadsheets	ECTS:3.0
P:dr.sc. Željko Širanović prof.v.š. L:dr.sc. Željko Širanović prof.v.š.	Introduction to Computer Networks	ECTS:4.0
P:dr.sc. Alen Šimec v. predavač L: Davor Lozić pred.	XML Programming	ECTS:6.0
Office Organization and Informatization elective courses		
P: Ana Hoić P:Prof. dr. sc. Jana Žiljak Gršić , mag. design A: Ana Hoić	Innovations in information technology	ECTS:5.0
P:dr.sc. Alen Šimec v. predavač L:dr.sc. Alen Šimec v. predavač L: Petar Osterman	Web application development	ECTS:5.0
Office Organization and Informatization elective courses		
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Lamia Egartner prof.	Business English for IT	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	Business German for IT	ECTS:3.0
E-business obligatory courses		
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger A: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Brigitta Cafuta	Databases	ECTS:5.0
A: Marko Milanović A:pred. Valter Perinović mag.	Physical Education IV	ECTS:1.0

kineziologije		
P:dr.sc. Goran Salamunićcar A: Željko Kovačević , struč.spec.ing.techn.inf. A:Dr. sc. Aleksandar Stojanović pred.	Object Oriented Programming II	ECTS:5.0
P:prof.dr.sc. Klaudio Pap P: Aleksandra Bernašek Petrinec L: Aleksandra Bernašek Petrinec L: Darija Ćutić , mag. ing. graph. techn.	Web Browsers and Navigation	ECTS:3.0
P: Vesna Uglješić dipl. dizajner P: Mia Čarapina dipl. ing., pred. L: Mia Čarapina dipl. ing., pred.	Project Programming	ECTS:3.0
P:mr.sc. Sergej Lugović MBA	Sociotechnical approaches to the study of Information Systems	ECTS:4.0
P:dr.sc. Alen Šimec v. predavač L: Davor Lozić pred.	XML Programming	ECTS:6.0
E-business elective courses		
P: Ana Hoić P:Prof. dr. sc. Jana Žiljak Gršić , mag. design A: Ana Hoić	Innovations in information technology	ECTS:5.0
P:dr.sc. Alen Šimec v. predavač L:dr.sc. Alen Šimec v. predavač L: Petar Osterman	Web application development	ECTS:5.0
E-business elective courses		
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Lamia Egartner prof.	Business English for IT	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	Business German for IT	ECTS:3.0
IT Design obligatory courses		
P: Milan Bajić L: Milan Bajić	Digital Photography	ECTS:4.0
P: Vesna Uglješić dipl. dizajner L: Vesna Uglješić dipl. dizajner	Graphics Design	ECTS:6.0
A: Marko Milanović A:pred. Valter Perinović mag. kineziologije	Physical Education IV	ECTS:1.0
P:dr.sc. Alen Šimec v. predavač L: Davor Lozić pred.	XML Programming	ECTS:6.0
IT Design elective courses		
P: Branimir Markulin Grgić P: Vesna Uglješić dipl. dizajner L: Vesna Uglješić dipl. dizajner	Product Design	ECTS:3.0
P: Ivan Rajković A: Višen Tadić struč.spec.art A: Ivan Rajković A: Dinka Radonić	Picture, Sound and Video Processing	ECTS:4.0

P: Milan Bajić L: Milan Bajić	Sound Production	ECTS:4.0
IT Design elective courses		
P: Ana Hoić P:Prof. dr. sc. Jana Žiljak Gršić , mag. design A: Ana Hoić	Innovations in information technology	ECTS:5.0
P:dr.sc. Alen Šimec v. predavač L:dr.sc. Alen Šimec v. predavač L: Petar Osterman	Web application development	ECTS:5.0
IT Design elective courses		
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Lamia Egartner prof.	Business English for IT	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	Business German for IT	ECTS:3.0

Semester 5		
Office Organization and Informatization obligatory courses		
P:dr.sc. Alberto Teković viši predavač P:dr.sc Sonja Zentner Pilinsky prof.v.š. A:dr.sc Sonja Zentner Pilinsky prof.v.š. A: Siniša Lacković struč.spec.ing.el.	Mobile Communications	ECTS:3.0
P: Sanja Kraljević , dipl.ing., v. pred. A: Sanja Kraljević , dipl.ing., v. pred. L: Sanja Kraljević , dipl.ing., v. pred. L: Jakob Gračanin	Advanced Databases	ECTS:5.0
P:dr.sc. Željko Širanović prof.v.š. L:dr.sc. Željko Širanović prof.v.š.	Advanced Internet Technologies	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Vida Senci A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	Word Processing	ECTS:3.0
P: Danijela Pongrac , prof. A: Danijela Pongrac , prof.	Office Organisation and Informatisation	ECTS:3.0
P:izv. prof. dr. sc. Krunoslav Antoliš L:izv. prof. dr. sc. Krunoslav Antoliš	IT Systems Security and Protection	ECTS:5.0
P:dr.sc.rač. Ivica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L: Andrej Vitez	Introduction to UNIX Systems	ECTS:5.0
E-business obligatory courses		
P: Vjeran Bušelić viši predavač A: Višen Tadić struč.spec.art L: Višen Tadić struč.spec.art A: Ivan Rajković L: Ivan Rajković	Media Integration	ECTS:6.0
P:dr.sc. Alberto Teković viši predavač P:dr.sc Sonja Zentner Pilinsky prof.v.š. A:dr.sc Sonja Zentner Pilinsky prof.v.š. A: Siniša Lacković struč.spec.ing.el.	Mobile Communications	ECTS:3.0
P: Sanja Kraljević , dipl.ing., v. pred. A: Sanja Kraljević , dipl.ing., v. pred. L: Sanja Kraljević , dipl.ing., v. pred. L: Jakob Gračanin	Advanced Databases	ECTS:5.0
P:izv. prof. dr. sc. Krunoslav Antoliš L:izv. prof. dr. sc. Krunoslav Antoliš	IT Systems Security and Protection	ECTS:5.0
P:dr.sc. Mladen Mauher prof.v.šk. P:prof. Marta Alić A:prof. Marta Alić	e-Business Systems	ECTS:5.0
P:mr.sc. Sergej Lugović MBA A:mag.oec Kristina Perec A: Dinko Horvat struč.spec.ing.techn.inf.	Technology Entrepreneurship	ECTS:6.0
IT Design obligatory courses		
P:Prof. dr. sc. Jana Žiljak Gršić , mag. design P: Vesna Uglješić dipl. dizajner L:mag.des. Ulla Leiner Maksan L: Vesna Uglješić dipl. dizajner	Visual Communication Design	ECTS:6.0

P: Ognjen Staničić dipl. ing. L: Ognjen Staničić dipl. ing.	Web Interactive Programming	ECTS:4.0
P:Prof.dr.sc. Slavica Ćosović Bajić P: Krešimir Štih L: Krešimir Štih	Computer Graphics	ECTS:5.0
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger	Computer Games Development	ECTS:5.0
P: Aleksandra Bernašek Petrinec L: Aleksandra Bernašek Petrinec	Reprophotography	ECTS:5.0
IT Design elective courses		
P: Ivan Rajković S: Boris Hergešić	Digital Animation	ECTS:5.0
P: Dinka Radonić P: Milan Bajić L: Milan Bajić L: Dinka Radonić	TV and Video Recording	ECTS:5.0

Semester 6		
Office Organization and Informatization obligatory courses		
P:dr.sc. Željko Širanović prof.v.š. L:dr.sc. Željko Širanović prof.v.š. L: Vedran Tadić struč.spec.ing.techn.inf.	Computer Network Administration	ECTS:4.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. L: Andrej Vitez L:dr.sc.rač. Ivica Dodig , prof.v.š.	UNIX Systems Administration	ECTS:5.0
P:dr. sc. Roman Domović , prof. L:dr. sc. Roman Domović , prof.	Computers and Software Installation	ECTS:3.0
P:mr.sc. Sergej Lugović MBA P:doc.dr.sc. Dalija Kuvačić profesor visoke škole A:mag.oec Kristina Perec A: Dinko Horvat struč.spec.ing.techn.inf.	Technology Entrepreneurship	ECTS:6.0
Office Organization and Informatization elective courses		
A: Milan Bajić A:Prof. dr. sc. Jana Žiljak Gršić , mag. design	Practical Work	ECTS:3.0
Office Organization and Informatization elective courses		
A: Vesna Uglješić dipl. dizajner A: Mia Čarapina dipl. ing., pred.	Final Thesis - A	ECTS:12.0
E-business obligatory courses		
P: Ognjen Staničić dipl. ing. L: Ognjen Staničić dipl. ing.	Web Interactive Programming	ECTS:4.0
P: Vjeran Bušelić viši predavač S: Višen Tadić struč.spec.art S: Ivan Rajković	Multimedia Marketing	ECTS:5.0
P:dr.sc. Maja Turčić pred. L: Mario Janković mag. ing. graph. techn.	Web Design	ECTS:6.0
E-business elective courses		
A: Milan Bajić A:Prof. dr. sc. Jana Žiljak Gršić , mag. design	Practical Work	ECTS:3.0
E-business elective courses		
A: Vesna Uglješić dipl. dizajner A: Mia Čarapina dipl. ing., pred.	Final Thesis - A	ECTS:12.0
IT Design obligatory courses		
P:dr.sc. Maja Turčić pred. L: Mario Janković mag. ing. graph. techn.	Web Design	ECTS:6.0
L:mag.des. Ulla Leiner Maksan L:Prof. dr. sc. Jana Žiljak Gršić , mag. design	IT Design - Practicum	ECTS:5.0
IT Design elective courses		
P: Ivan Rajković L: Ivan Rajković	Digital Television	ECTS:5.0
P: Aleksandra Bernašek Petrinec L: Aleksandra Bernašek Petrinec	Design and Application of Vector Graphics	ECTS:5.0
P: Vesna Uglješić dipl. dizajner P:dr.sc. Maja Turčić pred.	eBook design	ECTS:5.0

L: Vesna Uglješić dipl. dizajner L:dr.sc. Maja Turčić pred.		
IT Design elective courses		
A: Milan Bajić A:Prof. dr. sc. Jana Žiljak Gršić , mag. design	Practical Work	ECTS:3.0
IT Design elective courses		
A: Vesna Uglješić dipl. dizajner A: Mia Čarapina dipl. ing., pred.	Final Thesis - A	ECTS:12.0

Code WEB/ISVU	23968/185289	**ECTS**	5.0	**Academic year**	2018/2019
Name	3D design				
Status	3rd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (0+45+0+0) 90
Teachers	Lectures:1. Prof. dr. sc. Jana Žiljak Gršić , mag. design Laboratory exercises: Alan Divjak				
Course objectives	The aim of the course is to learn how to use 3D graphic design tools and to understand the role of 3D graphics in modern computer game design, visualization, animation and web and multimedia content. Special emphasis has been put on linking 3D graphics software and computer game design software, as well as key features of 3D content creation for computer games. The use of 3D graphics is increasingly related to the design and the optimal way to connect these areas is considered. The course focuses on acquiring technical knowledge of a complete 3D content development process, including modeling, texturing, lighting, animation and rendering, and understanding how 3D graphics today integrates into a number of different application areas, many of which are not traditionally linked to 3D graphics, which testifies to the rapid spread of the application of this technology. It also looks at new 3D technologies that enhance immersion and the scope of computer games, such as virtual and augmented reality. Since the field of 3D graphics is exceptionally large and interdisciplinary, the students are encouraged to work autonomously and research a large number of 3D graphics applications. After successful completion of the course, students will have adopted the basic set of knowledge and skills needed to make simpler 3D projects, as well as the understanding of advanced 3D graphics techniques that serve as a basis for further education.				
Learning outcomes:	1.1.Understanding the fields of application of 3D graphics and how it fits into a modern multimedia environment and the processes of making different types of content. Level:6 2.2.Knowledge of the basic elements of the 3D scene and the principle of creating 3D models. Level:6 3.3.Adopting basic knowledge of 3D graphics tools. Level:6 4.4.Adopting the theory of illumination and realism in 3D graphics, and framing and working with virtual cameras. Level:6 5.5.Recognizing and selecting an adequate approach to developing a 3D graphics solution. Level:6 6.6.Mastering the modeling and texturing tools. Level:6 7.7.Animation of 3D models and creating geometry deformations. Level:6 8.8.Using the appropriate lighting and rendering settings to achieve the desired results. Level:6 9.9.Linking created 3D content with computer game creation software. Level:6 10.10.Independent creation of a complete 3D graphics solution. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion				
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 Workshop				
Course content lectures	1.1.Introduction to 3D graphics. Fields of application, role in the computer games industry, , 1h, Learning outcomes:1 2.2.History of 3D graphics, impact on the entertainment industry, market situation, 1h, Learning outcomes:1 3.3.Classification of software for 3D graphics production, overview of available software and specialized tools, 1h, Learning outcomes:1,2 4.4.Software for creating computer games, connecting with standard 3D graphics tools. Application of virtual reality technology in computer games and production environments, 1h, Learning outcomes:1,2,9 5.5.Basics of 3D space, 3D scene navigation, 1h, Learning outcomes:2,3 6.6.Elements of 3D scenes, objects, lights, cameras, effects, 1h, Learning outcomes:2,3,4 7.7.Elements of 3D objects, polygons, edges, vertices, 1h, Learning outcomes:2,3 8.8. Introduction to lighting and virtual cameras, 1h, Learning outcomes:3,4,5 9.9.Achieving realism in 3D graphics, 1h, Learning outcomes:4,5 10.10.Modeling tools, manipulating the geometry, 1h, Learning outcomes:5,6,9 11.11.Texture creation, UV mapping and procedural textures, 1h, Learning outcomes:5,6,9 12.12.Material types, material preparation, 1h, Learning outcomes:5,6 13.13.Object animation, 1h, Learning outcomes:7 14.14.Light sources, HDR lighting, application of IES profiles, 1h, Learning outcomes:8,10 15.Kolokvij, 1h, Learning outcomes:1,2,3,4,5,6,7,8,9,10				
Course content laboratory	1.Getting acquainted with 3D software interface, 3D space navigation, coordinate system, 2h 2.Working with the viewport, scene view modes, shading types, 2h 3.Types of geometry in 3D graphics, creation and modification of primitives, 2h 4.Tools for editing polygons, edges, and vertices, 2h 5.Organic modeling, painting and sculpting, 2h 6.Hard surface modeling, Boolean operations, optimization for computer games, 2h 7.Texturing, texture creation, procedural texturing, working with channels, 2h 8.Material creation, PBR materials, material types, modeling rules in transparent surfaces, materials in computer games, 2h 9.Creating UV maps - mapping tools, 2h 10.UV mapping - texture creation and application on UV mapped models, optimization for computer games, 2h				

	11.Model animation, keyframing, procedural animation, working with animation curves and channels, 2h 12.Scene illumination, applying HDR maps, Sun / Sky System, IES profiles application, studio lighting, 2h 13.Photorealism in 3D graphics, dynamic range, tone mapping, 2h 14.Rendering, rendering settings, spectral and NPR rendering, 2h 15.Lighting and material baking, loading objects into game engine, realtime 3D graphics and rendering, 2h
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	obvezna literatura / odabrana poglavlja iz 1.3D modeliranje i tehničko crtanje, 2007, Đuro Kukec, Mihael Kukec 2.Virtualna okruženja: računalna grafika u stvarnom vremenu i njezine primjene, 2011, Igor S. Pandžić, ISBN 978-953-197-606-0 3.Uvod u računalnu grafiku, 2013, Vladan Papić, ISBN: 978-953-290-038-5 4.The Complete Guide to Blender Graphics: Computer Modeling Animation, Third Edition , 2016, John M. Blain , ISBN-13: 978-1498746458 5.3D Art Essentials: The Fundamentals of 3D Modeling, Texturing, and Animation, 2011, Ami Chopine, ISBN-13: 978-0240814711
Students obligations	Regular lectures attendance
Knowledge evaluation during semester	kolokvij
Knowledge evaluation after semester	Presentation, oral exam
Student activities:	Aktivnost — ECTS (Oral exam) — 2 (Practical work) — 3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. dr. sc. Jana Žiljak Gršić

Code WEB/ISVU	23731/170007	**ECTS**	5.0	**Academic year**	2018/2019
Name	Advanced Databases				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course5th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (15+30+0+0) 90
Teachers	Lectures: Sanja Kraljević , dipl.ing., v. pred. Auditory exercises: Sanja Kraljević , dipl.ing., v. pred. Laboratory exercises: Jakob Gračanin Laboratory exercises: Sanja Kraljević , dipl.ing., v. pred.				
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.abilityto 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 warehousing 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				
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				
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.Connectivity, 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 2.No classes				

	3.Database fundamentals, 2h, Learning outcomes:1,2,3,4,5 4.Transactions, 2h, Learning outcomes:5,6,7 5.Procedures, functions, 2h, Learning outcomes:6,7,8 6.Flow control, 2h, Learning outcomes:6,7,8 7.Cursors, 2h, Learning outcomes:7,8 8.First midterm exam, 2h 9.Triggers, 2h, Learning outcomes:7 10.Data locks, 2h, Learning outcomes:9 11.Grant, 2h, Learning outcomes:9,10 12.Connectivity, 2h, Learning outcomes:11,12 13.Injection prevention, 2h, Learning outcomes:9,10 14.No classes 15.Second midterm exam, 2h, Learning outcomes:11,12
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Tools
Exam literature	Basic literature: 1. Skripta iz kolegija, prezentacije s predavanja 2. MySQL Documentation: MySQL Reference Manuals Additional literature: 1. Manger; R.: Baze podataka, skripta, Sveučilište u Zagrebu, Prirodoslovno Matematički fakultet, drugo izdanje, Zagreb, 2014. 2. Balling, D. J. ; Zawodny, J.: High Performance MySQL, O'Reilly, 2015. 3. Vaswani, V.; MySQL Database Usage Administration, McGraw-Hill Osborne Media, 2010. 4. Cabral, S.; Murphy, K.: MySQL Administrator's Bible, Wiley Publishing, Inc., Indianapolis, Indiana, 2009. 5. Ramakrishnan, R.; Gehrke, J.: Database Management Systems, 3rd Edition, McGraw- Hill, New York, 2003. 6. Sumathi, S.; Esakkirajan, S.: Fundamentals of Relational Database Management Systems, Springer, Verlag Berlin Heidelberg, 2007.
Students obligations	1. Done laboratory exercises (tolerance 1/6 absences). 2. Achieved minimum of 15 points of laboratory exercises (out of 50).
Knowledge evaluation during semester	Short exam is written on each laboratory exercises: holds 8 points, in each of the five labs (except laboratory exercise zero) can be won up to 8 points -> maximum 40 points from all exercises, exception: laboratory exercise zero holds 10 points. Distribution of total number of points from mid-term exams: 25% first mid-term exam, 25% second mid-term exam, 10% laboratory exercise zero, 40% remaining laboratory exercises. The first and second mid-term exam include material previously handled in lectures and laboratory exercises. Pass -> 50 % (50 bodova), Best results -> will be exempt from second mid term exam with "excellent (5)" grade, (criterion is the maximum number of points in two mid term exams and all labs, minus 10%).
Knowledge evaluation after semester	Written and oral exam. Final grade from written exam: 60% written exam, 40% laboratory exercises.
Student activities:	Aktivnost — ECTS (Written exam) — 5
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Sanja Duk, dipl. ing., 1.6.2017.

Code WEB/ISVU	23598/156390	**ECTS**	4.0	**Academic year**	2018/2019
Name	Advanced e-Business				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course3rd semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+30 (30+0+0+0) 75
Teachers	Lectures:1. prof. Marta Alić Auditory exercises:prof. Marta Alić Auditory exercises: Nataša Uzelac				
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 on laboratory equipment Laboratory exercises, computer simulations Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Interactive problem solving Workshop				
Course content lectures	1.Introduction, 1h, Learning outcomes:1 2.One stage amplifiers. Common emitter amplifier, 1h, Learning outcomes:1,2 3.One stage amplifiers. Common emitter amplifier, 1h, Learning outcomes:1,2 4.One stage amplifiers. Common emitter amplifier, 1h, Learning outcomes:1,2 5.One stage amplifiers. Common collector amplifier, 1h, Learning outcomes:1,2 6.Transistor series voltage regulator, 1h, Learning outcomes:1,2,3 7.Common source amplifier, 1h, Learning outcomes:1,2,3,4 8.Common drain amplifier, 1h, Learning outcomes:4,5,6 9.Multistage amplifiers, 1h, Learning outcomes:4,5,6 10.Amplitude and phase frequency response, 1h, Learning outcomes:1,2,3,4,5,6 11.Amplitude and phase frequency response, 1h, Learning outcomes:7,8 12.Differential amplifier, 1h, Learning outcomes:9 13.Power amplifiers, 1h, Learning outcomes:9,10,11 14.Feedback, 1h, Learning outcomes:10,11 15.Oscillators, 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.Dr sc Goran klepac Dr.sc. MRšić Dr.sc. Kopal "Developing Churn Models Using Data Mining Techniques and Social Network Analysis".2015 2.. mr.sc.Olivia-Silvana Prlić: sadržaj predavanja(PPT prezentacija(u repozitoriju predmeta Napredno elektroničko poslovanje Tehničkog veleučilišta u Zagrebu, 2013, www.tvz.hr)) 3. Panian, Ž., (2013): "Elektroničko poslovanje druge generacije", udžbenik Sveučilišta u Zagrebu, Biblioteka INFORMATIKA, Ekonomski fakultet Sveučilišta u Zagrebu (naglasak na drugi dio knjige) 4. Jelassi, T.; Enders, A.:" Strategies for E-Business: Creating Value through Electronic and Mobile Commerce (Concept and Cases)",(2nd Edition), Prentice Hall, 2008. 5 Dave Chaffey: "E-Business and E-Commerce Management" - Strategy, Implementation and Practice (5th Edition), Prentice Hall, 2011. .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$Oral exam#2#50#70$
Student activities:	Aktivnost — ECTS (Constantly tested knowledge) — 2 (Practical work) — 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200117;200119;
Proposal made by	mr.sc.Olivia-Silvana Prlić Senior lecturer Course director

Code WEB/ISVU	23732/170008	**ECTS**	3.0	**Academic year**	2018/2019
Name	Advanced Internet Technologies				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 30
Teachers	Lectures:1. dr.sc. Željko Širanović prof.v.š. Laboratory exercises:dr.sc. Željko Širanović prof.v.š.				
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. Lammle, Tod: Cisco Certified Network Associate study guide, John Wiley Sons INC, 2011. Dodatna: 1. Douglas E. Comer: Computer Networks and Internets, Prentice Hall, 2009. 2. 1. Conlan, P., J.,(2009), Cisco Network Profesional's - Advanced Internetworking Guide,Wiley Publiching Inc.
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.
Student activities:	Aktivnost ECTS (Written exam) 3
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Uvod u mreže računala

Code WEB/ISVU	23610/156403	**ECTS**	3.0	**Academic year**	2018/2019
Name	Business English for IT				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - elective course4th semester - E-business (Izvanredni informatike) - elective course4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:1. dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju Auditory exercises: Lamia Egartner prof.				
Course objectives	To develop students English language skills: oral and written communication in the field of expertise, presentation of oneself/company				
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 Guest lecturer 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 Operating supplies 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, Cambridge University Press 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
Student activities:	Aktivnost ECTS (Written exam) 3
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	23612/156405	**ECTS**	3.0	**Academic year**	2018/2019
Name	Business German for IT				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - elective course4th semester - E-business (Izvanredni informatike) - elective course4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:2. Doc. dr. sc. Lidija Tepeš Golubić v. pred. Auditory exercises: Doc. dr. sc. Lidija Tepeš Golubić v. pred.				
Course objectives	To develop students language skills, use basic business terminology				
Learning outcomes:	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.English loanwords in German language, 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 prepared materials (texts)				
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	Attending classes and participation in the process	
Knowledge evaluation during semester	Preliminary exam 1 and 2, seminar paper	
Knowledge evaluation after semester	Written and/or oral exam	
Student activities:	Aktivnost (Activity in class) (Written exam) (Seminar Work)	ECTS 1 1 1
Remark	This course can be used for final thesis theme	
Prerequisites:	Students cannot enroll in this course unless they have completed Njemački jezik za IT	
Proposal made by	PhD. Lidija Tepeš Golubić, senior lecturer, 4th of June 2018	

Code WEB/ISVU	23607/156400	**ECTS**	4.0	**Academic year**	2018/2019
Name	Communication Skills				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - elective course3rd semester - E-business (Izvanredni informatike) - elective course3rd semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				45+30 (30+0+0+0) 45
Teachers	Lectures:1. Pred. Ida Popčević prof. Auditory exercises:Pred. Ida Popčević prof. Auditory exercises: Sara Slamić Tarade struč.spec. rel.publ.				
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 form a leader 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 ideas freely, 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 Debate				
Course content lectures	1.Communication process (1). , 2h, Learning outcomes:1 2.Communication process (2)., 2h, Learning outcomes:1,3 3.Verbal Communication., 2h, Learning outcomes:2,3,4 4.Non-verbal Communication., 2h, Learning outcomes:2,3 5.Foundations of feminism., 2h, Learning outcomes:7,8 6.The influence of gender based opinions on work with persons of the same or the opposite gender., 2h, Learning outcomes:7,8 7.Foundations of multiculturalism. , 2h, Learning outcomes:7,8 8.Intercultural differences more successful communication with people from other cultures. , 2h, Learning outcomes:6,7 9.Negative and positive aspects of conflict., 2h, Learning outcomes:3,4,5 10.Constructive and destructive interaction and communication. , 2h, Learning outcomes:3,4,5 11.Communication in small groups., 2h, Learning outcomes:3,4,5 12.Communication in large groups., 2h, Learning outcomes:3,4,5 13.Group structure and process specificities. , 2h, Learning outcomes:3,4,5 14.Public presentation (1)., 2h, Learning outcomes:3,4,5 15.Public presentation (2)., 2h, Learning outcomes:3,4,5,8				
Course content auditory	1.Introduction., 2h, Learning outcomes:2,3,4,5,6 2.Non-verbal communication., 2h, Learning outcomes:2,3,4,5,6 3.Advanced non-verbal communication. , 2h, Learning outcomes:2,3,4,5,6 4.Improvising. , 2h, Learning outcomes:2,3,4,5,6 5. Advanced improvising. , 2h, Learning outcomes:2,3,4,5,6 6.Improvising a discussion., 2h, Learning outcomes:2,3,4,5,6 7.Discussion prepared in advance., 2h, Learning outcomes:2,3,4,5,6 8.Karl Popper debate. , 2h, Learning outcomes:2,3,4,5,6 9.Karl Popper with a plan debate., 2h, Learning outcomes:2,3,4,5,6 10.World Schools debate. , 2h, Learning outcomes:2,3,4,5,6 11.British Parliament debate. , 2h, Learning outcomes:2,3,4,5,6 12.Individual debate. , 2h, Learning outcomes:2,3,4,5,6 13.Group exercises. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 14.Group exercises. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 15.Group exercises. , 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector Chairs and tables may not be fixed to the floor.				

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	Attend at least 50% of the lectures and exercises.
Knowledge evaluation during semester	Regular attendance Exam, theoretical issues Elements:Points Regular attendance and activity in the classes: 10 The 1st preliminary exam results: 30 The 2nd preliminary exam results: 30 The 3rd preliminary exam results: 30 Total: 100+10 The points required for the final grade: 50 - 59 pointssufficient (D) 60 - 74 pointsgood (C) 75 - 85 pointsvery good (B) 86 and more pointsexcellent(A)
Knowledge evaluation after semester	Oral exam
Student activities:	Aktivnost ECTS (Written exam) 4
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	23595/156386	**ECTS**	6.0	**Academic year**	2018/2019
Name	Communication Systems and Networks				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - elective course3rd semester - E-business (Izvanredni informatike) - elective course3rd semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				45+30 (15+15+0+0) 105
Teachers	Lectures:1. Mr.sc. Vladimir Lebinac dipl.ing. Auditory exercises: Lea Gagulić Auditory exercises: Vjeran Šimunić Laboratory exercises: Vjeran Šimunić				
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... General purpose computer laboratory 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	Teaching presence of more than 50%
Knowledge evaluation during semester	Regular attendance at 10% Colloquium, numerical assignments 20% Colloquium, Laboratory exercises 20% Colloquium, theoretical issues 40% E-learnig activity 10%
Knowledge evaluation after semester	Written exam 80% Oral exam 20%
Student activities:	Aktivnost ECTS (Written exam) 6
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200095;
Proposal made by	Vladimir Lebinac, MScEE, sen.lect.

Code WEB/ISVU	23743/170019	**ECTS**	5.0	**Academic year**	2018/2019
Name	Computer Games Development				
Status	5th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures: Tin Kramberger struč. spec. ing. techn. inf., pred. Laboratory exercises: Renata Kramberger				
Course objectives	Mastering the techniques of development of computer games.				
Learning outcomes:	1.IDE for game development. . Level:6,7 2.Establish (similarity / difference) between conventional programming and programming computer games.. Level:6 3.Physics and mathematics for game development. . Level:6 4.Plan development of computer games.. Level:6,7 5. Design computer game surroundings.. Level:6 6.Animate objects and surroundings with computer game programming framework. Level:6,7 7.Integrate artifitial inteligence with objects.. Level:6,7 8.Create computer game by the book.. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion Questions and answers Homework presentation				
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 Discussion, brainstorming Computer simulations Workshop				
Course content lectures	1.Basics of computer games, 2h, Learning outcomes:1,2,4 2.2D graphics and physics, 2h, Learning outcomes:2,3 3.User interface and game flow management, 2h, Learning outcomes:1,2,4,5 4.3D object basics, 2h, Learning outcomes:1,2,3,4,5 5.3D object modeling and animations, 2h, Learning outcomes:5,6 6.Illumination, shadows and cameras, 2h, Learning outcomes:5 7.Animations in a 3D environment, 2h, Learning outcomes:6 8.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6 9.Particle systems and audio, 2h, Learning outcomes:2,4,5,6 10.Artificial intelligence in game development, 2h, Learning outcomes:2,6,7 11.Alternative platforms for the development of computer games, 2h, Learning outcomes:4,8 12.Multiplayer game development, 2h, Learning outcomes:2,4,8 13.Guest lecturer, 2h, Learning outcomes:8 14.Student project presentation, 2h, Learning outcomes:1,2,3,4,5,6,7,8 15.Student project presentation, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Course content laboratory	1.No classes, 2h 2.Introduction to Object Oriented Programming, 2h, Learning outcomes:1,2 3.Getting to know the development tool, introduction to 2D game development, 2h, Learning outcomes:1,2 4.2D graphics and physics, 2h, Learning outcomes:2,3 5.Games textures and surroundings, 2h, Learning outcomes:1,2,4,5 6.Getting to know 3D game development, 2h, Learning outcomes:2,3,5 7.3D object modeling, 2h, Learning outcomes:5 8.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6 9.3D object animation, 2h, Learning outcomes:5,6 10.3D animations and avatars, 2h, Learning outcomes:5,6 11.Setting up 3D Scene, 2h, Learning outcomes:4,5 12.Particle systems and audio, 2h, Learning outcomes:2,4,5,6 13.Artificial intelligence, 2h, Learning outcomes:7 14.Multiplayer game development, 2h, Learning outcomes:2,4,8 15.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Lauren S. Ferro: Gamification with Unity 5.x, Packt Publishing, 2016. Dr. Edward Lavieri: Getting Started with Unity 5, Packt Publishing, 2015. Patrick Felicia: Getting Started with Unity, Packt Publishing, 2013. Claudio Scolastici: Unity 2D Game Development Cookbook, Packt Publishing, 2015				
Students obligations	Attendance at 70% of laboratory exercises, submission of the practical project.				
Knowledge	The theoretical part of the learning outcomes, max. 20 points				

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

Code WEB/ISVU	23742/170018	**ECTS**	5.0	**Academic year**	2018/2019
Name	Computer Graphics				
Status	5th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. Prof.dr.sc. Slavica Ćosović Bajić Lectures:1. Krešimir Štih Laboratory exercises: Krešimir Štih				
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
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Krešimir Štih

Code WEB/ISVU	23747/170023	**ECTS**	4.0	**Academic year**	2018/2019
Name	Computer Network Administration				
Status	6th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	Lectures:1. dr.sc. Željko Širanović prof.v.š. Laboratory exercises:dr.sc. Željko Širanović prof.v.š. Laboratory exercises: Vedran Tadić struč.spec.ing.techn.inf.				
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. Lammle, T., (2013), CCNA Routing and Switching Study Guide: Exams 100-101, 200-101, and 200-120, John Wiley Sons INC. Dodatna: 1. Douglas E. Comer: Computer Networks and Internets, Prentice Hall, 2009. 2. Conlan, P., J.,(2009), Cisco Network Profesional's - Advanced Internetworking Guide,Wiley Publiching Inc.
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.
Student activities:	Aktivnost ECTS (Written exam) 4
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Napredne tehnologije interneta Students cannot enroll in this course unless they have passed Uvod u mreže računala

Code WEB/ISVU	23238/143170	**ECTS**	6.0	**Academic year**	2018/2019
Name	Computer Typography				
Status	1st semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course1st semester - E-business (Izvanredni informatike) - obligatory course1st semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:1. Vesna Uglješić dipl. dizajner Laboratory exercises: Zorana Andrić mag. ing. graph. techn. Laboratory exercises: Darija Ćutić , mag. ing. graph. techn. Laboratory exercises: Ana Hoić Laboratory exercises:mag.des. Ulla Leiner Maksan Laboratory exercises: Vesna Uglješić dipl. dizajner				
Course objectives	Introduction to the basic elements of typography, typeface design and modification; also, the use of typography in visual communication. The student should acquire the basic theoretical knowledge, learn to recognize and modify various typefaces, and use them in their projects.				
Learning outcomes:	1.to analyse basic typographic terms and concepts. Level:6 2.to identify main typefaces features. Level:6 3.to differentiate various typefaces. Level:6 4.typeface design. Level:6 5.to make a computer font. Level:6 6.to analyse the importance of typography in visual communications. Level:6 7.to evaluate existing typographic works. Level:7 8.to make a connection between typography and design. Level:6,7 9.to make a connection between calligraphy and typography. Level:6,7 10.to design page layout. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Other video projection				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving				
Course content lectures	1.Basic concepts, 2h, Learning outcomes:1,2 2.Typography terminology, 2h, Learning outcomes:1,2,9 3.History and development of typography, 2h, Learning outcomes:1,2,9 4.Typeface classification, 2h, Learning outcomes:2,3 5.Famous typefaces, 2h, Learning outcomes:3,6,7 6.Computer typography, 2h, Learning outcomes:4,5 7.The importance of typography in visual communication, 2h, Learning outcomes:6,7,10 8.Typography as a means of expression, 2h, Learning outcomes:6,7,8,9 9.Typography in digital media, 2h, Learning outcomes:5,6,7 10.Typeface design, 2h, Learning outcomes:4,5,9 11.Typeface design, 2h, Learning outcomes:4,5,9 12.Copyright and licensing, 2h, Learning outcomes:5 13.Typography in documents, 2h, Learning outcomes:6,10 14.Page layout design, 2h, Learning outcomes:6,10 15.Security graphics typography, 2h, Learning outcomes:6,8				
Course content laboratory	1.Lettering, 2h, Learning outcomes:1,2,3,4,9 2.Lettering, 2h, Learning outcomes:1,2,3,4,9 3.Lettering, 2h, Learning outcomes:1,2,3,4,9 4.Typeface classification, 2h, Learning outcomes:2,3 5.Typeface classification, 2h, Learning outcomes:2,3 6.Typeface design, 2h, Learning outcomes:4,5,9 7.Typeface design, 2h, Learning outcomes:4,5,9 8.Typeface design, 2h, Learning outcomes:4,5,9 9.Typeface design, 2h, Learning outcomes:4,5,9 10.Page layout design, 2h, Learning outcomes:6,8,10 11.Page layout design, 2h, Learning outcomes:6,8,10 12.Page layout design, 2h, Learning outcomes:6,8,10 13.Page layout design, 2h, Learning outcomes:6,8,10 14.Individual project, 2h, Learning outcomes:6,7,8 15.Individual project, 2h, Learning outcomes:6,7,8				
Required materials	Basic: classroom, blackboard, chalk... Special purpose computer laboratory Whiteboard with markers Overhead projector Operating supplies papers, pencils, rulers, calligraphy pens				
Exam literature	1. F. Mesaroš, Tipografski priručnik, Grafički obrazovni centar, Zagreb, 1985. 2. V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. ISBN: 953 - 199 - 000, elektr.				

	Izdanje: http://free-zg.htnet.hr/kpap/ 3. V. Žiljak, TIPOGRAFIJA RAČUNALOM, str. 5 do 63 u knjizi 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. 4. V. Žiljak, TIPOGRAFIJA, 2004. Zagreb, Grafički fakultet katedra za računala i slog, elektroničko izdanje,: http://public.carnet.hr/%7Eviziljak/predavanja/tipografija1/Tipografski rjecnik1.htm 5. R. Bringhurst, The Elements of Typographic Style
Students obligations	Maximum of three absences from lab exercises, all colloquia and projects submitted on time.
Knowledge evaluation during semester	Every assignement or project done as a part of the lab exercises is graded as a colloquium.
Knowledge evaluation after semester	Tasks on the computer; oral exam.
Student activities:	Aktivnost — ECTS (Classes attendance) — 1 (Practical work) — 1 (Written exam) — 2 (Oral exam) — 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Vesna Uglješić

Code WEB/ISVU	23749/170025	**ECTS**	3.0	**Academic year**	2018/2019
Name	Computers and Software Installation				
Status	6th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+15 (0+15+0+0) 45
Teachers	Lectures:1. dr. sc. Roman Domović , prof. Laboratory exercises:dr. sc. Roman Domović , prof.				
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.Computer installation, 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.High-performance computing, 2h, Learning outcomes:1,2,3,7,9,10 6.First mid-term exam, 2h, Learning outcomes:1,2,6,8,10 7.Servers, 2h, Learning outcomes:2,3,6,8,10 8.Malicious software, 2h, Learning outcomes:2,3,6,8,10 9.Data security and protection, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 10.Storage systems, 2h, Learning outcomes:1,2,6,8,10 11.Second mid-term exam, 2h, Learning outcomes:3,4,5 12.Review and analysis of examples from IT area with guest speaker, 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
Student activities:	Aktivnost ECTS (Written exam) 3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200093;
Proposal made by	Roman Domović, prof.

Code WEB/ISVU	23613/156406	**ECTS**	5.0	**Academic year**	2018/2019
Name	Databases				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course4th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (15+30+0+0) 90
Teachers	Lectures:1. Tin Kramberger struč. spec. ing. techn. inf., pred. Auditory exercises: Tin Kramberger struč. spec. ing. techn. inf., pred. Laboratory exercises: Brigitta Cafuta Laboratory exercises: Renata Kramberger Laboratory exercises: Tin Kramberger struč. spec. ing. techn. inf., pred.				
Course objectives	Students need to grasp the concept, properties and role of databases and data mining systems in an information system. Practical work with the database management system will enable them to qualify students to familiarize themselves and master different methods of handling databases.				
Learning outcomes:	1.ability to build a database model. Level:6,7 2.ability to design normalized database. Level:6 3.ability to create basic SQL queries. Level:6,7 4.ability to construct SQL queries with data filtering. Level:6,7 5.ability to control embedded SQL functions. Level:6,7 6.ability to connect multiple data tables using SQL queries. Level:6,7 7.ability to sort and group data retrieved by a query. Level:6 8.ability to compare an outer SQL query with an inner SQL query. Level:6,7 9.ability to organize and optimize the database using indexes. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion Questions and answers				
Methods of carrying out auditory exercises	Laboratory exercises on laboratory 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, primary and foreign, database design, 2h, Learning outcomes:1,2 2.Data types, model, normalization, 2h, Learning outcomes:1,2 3.Basic DDL and DML clauses, 2h, Learning outcomes:3,4 4.String, date, and agregate functions, NULL values, 2h, Learning outcomes:3,4,5 5.Cartesian product, natural join, 2h, Learning outcomes:3,4,5,6 6.Join, 2h, Learning outcomes:3,4,5,6 7.Alias, 2h, Learning outcomes:3,4,5,6 8.Group by, having, 2h, Learning outcomes:7 9.Subselect, 2h, Learning outcomes:8 10.Keys, indexes, full text indexes, 2h, Learning outcomes:9 11.Query optimization, 2h, Learning outcomes:9 12.Creating and restoring database backups, 2h, Learning outcomes:9 13.Working with another database system and tools, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 14.Guest lecturer, 2h 15.Repeat for the final exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9				
Course content auditory	1.No classes, 2h 2.No classes, 2h 3.Database design, 2h, Learning outcomes:1 4.Database normalization, 2h, Learning outcomes:1,2 5.Database import, basic DDL and DML clauses, 2h, Learning outcomes:3 6.Functions and the WHERE clause, 2h, Learning outcomes:3,4,5 7.Cartesian product, natural join, functions, 2h, Learning outcomes:4,5,6 8.JOIN, 2h, Learning outcomes:4,5,6 9.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6 10.Aliases, 2h, Learning outcomes:4,5,6 11.GROUP BY, ORDER BY, HAVING clauses, 2h, Learning outcomes:6,7 12.Subselect, 2h, Learning outcomes:6,8 13.Indexes, 2h, Learning outcomes:9 14.Compensatory 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				
Course content laboratory	1.No classes, 2h 2.No classes, 2h 3.Database design, 2h, Learning outcomes:1 4.Database normalization, 2h, Learning outcomes:1,2 5.Database import, basic DDL and DML clauses, 2h, Learning outcomes:3				

6.Functions and the WHERE clause, 2h, Learning outcomes:2,3,4
7.Cartesian product, natural join, functions, 2h, Learning outcomes:4,5,6
8.JOIN, 2h, Learning outcomes:4,5,6
9.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6
10.Aliases, 2h, Learning outcomes:4,5,6
11.GROUP BY, ORDER BY, HAVING clauses, 2h, Learning outcomes:6,7
12.Subselect, 2h, Learning outcomes:6,8
13.Indexes, 2h, Learning outcomes: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

Exam literature

Basic literature:
1. Kramberger, T.; Duk, S.; Kovačević, R.: Baze podataka, TVZ, Zagreb, 2018, ISBN: 978-953-7048-70-9
1. Abraham Silberschatz: DATABASE SYSTEM CONCEPTS SIXTH EDITION, 2011
2. Radovan, M.: Baza podataka, Informator, Zagreb, 1993.

Additional literature:
1. Tkalac, S.: Relacijski model podataka, Informator, Zagreb, 1988.
2. Ullman, D.,J.: Database and Knowledge - base Systems, Computer Science Press, 1999.
3. Date, C.J.: An Introduction to Database Systems, Addison-Wesley publishing Company, New York. 1994.

Students obligations

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

Knowledge evaluation during semester

Code WEB/ISVU	23757/170033	**ECTS**	5.0	**Academic year**	2018/2019
Name	Design and Application of Vector Graphics				
Status	6th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures: Aleksandra Bernašek Petrinec Laboratory exercises: Aleksandra Bernašek Petrinec				
Course objectives	The acquisition of basic knowledge and skills in the design and implementation of vector graphics.				
Learning outcomes:	1.create complex vector graphics and their application. Level:6,7 2.distinguish between vector and raster graphics. Level:6 3.manage transformations of the coordinate system. Level:6,7 4.create complex graphics solutions using gradients, clips, masks and filters. Level:6,7 5.create and implement basic shapes of SVG graphical programming language. Level:6 6.create different typographic solutions. Level:6,7 7.manage the animation of SVG objects. Level:6,7 8.construct a paths with the Bezier curves. Level:6,7 9.manage and implement of vector graphics through other software platforms. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Questions and answers Other Lectures are interactive with projection from a computer.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Computer simulations				
Course content lectures	1.Graphic - historical , 2h, Learning outcomes:2,3,5 2.Screen graphic, 2h, Learning outcomes:1,5,7 3.Vector graphic, 2h, Learning outcomes:3,5 4.Colloquium 1, 2h, Learning outcomes:1,3,5,8 5.The correlation between the vector graphic software and SVG programming language, 2h, Learning outcomes:1,3,4 6.SVG - Basic elements and their attributes, 2h, Learning outcomes:1,3,4 7.SVG - Bezier curves, 2h, Learning outcomes:3,6,8 8.SVG - Creating gradients, 2h, Learning outcomes:1,4 9.SVG - Incorporating the text, 2h, Learning outcomes:1,4 10.SVG - Creation of clips and masks, 2h, Learning outcomes:1,7,8 11.SVG - Implementation of filters, 2h, Learning outcomes:1,7,8 12.SVG - Types of animations, 2h, Learning outcomes:1,4,9 13.SVG - Animation of objects, 2h, Learning outcomes:9 14.HTML 5 graphics designed with CSS 3 and SVG, 2h, Learning outcomes:1,4,9 15.Colloquium 2, 2h, Learning outcomes:1,9				
Course content laboratory	1.Designing the concept of the conceptual design, 2h, Learning outcomes:1,4,5,7 2.Elaboration of ideas, 2h, Learning outcomes:2,3,5 3.Designing of conceptual design, 2h, Learning outcomes:1,3,8 4.Digitalization of conceptual design, 2h, Learning outcomes:1,2,3,4,5,8 5.Colloquium 1, 2h, Learning outcomes:1,3,4 6.SVG - Basic elements and their attributes, 2h, Learning outcomes:1,4 7.SVG - Creating graphics with Bezier curve, 2h, Learning outcomes:1,4 8.SVG - Creating gradients, 2h, Learning outcomes:1,3,4 9.SVG - Incorporating and transformation of typography, 2h, Learning outcomes:3,6,8 10.SVG - Creating of mask and clips, 2h, Learning outcomes:1,7,8 11.SVG - Implementation of filters, 2h, Learning outcomes:1,9 12.SVG - Animation of objects, 2h, Learning outcomes:1,3,6,7,8,9 13.SVG - Designing and animating the conceptual design, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 14.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 15.There are no classes				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector Operating supplies				
Exam literature	obvezna literatura 1.J. Žiljak Vujić: Sigurnosna grafika, Tehničko veleučilište u Zagrebu, ISBN: 978 953 7048 33 4 2.J. David Eisenberg: SVG Essentials, O'Reilly, ISBN: 978 0 596 00223 7 (besplatno izdanje na webu) 3.Jay Nick: Learn SVG Interactively, Catto Creations Dopunska literatura 1.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.				

Students obligations	attendance of exercises and tests maximum 2 absence	
Knowledge evaluation during semester	Colloquium x 3	
Knowledge evaluation after semester	Written exam - if you are not satisfied colloquium Oral examination	
Student activities:	Aktivnost (Classes attendance) (Constantly tested knowledge) (Practical work) (Written exam) (Oral exam)	ECTS 1 1 1 1 1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	Aleksandra Bernašek, dipl. ing. graf. teh., 19.5.2015	

Code WEB/ISVU	23363/153298	**ECTS**	6.0	**Academic year**	2018/2019
Name	Design and Visual Meaning				
Status	2nd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:1. Aleksandra Bernašek Petrinec Lectures: Feđa Vukić Laboratory exercises: Aleksandra Bernašek Petrinec Laboratory exercises: Iva Kostešić				
Course objectives	Link basic theoretical principles , ideas and concepts about design and visual semantics . The student should acquire the basic terminology and definitions of theoretical knowledge and recognize important elements of visual culture , in particular the relation of design , visual perception and cognition in comparison to modern digital and multimedia environment , and to make them known to apply to their own creative work .				
Learning outcomes:	1.identify key terminology of visual meaning in the design of the management of government 's own project . Level : 6. Level:6 2.integrate theoretical assumptions characters and meanings in order to use in setting up your own project. Level:6,7 3.examine visual perception and cognition in the development of design project. Level:6 4.create mental maps in designing visual communications. Level:6,7 5.analyze meanings in different media context. Level:6 6.establish principles and ways of functioning of visual system for orientation in the implementation of the project design. Level:6 7.to design a semantic logic of graphic design for electronic media and Web environments. Level:6 8.devise an information structure in the construction of communication systems. Level:6,7 9.present the basic principles of the functioning of mass media. Level:6,7 10.analyze the visual logic of the cybernetic systems. Level:6 11.manage visual semantics in a multimedia environment. Level:6,7				
Involvement of learning outcomes of the course in study programme:	6.5.ID Realizirati dizajnerska rješenja u području grafičkih tehnologije i multimedijalnih sadržaja.: 20h in 180h				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Seminar, students presentation and discussion				
Methods of carrying out laboratory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Workshop				
Course content lectures	1.Terminology, 2h 2.Introduction to semiotics, 2h, Learning outcomes:1 3.Generating meanings, 2h, Learning outcomes:2 4.Visual perception and cognition, 2h, Learning outcomes:3 5.Mental maps, 2h, Learning outcomes:4 6.Meaning in context, 2h, Learning outcomes:5 7.The meaning of image: seeing, thinking and acting, 2h, Learning outcomes:6 8.The representational theory, 2h, Learning outcomes:7 9.Visual systems, 2h, Learning outcomes:7 10.Information structures and communication systems, 2h, Learning outcomes:7 11.The medium and the message, 2h, Learning outcomes:7 12.Mass media, 2h, Learning outcomes:8 13.Cybernetics and visually forwarding information, 2h, Learning outcomes:9 14.Multimedia environment, 2h, Learning outcomes:10 15.Design as inteface, 2h, Learning outcomes:11				
Course content laboratory	1.Terminology, presentation and critical discussion, 2h 2.Introduction to semiotics, presentation and critical discussion, 2h, Learning outcomes:1 3.Generating meaning, presentation and critical discussion, 2h, Learning outcomes:2 4.Visual perception and cognition, presentation and critical discussion, 2h, Learning outcomes:3 5.Mind maps, presentation and critical discussion, 2h, Learning outcomes:4 6.The meaning in context, presentation and critical discussion, 2h, Learning outcomes:5 7.The meaning of image: seeing, thinking and acting, presentation and critical discussion, 2h, Learning outcomes:6 8.The representational theory, presentation and critical discussion, colloquium, 2h, Learning outcomes:1,2,3,4,5,6,7 9.Visual systems, presentation and critical discussion, 2h, Learning outcomes:7 10.Information structures and communication systems, presentation and critical discussion, 2h, Learning outcomes:7 11.The medium and the message, presentation and critical discussion, 2h, Learning outcomes:7 12.Mass media, presentation and critical discussion, 2h, Learning outcomes:8 13.Cybernetics and visually passing information, presentation and critical discussion, 2h, Learning outcomes:9 14.Multimedia environment, presentation and critical discussion, 2h, Learning outcomes:10 15.Design as interface, presentation and critical discussion, colloquium, 2h, Learning outcomes:7,8,9,10,11				

Required materials	Basic: classroom, blackboard, chalk... Overhead projector	
Exam literature	F. Vukić, Teorija i razvoj dizajna, Zagreb, 2012. R. Arnheim, Visual Thinking, University of California Press, 2004. R. Solso, Cognition and the Visual arts, MIT Press, 1996. P. Jacob, M. Jannerod, Ways of Seeing, The scope and limits of visual cognition, Oxford University Press 2003.	
Students obligations	attending exercises maximum 2 absence	
Knowledge evaluation during semester	2 tests term paper	
Knowledge evaluation after semester	test + term paper	
Student activities:	Aktivnost (Written exam)	ECTS 6
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	

Code WEB/ISVU	23244/143181	**ECTS**	5.0	**Academic year**	2018/2019
Name	Devices Design				
Status	2nd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 90
Teachers	Lectures:1. dr.sc.rač. Ivica Dodig , prof.v.š. Lectures:2. dr.sc.rač. Davor Cafuta , prof.v.šk. Auditory exercises:dr.sc.rač. Ivica Dodig , prof.v.š. Auditory exercises: Jelena Kapelac				
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				
Involvement of learning outcomes of the course in study programme:	1.1.OPĆI Služiti se stranim jezikom u literaturi i svakodnevnoj stručnoj komunikaciji. : 10h in 150h 1.2.OPĆI Primijeniti znanje matematike i fizike na inženjerske probleme.: 10h in 150h 1.3.OPĆI Koristiti tehnike, vještine i suvremene alate neophodne za inženjersku praksu.: 10h in 150h 1.4.OPĆI Povezati inženjerske aktivnosti konstruiranja, proizvodnje i marketinga s potrebama korisnika proizvoda i usluge.: 10h in 150h 3.1.INF Analizirati i predvidjeti ponašanje programa napisanog u pseudo kodu ili poznatom programskom jeziku: 60h in 150h 3.2.INF Osmisliti, izraditi i testirati mrežnu stranicu izrađenu u osnovnim modernim tehnologijama.: 10h in 150h 3.3.INF Savladati teoretska i praktična znanja o tipografiji u informatičkoj struci: 120h in 150h 3.4.INF Razumijevati građevne dijelove i koncept digitalnih uređaja i modernih operacijskih sustava: 150h in 150h				
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.				
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				
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.	
Student activities:	Aktivnost (Written exam)	ECTS 5
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	23745/170021	**ECTS**	5.0	**Academic year**	2018/2019
Name	Digital Animation				
Status	5th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+0+30+0) 90
Teachers	Lectures:1. Ivan Rajković Seminar exercises: Boris Hergešić				
Course objectives					
Learning outcomes:	1. . Level:6,7 2. . Level:6,7 3. . Level:7 4. . Level:6,7 5. . Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers				
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:3 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 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:2,3 13. , 2h, Learning outcomes:4 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:1,2,3,4,5				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment				
Exam literature	Preporučena: 1. "The Animators Survival Kit"; Richard Williams 2. "Digital animation bible"; George Avgerakis Dopunska 3. "The illusion of life - Disney animation", Frank Thomas and Ollie Johnson 4. "Maxon Cinema 4D R16 Studio" - Sham Ticko 5. "Learning Autodesk Maya Foundation"				
Student activities:	Aktivnost (Classes attendance) (Project) (Seminar Work)		ECTS 1 3 1		
Remark	This course can be used for final thesis theme				

Prerequisites:	No prerequisites.

Code WEB/ISVU	23623/156421	**ECTS**	4.0	**Academic year**	2018/2019
Name	Digital Photography				
Status	4th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	Lectures:1. Milan Bajić Laboratory exercises: Milan Bajić				
Course objectives	Students will be able to take pictures using standard photo technique. They will become familiar with the basic principles of creating images and digital image processing. Train student for basic photographic processes and practices in the media and their use in the multimedia environment . Acquire analytical skills of understanding and interpreting the works .				
Learning outcomes:	1.Define basics of photography and photo camera. Level:6,7 2.Describe basic photography procedures. Level:6,7 3.Understand basic photography principles. Level:6 4.Apply knowledge to measure quality of photography. Level:6,7 5.Apply knowledge about photography and technology at work. Level:6,7 6.Plan, handle and use photo accessories at photo assignment. Be able to differentiate quality when using accessories. Level:6,7 7.Quantify and develop light measurement and exposition. Predict and control characteristics of photography. Level:6 8.Plan, use and sketch usage of artificial light. Aplly to work. Predict outcomes.. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Questions and answers				
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 Interactive problem solving Workshop				
Course content lectures	1.Course introduction, 2h, Learning outcomes:1,2,3,4,5,6,7,8 2.Photo cameras and lenses, 2h, Learning outcomes:1 3.Exposition and sensors, 2h, Learning outcomes:1,2,3,7 4.Artificial light sources, 2h, Learning outcomes:2,3 5.Framing, perspective, composition, 2h, Learning outcomes:2,3 6.Authors through periods and styles . Analysis of techniques and styles . Portrait. Interview. Photo report. Travel photo. News photography. Landscape., 2h 7.Lanscape photography, 2h, Learning outcomes:2,3,4 8.Documentary photography, 2h, Learning outcomes:2,3,4 9.Studio photography - commercial and product, 2h, Learning outcomes:2,3,4,8 10.Studio photography - nude, portrait, fashion, 2h, Learning outcomes:2,3,4,8 11.Photographic motif, 2h, Learning outcomes:3,6 12.Aerial photography, 2h, Learning outcomes:2,3,4,8 13.Underwater photography, 2h, Learning outcomes:2,3,4,8 14.Resolution. Image processing. Multimedia application. Software for image processing. Mobile applications., 2h, Learning outcomes:2,4 15.Analysis, discussion, presentation and evaluation of student portfolios, 2h, Learning outcomes:1,2,3,4,5				
Course content laboratory	1.Lab introduction, 2h, Learning outcomes:1,2,3,4,5,6,7,8 2.Hands on with photo equipment, 2h, Learning outcomes:1,2 3.Hands on studio equipment and accessoires, 2h, Learning outcomes:1,2,6,7 4.Stduio light, 2h, Learning outcomes:8 5.Project research, 2h, Learning outcomes:5,8 6.Studio photography, 2h, Learning outcomes:3,5,7 7.Documentary photography, 2h, Learning outcomes:5 8.Individual studio work, 2h, Learning outcomes:5,6,7,8 9.Individual studio work, 2h, Learning outcomes:5,6,7,8 10.Individual studio work, 2h, Learning outcomes:5,6,7,8 11.Individual field work, 2h, Learning outcomes:5,6,7,8 12.Individual field work, 2h, Learning outcomes:5,6,7,8 13.Individual field work, 2h, Learning outcomes:5,6,7,8 14.Creation of digital portfolio, 2h 15.Presentation of digital portfolio, 2h				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Video equipment				

Exam literature	Digitalna fotografija, Tom Ang DIGITALNA FOTOGRAFIJA Nove tajne profesionalnih fotografa, Scott Kelby Kd fotografske slike, Davor Žerjav Hrvatsko podmorje, Miro Andrić
Students obligations	50 % attendance with the active participation and timely execution of the set of obligations related to the practical work Regular attendance (15 checks) Practical work (1 check)
Knowledge evaluation during semester	mid term exam final exam
Knowledge evaluation after semester	Oral exam: Attendance - 10 % (a criterion for the passage of 80 %) Theoretical exam - 50 % (a criterion for the passage of 50 %) Practical work - 40 % (a criterion for the passage of 80 %)
Student activities:	Aktivnost ECTS (Written exam) 4
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Milan Bajic

Code WEB/ISVU	23756/170032	**ECTS**	5.0	**Academic year**	2018/2019
Name	Digital Television				
Status	6th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. Ivan Rajković Laboratory exercises: Ivan Rajković				
Course objectives	To introduce the basics of television production. Using the AV equipment to create own TV material and to defend the idea in front of producer.				
Learning outcomes:	1.prepare and perform AV content for the Internet platform. Level:6,7 2.develop cross medial program of selected products or services. Level:6,7 3.planing of shooting AV works in various conditions. Level:6,7 4.plan and organize a strategy and economics of TV and AV production. Level:6,7 5.identify basic concepts of the television. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers				
Methods of carrying out laboratory exercises	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:1,2,3 5. , 2h, Learning outcomes:1,2,3,4,5 6. , 2h, Learning outcomes:1,2,3 7. , 2h, Learning outcomes:1,2,3,4 8. , 2h, Learning outcomes:1,2,3,4,5 9. , 2h, Learning outcomes:1,2,3,4 10. , 2h, Learning outcomes:1,2,3 11. , 2h, Learning outcomes:3,4,5 12. , 2h, Learning outcomes:3,4,5 13. , 2h, Learning outcomes:2,3,4,5 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:2,3,4,5				
Course content laboratory	1. , 2h, Learning outcomes:1,2,3,4,5 2. , 2h, Learning outcomes:1,2,3 3. , 2h, Learning outcomes:3,4,5 4. , 2h, Learning outcomes:3,4,5 5. , 2h, Learning outcomes:3,4,5 6. , 2h, Learning outcomes:2,3,4,5 7. , 2h, Learning outcomes:1,2,3,4,5 8. , 2h, Learning outcomes:3,4,5 9. , 2h, Learning outcomes: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:3,4,5 13. , 2h, Learning outcomes:3,4,5 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:1,2,3,4,5				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment Operating supplies				
Exam literature	Preporučena: 1. "Television Production Handbook", Herbert Zettl Additional literature: 2. "Ronjenje u Hrvatskoj"; Miro Andrić 3. "Televizijske vijesti", Tena Perišin				
Student activities:	Aktivnost (Classes attendance) (Project) (Activity in class)		ECTS 1 3 1		

Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	23242/143178	**ECTS**	6.0	**Academic year**	2018/2019
Name	e-Business				
Status	2nd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course2nd semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:1. mr.sc. Sanja Bračun dipl.oec. Laboratory exercises: Brigitta Cafuta				
Course objectives	The course enables student understanding problems related with e-business in tactical, and operative aspects. The aim is to explain students the e-business concept in which information and Internet technology is intensively used and to point out the importance of applying e-business in business models, taking into account business security and data protection. Through the analysis of practical examples of e-business practices, students will be prepared to face with challenges of the global electronic market and the digital economy in their future workplace.				
Learning outcomes:	1.Prepare to participate in web maintenance and management projects, develop marketing plans and design of web ads. Level:6,7 2.Identify changes in society and the economy under the influence of information technology. Level:6 3.Link importance of planning process and market analysis in order to ensure successful asset management. Level:6,7 4.Analyse e-business, electronic commerce, and the electronic market in the new economy. Level:6 5.Analyse e-marketing and marketing tools. Level:6 6.Present existing systems, processes and instruments of e-payment and m-payment. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Questions and answers 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	Group problem solving Discussion, brainstorming On laboratory exercises, students create their own project of e-business modelling in a team consisting of 2 students. They use tools and knowledge they acquire during lectures and exercises. Exercises include web analytics and the use of CMS for the purpose of preparing, creating and publishing their own e-business model.				
Course content lectures	1.Introductory lecture, 2h, Learning outcomes:1 2.Introducing students with the concept and basic features, strategies and models of e-business , 2h, Learning outcomes:2 3.Environment, concept, elements and legal regulation of e-business, 2h, Learning outcomes:2 4.Development of e-business, new economy trends and model of sustainability of competitive advantage, Porter's value chain, 2h, Learning outcomes:2,3 5.The means of achieving the market leadership of a company - technology, brand and business intelligence, 2h, Learning outcomes:2,3 6.Electronic markets, globalization and e-business models by industry, 2h, Learning outcomes:3 7.Implementation of e-business, Process Management (ERP), Procurement (SCM) and Customer (CRM) with Customer Satisfaction and Loyalty, 2h, Learning outcomes:3 8.1st colloquium, 1h, Learning outcomes:1,2,3 9.Marketing and It's Tools (SEO and SEM), Gerila, Viral and Affiliate Marketing, 2h, Learning outcomes:4 10.Systems, processes, protocols and e-payment instruments, use of the public and secret key infrastructure and digital signatures, SWIFT, BIC, IBAN, 2h, Learning outcomes:5 11.Social networking and application of social network analysis, 2h, Learning outcomes:5,6 12.m-business and m-payment models, 2h, Learning outcomes:6 13.Cloud business models , 2h, Learning outcomes:6 14.New e-business models with 3D printing, 2h, Learning outcomes:6 15.2nd colloquium, 1h, Learning outcomes:4,5,6				
Course content laboratory	1.Choosing and approving of theme for creating students own business model of e- business, 2h, Learning outcomes:1 2.Making the first two chapters of the project (introduction and business model), teamwork , 2h, Learning outcomes:2,3 3.Continuation of the following project chapters (project analysis, innovation, new technology and Google survey), teamwork, 2h, Learning outcomes:3,4 4.Continuation of the following project chapters (clients, competitors and partners), teamwork, 2h, Learning outcomes:3,4 5.Continuation of the following project chapters (marketing plan), teamwork, 2h, Learning outcomes:5,6 6.Continuation of the following project chapters (domains, CMS and mobile technologies), teamwork, 2h, Learning outcomes:5,6 7.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 8.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 9.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 10.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 11.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 12.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 13.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6 14.Team presentation of students project and handing over the complete documentation, 2h, Learning				

	outcomes:1,2,3,4,5,6 15.Team presentation of students project and handing over the complete documentation, 2h, Learning outcomes:1,2,3,4,5,6
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Overhead projector Students develops their own projects of e-business
Exam literature	Obavezna literatura: 1.Priručnik za e-poslovanje (2014.), Ministarstvo poduzetništva i obrta, Zagreb, dostupno na: https://poduzetnistvo.gov.hr/UserDocsImages/EU%20projekti/IPA%20IIIC/Pobolj%C5%A1anje%20poslovne%20konkurentnosti%20putem%20elektroni%C4%8Dkog%20poslovanja/13-e-poslovanje-handbook-hrweb.pdf 2.Panian, Ž., (2013.): "Elektroničko poslovanje druge generacije", udžbenik Sveučilišta u Zagrebu, Biblioteka INFORMATIKA, Ekonomski fakultet Sveučilišta u Zagrebu 3.Krišto, I., (2012.) Elektroničko poslovanje, skripta Sveučilišta u Zagrebu, Biblioteka INFORMATIKA, Ekonomski fakultet Sveučilišta u Zagrebu 4.Spremić, M., (2004.): Menadžment i elektroničko poslovanje, Narodne novine d.d., Zagreb. 5.Bračun, S.,: Elektronički sadržaj predavanja dobiveni tijekom nastave, dostupni na https://lms.tvz.hr/course/view.php?id=139 Preporučena literatura: 1.Praćenje stručnih časopisa i izazova u novim tehnologijama na Internetu 2.Analiza socijalnih mreža, (2017.), dr. sc. R. Kopal, D. Korkut, S. Krnjašic, Algebra, Zagreb 3.Strategija e-Hrvatske do 2020. (2016.), Ministarstvo uprave 4.Nadrljanski M., Nadrljanski Đ. (2016.): Elektroničko poslovanje", Nakladnik Redak 5.Dave Chaffey (2014.),: Digital Business and E-Commerce Management (6th Edition) 6.Adobe Creative Team (2012.),: "Adobe Dreamweaver CS6 Classroom in a Book", Adobe Press 7.mr.sc. Matić T., (2010.),: "Kako pribaviti i koristiti elektronički potpis", Narodne novine d.d. Zagreb, Pravna biblioteka priručnika 8.Ridderstrale J., Nordstrom K. A., (2004.),: "Karaoke kapitalizam", Differo d.o.o., Zagreb 9.Ridderstrale J., Nordstrom K. A., (2002.),: "Funky Business", Differo d.o.o., Zagreb 10.Kalakota R., Robinson M. (2002.),: "E-poslovanje 2.0" - Vodič ka uspjehu, Mate, Zagreb
Students obligations	100% of attendance on exercises because of Project preparation at stages
Knowledge evaluation during semester	1st and 2nd colloquium Team presentation of students Project and handing over the complete documentation
Knowledge evaluation after semester	Oral Exam (in case of non-fulfilment of 1st and 2nd colloquium conditions)
Student activities:	Aktivnost — ECTS (Written exam) — 3 (Oral exam) — 3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200113;200115;

Code WEB/ISVU	23738/170014	**ECTS**	5.0	**Academic year**	2018/2019
Name	e-Business Systems				
Status	5th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 90
Teachers	Lectures:1. dr.sc. Mladen Mauher prof.v.šk. Lectures:2. prof. Marta Alić Auditory exercises:prof. Marta Alić				
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
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. Mladen Mauher, Ph.D.

Code WEB/ISVU	23758/170034	**ECTS**	5.0	**Academic year**	2018/2019
Name	eBook design				
Status	6th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. dr.sc. Maja Turčić pred. Lectures: Vesna Uglješić dipl. dizajner Laboratory exercises:dr.sc. Maja Turčić pred. Laboratory exercises: Vesna Uglješić dipl. dizajner				
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	Lab attendance				

evaluation during semester	Project assessment progress	
Knowledge evaluation after semester	Oral exam Completed project	
Student activities:	Aktivnost (Written exam)	ECTS 5
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	pred. Maja Turčić, dipl.ing.	

Code WEB/ISVU	23609/156402	**ECTS**	3.0	**Academic year**	2018/2019
Name	English Language for IT				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - elective course3rd semester - E-business (Izvanredni informatike) - elective course3rd semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:1. dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju Auditory exercises: Lamia Egartner prof. Auditory exercises: Zoran Vulelija				
Course objectives	To develop students English language skills: oral and written communication in the field of expertise, presenation of oneself/company				
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 Guest lecturer 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 Operating supplies 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.Professional English in Use ICT, for Computer and Internet, Esteras, Fabre, 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.
Student activities:	Aktivnost ECTS (Written exam) 3
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	23751/170027	**ECTS**	12.0	**Academic year**	2018/2019
Name	Final Thesis - A				
Status	6th semester - Office Organization and Informatization (Izvanredni informatike) - elective course6th semester - E-business (Izvanredni informatike) - elective course6th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+90 (90+0+0+0) 270
Teachers	Auditory exercises:1. Mia Čarapina dipl. ing., pred. Auditory exercises: Vesna Uglješić dipl. dizajner				
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				
Student activities:	Aktivnost (Written exam)		ECTS 12		
Remark	This course can not be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have passed Matematika I Students cannot enroll in this course unless they have passed Matematika II Students cannot enroll in this course unless they have passed Fizika Students cannot enroll in this course unless they have passed Osnove programiranja Students cannot enroll in this course unless they have passed Uredsko poslovanje Students cannot enroll in this course unless they have passed Računalna tipografija 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 Programiranje Students cannot enroll in this course unless they have passed Kineziološka kultura II Students cannot enroll in this course unless they have passed Kineziološka kultura I				

Code WEB/ISVU	23611/156404	**ECTS**	3.0	**Academic year**	2018/2019
Name	German for IT				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - elective course3rd semester - E-business (Izvanredni informatike) - elective course3rd semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:1. Doc. dr. sc. Lidija Tepeš Golubić v. pred. Auditory exercises: Doc. dr. sc. Lidija Tepeš Golubić v. pred.				
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	Attending classes and participation in the process	
Knowledge evaluation during semester	Preliminary exam 1 and 2; seminar paper	
Knowledge evaluation after semester	Written and/or oral exam	
Student activities:	Aktivnost (Activity in class) (Written exam) (Report)	ECTS 1 1 1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	PhD. Lidija Tepeš Golubić, senior lecturer, 11th of March 2014	

Code WEB/ISVU	23606/156399	**ECTS**	6.0	**Academic year**	2018/2019
Name	Graphics Design				
Status	4th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 90
Teachers	Lectures:1. Vesna Uglješić dipl. dizajner Laboratory exercises: Vesna Uglješić dipl. dizajner				
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	UVOD U LIKOVNO MIŠLJENJE / Marcel Bačić, Jasenka Mirenić Bačić DESIGN FOR COMMUNICATION / Elizabeth Resnick DESIGN AND FORM / Johannes Itten TEORIJA I POVIJEST DIZAJNA / Feđa Vukić THE ELEMENTS OF TYPOGRAPHIC STYLE / Robert Bringhurst				
Students obligations	Mandatory laboratory exercises (80%), project completion (100%).				

Knowledge evaluation during semester	Two preliminary exams submission of completed elements of a larger project, grades 1 5 Final presentation, grade 1 5 Grades are based on preparation, commitment, content and appearance of the project and its elements. Laboratory exercises grade is calculated as the average of above mentioned grades.
Knowledge evaluation after semester	Visual presentation and oral defense of a design solution on a given topic, with elaboration on the problem analysis, concept, and explanation of relevant elements of design theory. Final grade is calculated as the average of laboratory exercises and final exam presentation grades (50 50%).
Student activities:	Aktivnost ECTS (Written exam) 6
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Vesna Uglješić, Mag. Des.

Code WEB/ISVU	23602/156395	**ECTS**	5.0	**Academic year**	2018/2019
Name	Graphics Programming Languages				
Status	3rd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 60
Teachers	Lectures:1. dr.sc. Maja Turčić pred. Lectures:2. prof.dr.sc. Klaudio Pap Laboratory exercises: Darija Ćutić , mag. ing. graph. techn. Laboratory exercises:prof.dr.sc. Klaudio Pap Laboratory exercises:dr.sc. Maja Turčić pred.				
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 Discussion Questions and answers				
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 colour 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 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	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam 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	1. Laboratory attendance (maximum of 2 absences) Maximum number of points - 45				

	Requirement: 18 points 2. Positively reviewed quiz Maximum number of points - 15 Requirement: 6 points
Knowledge evaluation during semester	Tri kolokvija po 5 bodova, maksimalno 15 bodova Prolaz: 2 boda (ukupno 6 bodova) Vjebe, maksimalno 45 bodova Prolaz: 18 bodova Ocjenjuje se priprema, zalaganje i finalno rjeenje. Ukupno 60 bodova 50-60 = 5 40-50 = 4 30-40 = 3 20-30 = 2 Manje od 18 nedovoljno postignu
Knowledge evaluation after semester	Studenti ocijenjeni sa 4 ili 5 tijekom semestra izlaze samo na usmeni dio ispita gdje se provjerava teorija. Studenti sa ocjenama 2 i 3 izlaze na pismeni ispit gdje rjeavaju programski zadatak nakon a slijedi usmeni dio ispita gdje se provjerava teorijsko znanje. Pismeni ispit maksmimalan broj bodova 100: 90-100 = 5 80-90 = 4 70-80 = 3 60-70 = 2 manje od 60 nedovoljno postignu
Student activities:	Aktivnost — ECTS (Written exam) — 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot pass this course unless they have passed Osnove programiranja

Code WEB/ISVU	23603/156396	**ECTS**	4.0	**Academic year**	2018/2019
Name	Graphics Techniques				
Status	3rd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 60
Teachers	Lectures:1. Aleksandra Bernašek Petrinec Auditory exercises: Aleksandra Bernašek Petrinec				
Course objectives	Acquiring basic knowledge about the processes of graphic production. Analyze all the parameters in creating a conceptual graphic product, from idea to realization.				
Learning outcomes:	1.ability to distinguish basic printing techniques. Level:6 2.Compare old printing techniques (historical review). Level:6,7 3.Classify printing substrates. Level:6,7 4.Integrate all processes in the graphics industry. Level:6,7 5.ability to analyse the raw materials used in paper, carton and cardboard manufacturing. Level:6 6.ability to identify the types of printing substrates. Level:6 7.ability to analyse the theory of colours. Level:6 8.analyze types of design solutions. Level:6 9.determine the tasks of graphical industry and errors that occur during the printing process. Level:7 10.Present a project assignment. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers Seminar, students presentation and discussion 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	Group problem solving Discussion, brainstorming Interactive problem solving Other Laboratory exercises on the field.				
Course content lectures	1.Historical overview of basic graphing techniques, 2h, Learning outcomes:1,2 2.Assignment of and agreement on project tasks, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 3.Graphic prepres, 2h, Learning outcomes:4,8,9 4.Graphic design, 2h, Learning outcomes:4,8 5.Basic graphic colors; Color theory, 2h, Learning outcomes:4,7 6.Components for printing ink formulating: fillers, pigments, binders, solvents, resins and desiccants or driers, 2h, Learning outcomes:4,7 7.Color management, 2h, Learning outcomes:4,7,9 8.Project overwiev, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 9.Overview of basic printing media; Paper and cardboard, 2h, Learning outcomes:3,4,5,6,9 10.Standard paper sizes, 2h, Learning outcomes:3,4,5,6,9 11.Main printing techniques: , 2h, Learning outcomes:4,9 12.Main printing techniques: , 2h, Learning outcomes:4,9 13.Main printing techniques: , 2h, Learning outcomes:4,9 14.Main printing techniques: , 2h, Learning outcomes:4,9 15.Errors in the printing proces, 2h, Learning outcomes:4,9				
Course content auditory	1.Visit to Printing house Zagreb, 3h, Learning outcomes:1,2,3,4,5,6,7,8,10 2.Visit to Graphical institute of Croatia, 3h, Learning outcomes:1,2,3,4,5,6,7,8 3.Visit to the current exhibition, 3h, Learning outcomes:1,3,6,7,8 4.Visit to the current exhibition, 3h, Learning outcomes:1,3,6,7,8,10 5.Presentation of projects, 3h, Learning outcomes: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... Whiteboard with markers Overhead projector Video equipment Special equipment UV and IR lamps, IR cameras.				
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 4. Jana Žiljak Vujić, Sigurnosna grafika				

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	Written and oral exam#1#100#60$	
Student activities:	Aktivnost	ECTS
	(Classes attendance)	1
	(Project)	1
	(Oral exam)	1
	(Written exam)	1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	Aleksandra Bernašek Petrinec, lecturer	

Code WEB/ISVU	23520/156272	**ECTS**	6.0	**Academic year**	2018/2019
Name	Information literacy and critical thinking				
Status	2nd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 120
Teachers	Lectures:1. Vjeran Bušelić viši predavač Auditory exercises: Vjeran Bušelić viši predavač				
Course objectives	Gathering basic knowledge of Infromation Liteacry and Critical Thinking				
Learning outcomes:	1.to analyze basic characteristics modern literacies -digital, visual, media, informatics and information. Level:6 2.to judge type and volume given/recognised information need. Level:7 3.to gather needed informaton quick and efficient using Internet . Level:6,7 4.to judge selected sources and gathered information. Level:7 5.to build and articulate arguments and personal stance (reasons, claims, dilemma,...). Level:6,7 6.to integrate effectively compelted information for given purpose. Level:6,7 7.to judgje ethical usage of information evaluating information sources . Level:7 8.to write seminar/professional paper on given subject using professional/institutional template. 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				
Methods of carrying out auditory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Essay writing Discussion, brainstorming Mind mapping Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1 2. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 3. , 2h, Learning outcomes:1,2,3,4,5,6,7 4. , 2h, Learning outcomes:1,6,8 5. , 2h, Learning outcomes:1,6,8 6. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 7. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 8. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 9. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 10. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 11. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 12. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 13. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 14. , 2h, Learning outcomes:1 15. , 2h, Learning outcomes:1				
Course content auditory	1. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 2. , 2h, Learning outcomes:1,2,3,7,8 3. , 2h, Learning outcomes:1,2,3,4,7,8 4. , 2h, Learning outcomes:1,2,3,4,5,7,8 5. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 6. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 7. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 8. , 2h, Learning outcomes:1,2,3,4,5,6,7 9. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 10. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 11. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 12. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 13. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 14. , 2h, Learning outcomes:1,2,3,4,5,6,7,8 15. , 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment				
Exam literature	Preporučena 1. Špiranec, Banek, Informacijska pismenost Teorijski okviri i polazišta, ZIS Zagreb, 2008. 2. Buchberger, Kritičko mišljenje priručnik kritičkog mišljenja, slušanja, čitanja i pisanja, Universitats, 2012. Additional literature:				

	1. Bassham , Irwin , Nardone , "Wallace, Critical Thinking: A Student's Introduction", 4th Edition, McGraw-Hill, 2011. 2. Butterworth, Thwaites, "Thinking Skills", 2nd Edition Cambridge University Press, 2013. 3. Thomson, "Critical Reasoning", Routledge; 3 edition, 2008
Students obligations	50% dolaznosti uz aktivno sudjelovanje i pravovremeno izvravanje zadanih obaveza vezano uz prakti rad
Knowledge evaluation during semester	Redovitost pohaa (15+15 provjera) Kolokvij, teorijska pitanja (1 provjere) Prakti rad (2 provjere)
Knowledge evaluation after semester	Usmeni ispit: Dolaznost - 10% (kriterij za prolaz 50%) Teorijska provjera - 20% (kriterij za prolaz 50%) Prva prakti provjera (prezentacija) - 20% (kriterij za prolaz 100%) Druga prakti provjera (seminar) - 20% (kriterij za prolaz 100%) Usmeni ispit - 30%
Student activities:	Aktivnost ECTS (Written exam) 6
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	23615/156409	**ECTS**	5.0	**Academic year**	2018/2019
Name	Innovations in information technology				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - elective course4th semester - E-business (Izvanredni informatike) - elective course4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 90
Teachers	Lectures:1. Prof. dr. sc. Jana Žiljak Gršić , mag. design Lectures: Ana Hoić Auditory exercises: Ana Hoić				
Course objectives	Acquisition of basic knowledge in the field of innovation, their role and impact on business processes and technological development. To qualify students to improve their ideas, procedures and processes for a more successful business environment. To familiarize students with 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 Guest lecturer 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, protection of intellectual property, 2h, Learning outcomes:5,6 8.Innovation project checking, project and compliance with the law and market proposal, 2h, Learning outcomes:1,5 9.Possible market projection, identifying areas of interest and offering their solutions in a real environment, 2h, Learning outcomes:7 10.Project prezentation in front of a student group, 2h, Learning outcomes:8 11.Innovations critical analysis - development planning and solutions correction, 2h, Learning outcomes:7 12.Critical issues setting - second check milestone and defining innovative solutions, 2h, Learning outcomes:7 13.Preparation of the final solution for presentation, 2h, Learning outcomes:6,7 14.Innovative products benefits and improvement of existing applications, 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 student group, 2h, Learning outcomes:8 11.Innovations critical analysis - development planning and solutions correction, 2h, Learning outcomes:7 12.Critical issues setting - second check milestone and defining innovative solutions, 2h, Learning outcomes:7 13.Preparation of the final solution for presentation, 2h, Learning outcomes:6,7 14.Student groups present their ulimate solutions and defend their work, 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 d.d., Zagreb, 2011. 2. Boris Golob: "Inovacija od ideje do tržišta", Dragon d.o.o., Rijeka, 2009.
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
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Marko Horvat, PhD, lect., 28.05.2015.

Code WEB/ISVU	23241/143177	**ECTS**	4.0	**Academic year**	2018/2019
Name	Introduction to (X)HTML and CSS				
Status	1st semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course1st semester - E-business (Izvanredni informatike) - obligatory course1st semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	Lectures:1. Sanja Kraljević , dipl.ing., v. pred. Laboratory exercises:dr. sc. Roman Domović , prof. Laboratory exercises: Sanja Kraljević , dipl.ing., v. pred. Laboratory exercises: Renata Kramberger Laboratory exercises: Petar Osterman				
Course objectives	To introduce students to practical and theoretical aspects of using HTML and CSS, the basic markup languages for making the Web based 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 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.ability to integrate more Web pages into Web site and connect them with absolute and relative links. Level:6,7 16.ability to prepare and optimize images and photos for Web site; choose a suitable format. Level:6,7 17.ability to formulate webpage key words and to set metadata. Level:6,7 18.ability to design horizontal or vertical navigation bar, adjust it to a webpage content and ability to know how to code it. Level:6 19.ability to create a Web page adapted to the needs of different browser width layout or media. Level:6,7 20.ability to link multimedia elements into a Web page (audio, video, web mapping services). Level:6,7 21.create visual effects for enriching user experience of web site. Level:6,7				
Involvement of learning outcomes of the course in study programme:	1.1.OPĆI Služiti se stranim jezikom u literaturi i svakodnevnoj stručnoj komunikaciji. : 2h in 120h 1.2.OPĆI Primijeniti znanje matematike i fizike na inženjerske probleme.: 3h in 120h 1.3.OPĆI Koristiti tehnike, vještine i suvremene alate neophodne za inženjersku praksu.: 3h in 120h 1.4.OPĆI Povezati inženjerske aktivnosti konstruiranja, proizvodnje i marketinga s potrebama korisnika proizvoda i usluge.: 5h in 120h 1.5.OPĆI Identificirati, modelirati i rješavati inženjerske probleme.: 2h in 120h 2.1.OSOBNE Znanje o suvremenim pitanjima struke i društva.: 3h in 120h 2.2.OSOBNE Odgovornost, dosljednost, točnost, ažurnost.: 10h in 120h 2.3.OSOBNE Etički i moralni pristup radu.: 5h in 120h 2.4.OSOBNE Kritička evaluacija argumenata, pretpostavki i podataka u cilju stvaranja mišljenja i pridonošenja rješenju problema.: 3h in 120h 2.8.OSOBNE Komunikacijske vještine u okviru struke te s klijentima, na hrvatskom i engleskom jeziku.: 2h in 120h 2.9.OSOBNE Profesionalna i ljudska osobnost.: 2h in 120h 2.10.OSOBNE Prilagodljivost novim tehnologijama i tehnikama kao dio procesa cjeloživotnog učenja.: 5h in 120h 2.11.OSOBNE Otvorenost za nova znanja, iskustva i kulturne okolnosti.: 4h in 120h 2.12.OSOBNE Fleksibilnost i prilagodljivost u iznalaženju tehničkih rješenja uz neupitno poštivanje temeljnih etičkih načela, pravnih normi i pravila struke.: 4h in 120h 3.2.INF Osmisliti, izraditi i testirati mrežnu stranicu izrađenu u osnovnim modernim tehnologijama.: 40h in 120h 3.3.INF Savladati teoretska i praktična znanja o tipografiji u informatičkoj struci: 4h in 120h 4.5.ORG Korištenje, usporedba i planiranje primjene alata u elektroničkom poslovanju, računalnim sustavima i mrežama: 1h in 120h 5.5.ELPO Primjena i realizacija multimedijskih sadržaja u elektroničkom okruženju: 5h in 120h 6.2.ID Planiranje, procjenjivanje i osmišljavanje dizajna sučelja programskih rješenja i mrežnih stranica: 40h in 120h 6.5.ID Realizirati dizajnerska rješenja u području grafičkih tehnologije i multimedijalnih sadržaja.: 5h in 120h				
Methods of carrying	Ex cathedra teaching				

out lectures	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 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 frameworks, 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/). M. MacDonald, HTML5 - The Missing Manual, O'Reilly, 2014.; 2. D.S.McFarland, CSS3 - The Missing Manual, O'Reilly,

	2013. (eng: Reviewed course textbook. Lecture presentation notes (PDF) downloadable on course webpage. W3Schools e-tutorial chapters about HTML, XHTML and CSS (http://www.w3schools.com/ M. MacDonald, HTML5 - The Missing Manual, O'Reilly, 2014. D.S.McFarland, CSS3 - The Missing Manual, O'Reilly, 2013.). (eng: Reviewed course textbook. Lecture presentation notes (PDF) downloadable on course webpage. W3Schools e-tutorial chapters about HTML, XHTML and CSS (http://www.w3schools.com/ M. MacDonald, HTML5 - The Missing Manual, O'Reilly, 2014. D.S.McFarland, CSS3 - The Missing Manual, O'Reilly, 2013.).
Students obligations	Done laboratories, collected 18 points from 28 possible during the exercises. - 12 exercises * 2 points - 2 short test * 2 points
Knowledge evaluation during semester	40% of the grade is lab (evaluation form of points collected during the exercises) 30% score is first mid-term exam, 30% score is first mid-term exam.
Knowledge evaluation after semester	Lab exercises carries 40% marks. Written exam carries 60% marks.
Student activities:	Aktivnost ECTS (Written exam) 4
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200109;
Proposal made by	Sanja Duk, dipl.ing., 25.5.2017.

Code WEB/ISVU	23599/156391	**ECTS**	4.0	**Academic year**	2018/2019
Name	Introduction to Computer Networks				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	Lectures:1. dr.sc. Željko Širanović prof.v.š. Laboratory exercises:dr.sc. Željko Širanović prof.v.š.				
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, OReilly 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.
Student activities:	Aktivnost ECTS (Written exam) 4
Remark	This course can not be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Željko Širanović

Code WEB/ISVU	23736/170012	**ECTS**	5.0	**Academic year**	2018/2019
Name	Introduction to UNIX Systems				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. dr.sc.rač. Ivica Dodig , prof.v.š. Laboratory exercises:dr.sc.rač. Davor Cafuta , prof.v.šk. Laboratory exercises: Andrej Vitez				
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.-, 2h 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.-, 2h 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.
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Operacijski sustavi
Proposal made by	Ivica Dodig, Davor Cafuta (08.01.2014)

Code WEB/ISVU	23755/170031	**ECTS**	5.0	**Academic year**	2018/2019
Name	IT Design - Practicum				
Status	6th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (0+30+0+0) 120
Teachers	Laboratory exercises:1. mag.des. Ulla Leiner Maksan Laboratory exercises:2. Prof. dr. sc. Jana Žiljak Gršić , mag. design				
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.				
Student activities:	Aktivnost (Written exam)		ECTS 5		
Remark	This course can be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have completed Dizajn vizualnih komunikacija				
Proposal made by	Jana Žiljak Vujić predavač				

Code WEB/ISVU	23735/170011	**ECTS**	5.0	**Academic year**	2018/2019
Name	IT Systems Security and Protection				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course5th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. izv. prof. dr. sc. Krunoslav Antoliš Laboratory exercises:izv. prof. dr. sc. Krunoslav Antoliš				
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.K. Antoliš et all.: Sigurnost informacijskih sustava, ISBN 978-953-322-216-5, priručnik, nakladnik: Algebra d.o.o., Zagreb ožujak, 2016. 2.K. Antoliš et all.: Sigurnost elektroničkog poslovanja, ISBN 978-953-322-155-7, priručnik, nakladnik: Algebra d.o.o., Zagreb srpanj, 2013 3.Antoliš, K.,et al(2010), Sigurnost računalnih mreža - 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.K. Antoliš poglavlje u knjizi:The Darknet as a Safe Haven for Violent Extremists, str. 77.-87. U knjizi Violent Extremism and Radicalzation Procesesses as Driving Factors to Terrorism Threats,CIP: 323.285(082), ISBN 978-961-94011-1-8, Institut for Corporative Security Studies, May 2018, Ljubljana, Slovenija, 7.K. Antoliš, P. Mišević, A. Miličević: VULNERABILITIES OF NEW TECHNOLOGIES AND THE PROTECTION OF CNI, Media, culture and public relations, ISSN 1333-6371, Vol. 6. No.1, INFO-84, 1, UDK: 004.521.39:004.7:001, Authors Review/ Pregledni rad, 6, 2015, Zagreb, 8.K. Antoliš: ICT Identity Theft, Informatologija, 46, 2013., 4, 353-360, UDK:681.3:340:001, Authors Review/Pregledni rad, ISSN 1330-0067, Zagreb, Hrvatska.
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
Student activities:	Aktivnost — ECTS (Written exam) — 1 (Essay) — 1 (Seminar Work) — 1 (Oral exam) — 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200099;
Proposal made by	doc. dr.sc. Krunoslav Antoliš, profesor visoke škole u trajnom zvanju

Code WEB/ISVU	23364/154063	**ECTS**	5.0	**Academic year**	2018/2019
Name	Market Communication				
Status	2nd semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. mr.sc. Sergej Lugović MBA Laboratory exercises: Dinko Horvat struč.spec.ing.techn.inf. Laboratory exercises:mag.oec Kristina Perec				
Course objectives	The aim of the course is to teach students to observe the market, distinguish niche for new technology product or service, to spot the main competitors and trends and be able to develop a strategy for the launch of the new-technology products / systems / applications, based on the observation and assessment of the target group and its characteristics of life, communication, or buying in a broader traditional and the digital environment.				
Learning outcomes:	1.Identify customer. Level:6 2.develop new ICT product or service . Level:6,7 3.develop brand identity of product or service. Level:6,7 4.plan marketing strategy and creative implementation . Level:6,7 5.define advertising and point of contact with customer. Level:6,7 6.develop control and optimisation of marketing strategy. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer				
Methods of carrying out laboratory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web				
Course content lectures	1.Introduction - The role of communication in the modern considerations of the market, 2h, Learning outcomes:6 2.Analysis of environment - understanding the market + Knowledge of the user / consumers, 2h, Learning outcomes:6 3.Behavioral economics - the basics, 2h, Learning outcomes:6 4.The concept and definition of the brand, the history of the brand, 2h, Learning outcomes:6 5.Methods and tools forming new technology products and services through tangible, rational or emotional attributes or characteristics, 2h, Learning outcomes:6 6.Methods and tools for products and services design (through a cost / technological / competitive doubts), 2h, Learning outcomes:6 7.The process of selecting the name and brand (trademark, slogan, packaging, color), 2h, Learning outcomes:6 8.Evaluation of the brand value, 2h, Learning outcomes:6 9.Segmentation, targeting and positioning , 2h, Learning outcomes:6 10.From design strategy to detailed marketing plan, 2h, Learning outcomes:6 11.Planning and implementation of design solutions in marketing, working with agencies, 2h, Learning outcomes:6 12.Selecting and evaluation of the key performance indicators, 2h, Learning outcomes:6 13.Online marketing and display advertising, 2h, Learning outcomes:6 14.Social media, online PR and marketing content, 2h, Learning outcomes:6 15.SEM and SEO and web analytics, 2h, Learning outcomes:6				
Course content laboratory	1.Lab, 2h, Learning outcomes:6 2.Lab, 2h, Learning outcomes:6 3.Lab, 2h, Learning outcomes:6 4.Lab, 2h, Learning outcomes:6 5.Lab, 2h, Learning outcomes:6 6.Lab, 2h, Learning outcomes:6 7.Lab, 2h, Learning outcomes:6 8.Lab, 2h, Learning outcomes:6 9.Lab, 2h, Learning outcomes:6 10.Lab, 2h, Learning outcomes:6 11.Lab, 2h, Learning outcomes:6 12.Lab, 2h, Learning outcomes:6 13.Lab, 2h, Learning outcomes:6 14.Lab, 2h, Learning outcomes:6 15.Lab, 2h, Learning outcomes:6				
Required materials	Basic: classroom, blackboard, chalk...				
Exam literature	Integrirana marketinška komunikacija, Tanja Kesić Upravljanje markama, Tihomir Vranešević Pobijedite Internet ili će Internet povijediti vas, Penović, Ličina, Cetinić Digital Adaptation, Paul Boag				
Students obligations	Class attendance 70%				
Knowledge evaluation during semester	Seminar				
Knowledge evaluation after semester	Oral Exam				
Student activities:	Aktivnost (Written exam)			ECTS 5	

Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	mr.sc. Sergej Lugović MBA

Code WEB/ISVU	23417/155823	**ECTS**	6.0	**Academic year**	2018/2019
Name	Mathematics I				
Status	1st semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course1st semester - E-business (Izvanredni informatike) - obligatory course1st semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (45+0+0+0) 105
Teachers	Lectures:1. Tihana Strmečki Auditory exercises: Andrea Katarić				
Course objectives	To enable students to solve mathematical problems related to engineering practice.				
Learning outcomes:	1.ability to calculate the value of units containing basic arithmetic operations consisting of complex numbers. Level:6 2.ability to draw the position of a complex number in gaussian plane. Level:6 3.ability to calculate the determinants and simple matrix units. Level:6 4.ability to calculate vector units. Level:6 5.ability to solve linear equations. Level:6 6.ability to understand the definition and composition of a function; to understand inverse functions. Level:6,7 7.ability to classify functions: even functions/odd functions, injections/surjections/bijections. Level:6,7 8.ability to classify basic types of elementary function: exponential functions, polynomials, logarithm functions. Level:6,7 9.ability to sketch graphs of polynomials, trigonometric functions and rational functions without using derivatives. Level:6 10.ability to calculate the limit of a function. Level:6 11.ability to calculate the derivative of a function. Level:6 12.ability to sketch function graphs by means of derivatives and critical points. Level:6				
Involvement of learning outcomes of the course in study programme:	1.1.OPĆI Služiti se stranim jezikom u literaturi i svakodnevnoj stručnoj komunikaciji. : 5h in 180h 1.2.OPĆI Primijeniti znanje matematike i fizike na inženjerske probleme.: 150h in 180h 1.3.OPĆI Koristiti tehnike, vještine i suvremene alate neophodne za inženjersku praksu.: 5h in 180h 1.5.OPĆI Identificirati, modelirati i rješavati inženjerske probleme.: 5h in 180h 2.2.OSOBNE Odgovornost, dosljednost, točnost, ažurnost.: 5h in 180h 2.3.OSOBNE Etički i moralni pristup radu.: 5h in 180h 2.4.OSOBNE Kritička evaluacija argumenata, pretpostavki i podataka u cilju stvaranja mišljenja i pridonošenja rješenju problema.: 5h in 180h				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Other The chalkboard lectures include theory and many examples clearly analyzed step by step, in cooperation with students				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Other Exercises are solved on the blackboard in cooperation with students.				
Course content lectures	1.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:1,2 2.Determinant (2nd order - by formula, 3rd order - by rule of Sarrus and Laplace expansion, 4th order - by Laplace expansion nad using elementary transformations), 2h, Learning outcomes:3,5 3.System of linear equations, solving by Cramers rule and by Gauss-Jordan elimination method, 2h, Learning outcomes:5 4.Vectors, 2h, Learning outcomes:4,5 5.Elementary functions: power functions, polynomials, exponential functions, logarithmic functions, trigonometric functions, hyperbolic functions, 2h, Learning outcomes:6,7 6.Elementary functions: power functions, polynomials, exponential functions, logarithmic functions, trigonometric functions, hyperbolic functions, 2h, Learning outcomes:6,7,8 7.1. exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8 8.Limits, sequences, 2h, Learning outcomes:10 9.Sketching graphs of some functions (polynomials, trigonometric functions), 2h, Learning outcomes:9 10.Problem of finding a tangent, derivative of function, rules for derivative of a sum, product and a quotient of two functions, 2h, Learning outcomes:9,12 11.Differential, implicit differentiation, parametric differentiation, 2h, Learning outcomes:10,11 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 15.2. exam, 2h, Learning outcomes:9,10,11,12				
Course content auditory	1.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, 1h, Learning outcomes:1,2 2.Determinant (2nd order - by formula, 3rd order - by rule of Sarrus and Laplace expansion, 4th order - by Laplace expansion nad using elementary transformations), 1h, Learning outcomes:3,5 3.System of linear equations, solving by Cramers rule and by Gauss-Jordan elimination method, 1h, Learning outcomes:5 4.Vectors, 1h, Learning outcomes:4,5 5.Elementary functions: power functions, polynomials, exponential functions, logarithmic functions, trigonometric functions, hyperbolic functions, 1h, Learning outcomes:6,7 6.Elementary functions: power functions, polynomials, exponential functions, logarithmic functions, trigonometric				

	functions, hyperbolic functions, 1h, Learning outcomes:6,7,8 7.1. exam, 1h, Learning outcomes:1,2,3,4,5,6,7,8 8.Limit, sequence, 1h, Learning outcomes:10 9.Sketching graphs of some functions (polynomials, trigonometric functions), 1h, Learning outcomes:9 10.Problem of finding a tangent, derivative of function, rules for derivative of a sum, product and a quotient of two functions, 1h, Learning outcomes:9,12 11.Differential, implicit differentiation, parametric differentiation, 1h, Learning outcomes:10,11 12.Derivative of a composite function, derivative of function f(x)=x^x, 1h, Learning outcomes:11 13.LHopitals rule, 1h, Learning outcomes:11 14.Taylor polinomial of a function centered at zero, 1h, Learning outcomes:11 15.2. exam, 1h, Learning outcomes:9,10,11,12
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Special equipment Lecture material is presented and problems are solved using appropriate CAS.
Exam literature	Basic literature: 1. P. Javor: Uvod u matematičku analizu, Školska knjiga, Zagreb, 1983. 2. S. Suljagić: Matematika I, skripta, Zagreb, 2005 3. I. Slapničar: Matematika 1, skripta, Split, 2002. 4. B. P. Deminovič: Zadaci i rješeni primjeri iz više matematike, Danjar, Zagreb, 1995. 5. N. Elezović: Linearna algebra, Element, Zagreb, 1995. Additional literature: 1. L. Krnić, Z. Šikić: Račun diferencijalni i integralni, I dio, Školska knjiga, Zagreb, 1992. 2. V. Devide: Riješeni zadaci iz više matematike, svezak i i II, Školska knjiga, Zagreb, 1985. 3. T. Bradić, R. Roki, J. Pečarić, M. Strunje: Matematika za tehničke fakultete, Multigraf, Zagreb, 1994.
Students obligations	No special requirements
Knowledge evaluation during semester	Two exams during semester Ratings by the outcome: maximum 100 points 50-62 sufficient (2) 63-75 good (3) 76-88 very good (4) 89-100 excellent (5)
Knowledge evaluation after semester	Written exam 60% of mark Ratings of written part of the exam: maximum 100 points 50-62 sufficient (2) 63-75 good (3) 76-88 very good (4) 89-100 excellent (5) Oral exam 40% of mark
Student activities:	Aktivnost — ECTS (Written exam) — 6
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	143166;
Proposal made by	dipl.ing.mat Tihana Strmečki., 10.06.2015.

Code WEB/ISVU	23418/155824	**ECTS**	6.0	**Academic year**	2018/2019
Name	Mathematics II				
Status	2nd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course2nd semester - E-business (Izvanredni informatike) - obligatory course2nd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (45+0+0+0) 105
Teachers	Lectures:1. Tihana Strmečki Auditory exercises: Andrea Katarić				
Course objectives	To enable students to solve mathematical problems related to engineering practice.				
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 using numerical methods . Level:6				
Involvement of learning outcomes of the course in study programme:	1.1.OPĆI Služiti se stranim jezikom u literaturi i svakodnevnoj stručnoj komunikaciji. : 10h in 180h 1.2.OPĆI Primijeniti znanje matematike i fizike na inženjerske probleme.: 150h in 180h 1.3.OPĆI Koristiti tehnike, vještine i suvremene alate neophodne za inženjersku praksu.: 10h in 180h 1.5.OPĆI Identificirati, modelirati i rješavati inženjerske probleme.: 10h in 180h 2.2.OSOBNE Odgovornost, dosljednost, točnost, ažurnost.: 10h in 180h 2.3.OSOBNE Etički i moralni pristup radu.: 10h in 180h 2.4.OSOBNE Kritička evaluacija argumenata, pretpostavki i podataka u cilju stvaranja mišljenja i pridonošenja rješenju problema.: 10h in 180h				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Other The chalkboard lectures include theory and many examples clearly analyzed step by step, in cooperation with students.				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Other Exercises are solved on the blackboard in cooperation with students.				
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, Newton-Leibnizs formula, Mid value theorem for integrals, 2h, Learning outcomes:1,2 5.Improper integrals, trigonometry and hyperbolic supstitutions, 2h, Learning outcomes:1,2 6.Application of definite integrals: areas of plane figures, the arc length of a curve, volumes of solids and areas of surfaces of revolution, 2h, Learning outcomes:1,2,3 7.Numerical methods of calculating definite integrals, 2h, Learning outcomes:1,2,3,4 8.1. exam, 2h, Learning outcomes:1,2,3 9.Ordinary differential equations - introduction, 2h, Learning outcomes:5 10.First order ODE with separable variables, homogenous ODEs, 2h, Learning outcomes:5 11.Solving ODEs by variable substitution (homogeneous diff. eqs., ode of form y=f(ax+by+c)), 2h, Learning outcomes:5 12.Linear ODEs, homogenous and nonhomogenous, variation of constant method, integrating factor method, 2h, Learning outcomes:5 13.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:5,6,7 15.2. exam, 2h, Learning outcomes:5,6,7				
Course content auditory	1.Indefinite integrals, primitive function, basic integrals, 3h, Learning outcomes:1 2.Solving indefinite integrals by substitution, and using partial fractions, 3h, Learning outcomes:1 3.Solving indefinite integrals by integration by parts, by completing the square of second degree trinomial, 3h, Learning outcomes:1 4.Definite integrals, Newton-Leibnizs formula, 3h, Learning outcomes:1,2 5.Improper integrals, trigonometry and hyperbolic supstitutions, 3h, Learning outcomes:1,2 6.Application of definite integrals: the areas of plane figures, the arc length of a curve, volumes of solids and areas of surfaces of revolution, 3h, Learning outcomes:1,2,3 7.Numerical methods of calculating definite integrals, 3h, Learning outcomes:1,2,3,4 8.1. exam, 3h, Learning outcomes:1,2,3,4 9.Ordinary differential equations - introduction, 3h, Learning outcomes:5 10.First order ODE with separable variables, 3h, Learning outcomes:5 11.Solving ODEs by variable substitution (homogeneous diff. eqs., ode of form y=f(ax+by+c)), 3h, Learning outcomes:5 12.Linear ODEs, homogenous and nonhomogenous, variation of constant method, integrating factor method, 3h, Learning outcomes:5 13.Linear ODEs of second order with constant coefficients, homogenous and nonhomogenous, 3h, Learning outcomes:5 14.Solving ODEs by Laplaces transformation; Numerical methods of solving ODEs, 3h, Learning outcomes:6,7 15.2. exam, 3h, Learning outcomes:5,6,7				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Special equipment				

	Some of the problems are solved using the appropriate software Mathematica.
Exam literature	Basic literature: 1. P. Javor: Uvod u matematičku analizu, Školska knjiga, Zagreb, 1983. 2. S. Suljagić: Matematika II, skripta, Zagreb, 2006. 3. I. Slapničar: Matematika 2, skripta, Split, 2008. 4. B. P. Deminovič: Zadaci i rješeni primjeri iz više matematike, Danjar, Zagreb, 1995. Additional literature: 1. L. Krnić, Z. Šikić: Račun diferencijalni i integralni, I dio, Školska knjiga, Zagreb, 1992. 2. I. Ivanšić: Fourierov red i integral, diferencijalne jednadžbe, skripta, FER, Zagreb, 1997. 3. T. Bradić, R. Roki, J. Pečarić, M. Strunje: Matematika za tehničke fakultete, Multigraf, Zagreb, 1994.
Students obligations	No special requirements.
Knowledge evaluation during semester	Two exams during semester Ratings by the outcome: maximum 100 points 50-62 sufficient (2) 63-75 good (3) 76-88 very good (4) 89-100 excellent (5)
Knowledge evaluation after semester	Written exam 60% of mark Ratings of written part of the exam: maximum 100 points 50-62 sufficient (2) 63-75 good (3) 76-88 very good (4) 89-100 excellent (5) Oral exam 40% of mark
Student activities:	Aktivnost ECTS (Written exam) 6
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	143183;
Proposal made by	dipl.ing.mat Tihana Strmečki., 19.05.2016.

Code WEB/ISVU	23737/170013	**ECTS**	6.0	**Academic year**	2018/2019
Name	Media Integration				
Status	5th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (15+15+0+0) 120
Teachers	Lectures: Vjeran Bušelić viši predavač Auditory exercises: Ivan Rajković Auditory exercises: Višen Tadić struč.spec.art Laboratory exercises: Ivan Rajković Laboratory exercises: Višen Tadić struč.spec.art				
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%)
Student activities:	Aktivnost ECTS (Written exam) 6
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Obrada slike, zvuka i videa

Code WEB/ISVU	23730/170006	**ECTS**	3.0	**Academic year**	2018/2019
Name	Mobile Communications				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course5th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:1. dr.sc Sonja Zentner Pilinsky prof.v.š. Lectures:dr.sc. Alberto Teković viši predavač Auditory exercises: Siniša Lacković struč.spec.ing.el. Auditory exercises:dr.sc Sonja Zentner Pilinsky prof.v.š.				
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 5 absences from exercises and 5 absences from lectures	
Knowledge evaluation during semester	presence at lectures and exercises, 3 semiexams with theoretical questions and numerical exercises (50% required at each semi to obtain grade at the end of semester)	
Knowledge evaluation after semester	written and oral exam	
Student activities:	Aktivnost (Written exam)	ECTS 3
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	Prof. dr. sc. Ervin Zentner	

Code WEB/ISVU	23753/170029	**ECTS**	5.0	**Academic year**	2018/2019
Name	Multimedia Marketing				
Status	6th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+15 (0+0+15+0) 105
Teachers	Lectures:1. Vjeran Bušelić viši predavač Seminar exercises: Ivan Rajković Seminar exercises: Višen Tadić struč.spec.art				
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. Prezentacijom do uspjeha; 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	Redovitost pohaa (15 provjera) Kolokvij, teorijska pitanja (2 provjere)				

semester	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%)	
Student activities:	Aktivnost (Written exam)	ECTS 5
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	

Code WEB/ISVU	23604/156397	**ECTS**	5.0	**Academic year**	2018/2019
Name	Object Oriented Programming I				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course3rd semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. Prof. dr. sc. Miroslav Slamić profesor visoke škole Laboratory exercises: Danko Ivošević pred. Laboratory exercises: Željko Kovačević , struč.spec.ing.techn.inf. Laboratory exercises: Martina Petrovečki struč.spec.ing.techn.inf.				
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 Thinking in C++ Vol 1 i Vol 2, Prentice Hall, 2003. http://www.mindview.net/Books/TICPP/ThinkingInCPP2e.html 5. Stroustrup The C++ Programming Language, Addison-Wesley, Third edition, 2004. 6. Željko Kovačević, C++ Analiza i primjena, Školska knjiga, 2004.
Students obligations	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 % .
Student activities:	Aktivnost ECTS (Written exam) 5
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	23605/156398	**ECTS**	5.0	**Academic year**	2018/2019
Name	Object Oriented Programming II				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course4th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (60+0+0+0) 60
Teachers	Lectures:1. dr.sc. Goran Salamunićcar Auditory exercises: Željko Kovačević , struč.spec.ing.techn.inf. Auditory exercises:Dr. sc. Aleksandar Stojanović pred.				
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++, C# 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 Demonstration Discussion Questions and answers Seminar, students presentation and 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.Spajanje aplikacije na bazu podataka 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	Basic: classroom, blackboard, chalk... General purpose computer laboratory				

	Overhead projector
Exam literature	Posebno pripremljeni nastavni materijali za C++, C# i Javu.
Students obligations	Active participation on lectures (at least 6). done laboratory exercises done seminar
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%
Student activities:	Aktivnost — ECTS (Written exam) — 2 (Oral exam) — 2 (Practical work) — 1
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Goran Salamunićcar, Phd, 20.5.2016.

Code WEB/ISVU	23240/143173	**ECTS**	6.0	**Academic year**	2018/2019
Name	Office Automation				
Status	1st semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course1st semester - E-business (Izvanredni informatike) - obligatory course1st semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:1. dr. sc. Roman Domović , prof. Lectures: Danijela Pongrac , prof. Laboratory exercises:dr. sc. Roman Domović , prof. Laboratory exercises: Željka Širanović mag.inf.zn. Laboratory exercises: Nataša Uzelac				
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				
Involvement of learning outcomes of the course in study programme:	6.5.ID Realizirati dizajnerska rješenja u području grafičkih tehnologije i multimedijalnih sadržaja.: 5h in 180h				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Seminar, students presentation and 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:1 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:3 4.Computer hardware support for Information System., 2h, Learning outcomes:4 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:5 7.Assessment of information systems, computer hardware and software support. Check store of E-learning system Moodle., 2h, Learning outcomes:6 8.Use of cloud technologies in the Microsoft environment (MS tools: Word, Excel, Powerpoint, Outlook, Access, Microsoft Dynamics CRM, Sharepoint)., 2h, Learning outcomes:7 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:8 10.Computer networks in the modern business environment, and its application in daily life., 2h, Learning outcomes:9 11.Services on the TCP / IP protocols, computer networks and their links., 2h, Learning outcomes:9 12.Data warehouse, CRM and his philosophy, application and storage of data in the database, file structure and data dictionary., 2h, Learning outcomes:10,11 13.Human Resources (lifeware) in the IT sector, participation, responsibilities and tasks., 2h, Learning outcomes:11 14.Ergonomic workplace, and safe use of computer equipment in their daily operations, 2h, Learning outcomes:11 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				
Course content laboratory	1.Understanding the operating environment, applications with user data on a computer network and work with your computer., 2h, Learning outcomes:1 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:3 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:4				

	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:6 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:6 7.Examination on the computer, the practical part. Assessment work in Microsoft Word., 2h, Learning outcomes:7 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:8 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:9 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:9 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:10 12.Working with MS Word document in a collaborative environment, save documents using cloud technology using Sharepoint., 2h, Learning outcomes:10,11 13.Connecting tools MS Word, MS Excel, MS Powerpoint, problem solving and preparation for the midterm., 2h, Learning outcomes:10,11 14.Examination on the computer, the practical part. Assessment work in Microsoft in Microsoft Excel., 2h, Learning outcomes:11,12 15.Examination on the computer, repeat exams of practical material., 2h
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 4. Varga, Ćurko et al: Informatika u poslovanju, Element, Zagreb, 2007. 5. 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$
Student activities:	Aktivnost — ECTS (Classes attendance) — 1 (Written exam) — 2 (Activity in class) — 1 (Practical work) — 2
Remark	This course can not be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Alen Šimec, PhD

Code WEB/ISVU	23734/170010	**ECTS**	3.0	**Academic year**	2018/2019
Name	Office Organisation and Informatisation				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:1. Danijela Pongrac , prof. Auditory exercises: Danijela Pongrac , prof.				
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.ability to make a query specification. Level:6 8. ability to devise implementation, testing and maintenance of an information system. Level:6,7 9.Ability to analyze the needs of office systems of the future. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Modelling Questions and answers Seminar, students presentation and discussion 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 Data mining and knowledge discovery on the Web Essay writing Workshop				
Course content lectures	1.Ontology of the office; Organization of offices (models and structures), 2h, Learning outcomes:1,2 2.Functions and processes; Office Processes; Generic office functions, 2h, Learning outcomes:2,3 3.Generic office system technologies, 2h, Learning outcomes:2,3 4.Generic office system technologies, 2h, Learning outcomes:2,3 5.Generic office system technologies, 2h, Learning outcomes:2,3 6.Transfer Information and Communication Technology, 2h, Learning outcomes:4 7.1 Colloquium, 2h, Learning outcomes:1,2,3,4 8.Standard model of Office automation; Document And Data Flow Diagrams, 2h, Learning outcomes:4,5 9.Standard model of Office automation; Data model and XML schema, 2h, Learning outcomes:4,5 10.Standard Office Business Model (Nonfunctional Requirements), 2h, Learning outcomes:6,7 11.Business Process Decomposition Of Office System, 2h, Learning outcomes:4,5 12.Software engineering of office systems, 2h, Learning outcomes:7,8 13.Office systems of the future, 2h, Learning outcomes:9 14.Presentation of students with debate, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 15.2 Colloquium, 2h, Learning outcomes:5,6,7,8,9				
Course content auditory	1.Introduction to Office Collaboration Systems, 2h, Learning outcomes:1 2.Concept and technology of the Sharepoint portal server, 2h, Learning outcomes:2 3.Web and App Parts; Document Management, Versioning, 2h, Learning outcomes:2 4.Web site; Web page; Managing users and access permissions, 2h, Learning outcomes:3 5.Templates, Manage Lists, and Libraries, 2h, Learning outcomes:4 6.Workflow Design, Import / Export Data from Excel, 2h, Learning outcomes:4 7.Social Tools; Searchers, Visio, 2h, Learning outcomes:5 8.Individual assignment to students, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 9.Designing and Creating a Website and Documenting Work, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 10.Designing and Creating a Website and Documenting Work, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 11.Designing and Creating a Website and Documenting Work, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 12.Designing and Creating a Website and Documenting Work, 2h, Learning outcomes:1,2,3,4,5,6,7,8 13.Designing and Creating a Website and Documenting Work, 2h, Learning outcomes:1,2,3,4,5,6,7,8 14.Designing and Creating a Website and Documenting Work, 2h, Learning outcomes:1,2,3,4,5,6,7,8 15.Submit seminar work, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
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 LMS-u TVZ-a i SharePoint-u 2. Klasić, Klarin: Informacijski sustavi načela i praksa, Intus informatika,Zagreb,2009. Additional literature: 1. K.C.Laudon, J.P.Laudon; Management Information Systems - MANAGING THE DIGITAL FIRM, 13th edition; Pearson Education, 2014. 2. R. Barker: CASE*METHOD Tasks and Deliverables, Addison-Wesley Publishing Company, 1991. 3. J. Martin: Information Engineering II - Planning and Analisys, Prentice Hall, Englewood Cliffs, NY 1990. 4. Van Vliet, H.: Software Engineering, John Wiley and Sons, USA, 2001.				

Students obligations	At least 3 points from the flash of tests on lectures (regular attendance). Internships (seminar work - Documentation on SharePoint system work - minimum 16 points)
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 6 questions, 50% is prerequisite for oral exam -Oral exam
Student activities:	Aktivnost ECTS (Written exam) 3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Danijela Pongrac, prof.

Code WEB/ISVU	23596/156387	**ECTS**	5.0	**Academic year**	2018/2019
Name	Operating Systems				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. dr.sc.rač. Davor Cafuta , prof.v.šk. Lectures:2. dr.sc.rač. Ivica Dodig , prof.v.š. Laboratory exercises: Brigitta Cafuta				
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.
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje Students cannot enroll in this course unless they have passed Građa računala
Proposal made by	Davor Cafuta , Ivica Dodig (10.01.2014)

Code WEB/ISVU	23239/143172	**ECTS**	1.0	**Academic year**	2018/2019
Name	Physical Education I				
Status	1st semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course1st semester - E-business (Izvanredni informatike) - obligatory course1st semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	Auditory exercises:1. pred. Valter Perinović mag. kineziologije Auditory exercises: Marko Milanović				
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:				
Involvement of learning outcomes of the course in study programme:	2.1.OSOBNE Znanje o suvremenim pitanjima struke i društva.: 5h in 30h 2.2.OSOBNE Odgovornost, dosljednost, točnost, ažurnost.: 10h in 30h 2.3.OSOBNE Etički i moralni pristup radu.: 10h in 30h 2.4.OSOBNE Kritička evaluacija argumenata, pretpostavki i podataka u cilju stvaranja mišljenja i pridonošenja rješenju problema.: 5h in 30h 2.5.OSOBNE Spremnost za rad na terenu i u nestandardnim uvjetima.: 5h in 30h 2.9.OSOBNE Profesionalna i ljudska osobnost.: 20h in 30h 2.11.OSOBNE Otvorenost za nova znanja, iskustva i kulturne okolnosti.: 10h in 30h				
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	Osnovna: Milanović, D.:Priručnik za sportske trenere, FFK Sveučilište u Zagrebu, Zagreb, 1997. Milanović, D. i dr.: Fitness, FFK, Zagreb, 1996. B. Anderson, E. Burke, B. Perl, Fitness za sve, Zagreb, 1997. Dodatna: Radovi nositelja: Zvonarek N., Primjena individualnog dopunskog treninga u rukometu s ciljem poboljšanja osobne tehnike i taktike fintiranja i analiza profila braniča, 2003. Lukenda Ž., Tus J., Tipovi treninga s teretom, Zbornik radova 11. ljetne škole kineziologa RH, Rovinj, 2002.				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Prakti ispit#1#1#100$				
Knowledge evaluation after semester	Laboratory exercises				
Student activities:	Aktivnost (Classes attendance)		ECTS 1		
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				
Proposal made by	pred. Valter Perinović mag. kineziologije				

Code WEB/ISVU	23245/143186	**ECTS**	1.0	**Academic year**	2018/2019
Name	Physical Education II				
Status	2nd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course2nd semester - E-business (Izvanredni informatike) - obligatory course2nd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	Auditory exercises:1. pred. Valter Perinović mag. kineziologije Auditory exercises: Marko Milanović				
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:				
Involvement of learning outcomes of the course in study programme:	2.1.OSOBNE Znanje o suvremenim pitanjima struke i društva.: 5h in 30h 2.2.OSOBNE Odgovornost, dosljednost, točnost, ažurnost.: 10h in 30h 2.3.OSOBNE Etički i moralni pristup radu.: 10h in 30h 2.4.OSOBNE Kritička evaluacija argumenata, pretpostavki i podataka u cilju stvaranja mišljenja i pridonošenja rješenju problema.: 5h in 30h 2.5.OSOBNE Spremnost za rad na terenu i u nestandardnim uvjetima.: 5h in 30h 2.9.OSOBNE Profesionalna i ljudska osobnost.: 20h in 30h 2.11.OSOBNE Otvorenost za nova znanja, iskustva i kulturne okolnosti.: 10h in 30h				
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				
Student activities:	Aktivnost (Classes attendance)			ECTS 1	
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	23621/156418	**ECTS**	1.0	**Academic year**	2018/2019
Name	Physical Education III				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course3rd semester - E-business (Izvanredni informatike) - obligatory course3rd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	Auditory exercises:1. pred. Valter Perinović mag. kineziologije Auditory exercises: Marko Milanović				
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				
Student activities:	Aktivnost (Classes attendance)			ECTS 1	
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	23622/156419	**ECTS**	1.0	**Academic year**	2018/2019
Name	Physical Education IV				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course4th semester - E-business (Izvanredni informatike) - obligatory course4th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	Auditory exercises:1. pred. Valter Perinović mag. kineziologije Auditory exercises: Marko Milanović				
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				
Student activities:	Aktivnost (Classes attendance)		ECTS 1		
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	23997/185593	**ECTS**	6.0	**Academic year**	2018/2019
Name	Physics				
Status	2nd semester - IT Design (Izvanredni informatike) - obligatory course2nd semester - E-business (Izvanredni informatike) - obligatory course2nd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:1. prof.vis.šk. Ivica Levanat Lectures:2. Alemka Knapp Laboratory exercises:prof.dr. Dubravko Horvat Laboratory exercises: Alemka Knapp Laboratory exercises: Diana Šaponja-Milutinović dipl.ing.fizike, pred.				
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 relate precision of measurement and of physical units. Level:6,7 2.ability to calculate simple linear motions, motions on a circle, and a launch at an angle. Level:6 3.ability to calculate the translation acceleration of a body upon which a force is exerted. Level:6 4.ability to relate the work of forces to kinetic and potential energy of a body. Level:6,7 5.ability to distinguish between a classical mechanical description of motion and special relativity. Level:6 6.ability to analyse the effects of both electric and magnetic fields on electric charge. Level:6 7.ability to calculate currents and voltages in simple circles with Ohm resistance using Kirchhoff's laws. Level:6 8.ability to relate alternating current to electromagnetic induction. Level:6,7 9.ability to analyze simple harmonic oscillations without damping. Level:6 10.ability to relate Bohr's model of atom to a quality description of electron shells and ribbons. Level:6,7 11.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 laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Other Homework				
Course content lectures	1.Physical quantities and units., 2h, Learning outcomes:1 2.Rectilinear motion, free fall., 2h, Learning outcomes:2 3.Motion along curve and circle., 2h, Learning outcomes:2 4.Newton axioms, momentum., 2h, Learning outcomes:3 5.Work, power and energy., 2h, Learning outcomes:4 6.Einstein special theory of relativity., 2h, Learning outcomes:5 7.Gravitational and electric field., 2h, Learning outcomes:6 8.Direct current ., 2h, Learning outcomes:7 9.Magnetic field., 2h, Learning outcomes:6 10.Electromagnetic induction., 2h, Learning outcomes:8 11.Alternating current., 2h, Learning outcomes:8 12.Harmonic oscillations., 2h, Learning outcomes:9 13. Wave optics, photoelectric effect., 2h, Learning outcomes:10,11 14.Atomic and nuclear structure., 2h, Learning outcomes:10 15.Electron shells, semiconductors., 2h, Learning outcomes:10,11				
Course content laboratory	1.Physical quantities and units: application of Python syntax, 2h, Learning outcomes:1 2.Measurement and analysis of results, 2h, Learning outcomes:1 3.Length measurement, volume calculation, Python programs and output files , 2h, Learning outcomes:1 4.Rectilinear motion, computer aided problem solving (numpy, matplotlib)., 2h, Learning outcomes:2 5.Projectile motion, trajectories (Python programs), computer aided problem solving, 2h, Learning outcomes:2 6.Newton's laws, computer aided problem solving (numpy), 2h, Learning outcomes:3 7.Work, power, energy - numerical integration, Monte Carlo method (numpy, matplotlib, scipy)., 2h, Learning outcomes:4 8.First partial exam, 2h 9.Harmonic oscillation (numpy, matplotlib), 2h, Learning outcomes:9 10.Measurement of spring constant (least squares method, numpy, matplotlib), 2h, Learning outcomes:9 11.Measurement of gravitational field strength (least squares method, numpy, matplotlib), 2h, Learning outcomes:3 12.Torsion pendulum (least squares method, numpy, matplotlib), 2h, Learning outcomes:9 13.Charge motion in electric and magnetic field (numpy, matplotlib), 2h, Learning outcomes:6 14.Photoelectric effect, Bohr model of atom (numpy, matplotlib), 2h, Learning outcomes:11 15.Second partial exam, 2h				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Whiteboard with markers Overhead projector :-				

Exam literature	Basic literature: 1. Levanat, I., Fizika za TVZ 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	Laboratory exercises attendance (at most 2 exercises may not be done).
Knowledge evaluation during semester	Two partial exams from exercises, each up to 25 points. Homeworks, up to 15 points.
Knowledge evaluation after semester	Laboratory exercises full exam, up to 50 points. Theory exam, up to 20 points. Exercises attendance gives 10 points, lectures up to 5 points, they are added to homework points after exam, or to the points from both partial exams if student is not taking full exam. Maximum number of points is 100. Grades: 2...55 p 3...65 p 4...75 p 5...85 p
Student activities:	Aktivnost — ECTS (Classes attendance) — 1 (Oral exam) — 2 (Written exam) — 3
Remark	This course can not be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	143179;
Proposal made by	Ivica Levanat, prof. v. škole, 21. 01. 2014

Code WEB/ISVU	23614/156407	**ECTS**	4.0	**Academic year**	2018/2019
Name	Picture, Sound and Video Processing				
Status	3rd semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (60+0+0+0) 30
Teachers	Lectures:1. Ivan Rajković Auditory exercises: Dinka Radonić Auditory exercises: Ivan Rajković Auditory exercises: Višen Tadić struč.spec.art				
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 design a work containing audio and video formats. Level:6,7 5.ability to prepare the synchronization of sound, video and animation. Level:6,7 6.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 Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1,2,3,4 2. Medij slika, zvuk i video, 2h, Learning outcomes:1,2,3,4 3.Standardi slikovnih formata: GIF, JPEG, TIFF, PCX, BMP, PNG., 2h, Learning outcomes:1,2,3,4 4. Osnove izrade video zapisa, 2h, Learning outcomes:1,2,3,4 5.Montaa video materijala, 2h, Learning outcomes:1,2,3,4 6.Oblikovanje scenarija, 2h, Learning outcomes:1,2,3,4,5,6 7.Knjiga snimanja, 2h, Learning outcomes:4,5,6 8. Produkcijska izvedba projekta, 2h, Learning outcomes:4,5,6 9. Oblikovanje AV projekta, 2h, Learning outcomes:4,5,6 10. Izrada grafih paketa, 2h, Learning outcomes:4,5,6 11.Interaktivnost multimedijskih alata , 2h, Learning outcomes:4,5,6 12.Integracija grafike, animacije, teksta, zvuka i videa za kreiranje interaktivnog sadraja za CD, DVD i Web., 2h, Learning outcomes:4,5,6 13. Platforme za prezentaciju multimedijskih projekata, 2h, Learning outcomes:4,5,6 14.Optimiziranje AV suja, 2h, Learning outcomes:4,5,6 15. Prezentacija zavrnih radova, 2h, Learning outcomes:4,5,6				
Course content auditory	1. Pregled vjebi, na rada, upoznavanje, 2h, Learning outcomes:1,2,3 2. Klasifikacija programa i raarske opreme u multimedijskom dizajnu. , 2h, Learning outcomes:1,2,3,4,5 3. Pregled kolokvija, 2h, Learning outcomes:1,2,3,4 4. Obrada slike - Adobe Photoshop , 2h, Learning outcomes:1,2,3,4 5. Obrada slike - Adobe Photoshop 1, 2h, Learning outcomes:1,2,3,4 6.Obrada zvuka - Adobe Audition , 2h, Learning outcomes:4,5,6 7. Osnove Animacije, 2h, Learning outcomes:4,5,6 8. Pregled kolokvija II, 2h, Learning outcomes:1,2,3,4,5,6 9. Obrada videa - Adobe Premiere, 2h, Learning outcomes:4,5,6 10. Obrada videa - Adobe Premiere II, 2h, Learning outcomes:4,5,6 11. Priprema za snimanje materijala, 2h, Learning outcomes:4,5,6 12. Snimanje materijala, 2h, Learning outcomes:4,5,6 13. Montaa zavrnih radova, 2h, Learning outcomes:4,5,6 14. Finalizacija zavrnih radova II, 2h, Learning outcomes:4,5,6 15. Prezentacija zavrnih radova studenta, 2h, Learning outcomes:3,4				
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
Student activities:	Aktivnost ECTS (Classes attendance) 1 (Activity in class) 1 (Practical work) 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Ivan Rajković

Code WEB/ISVU	23601/156394	**ECTS**	4.0	**Academic year**	2018/2019
Name	Picture, Sound and Video Processing				
Status	4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (60+0+0+0) 30
Teachers	Lectures:1. Ivan Rajković Auditory exercises: Dinka Radonić Auditory exercises: Ivan Rajković Auditory exercises: Višen Tadić struč.spec.art				
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 design a work containing audio and video formats. Level:6,7 5.ability to prepare the synchronization of sound, video and animation. Level:6,7 6.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 Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1,2,3,4 2. Medij slika, zvuk i video, 2h, Learning outcomes:1,2,3,4 3.Standardi slikovnih formata: GIF, JPEG, TIFF, PCX, BMP, PNG., 2h, Learning outcomes:1,2,3,4 4. Osnove izrade video zapisa, 2h, Learning outcomes:1,2,3,4 5.Montaa video materijala, 2h, Learning outcomes:1,2,3,4 6.Oblikovanje scenarija, 2h, Learning outcomes:1,2,3,4,5,6 7.Knjiga snimanja, 2h, Learning outcomes:4,5,6 8. Produkcijska izvedba projekta, 2h, Learning outcomes:4,5,6 9. Oblikovanje AV projekta, 2h, Learning outcomes:4,5,6 10. Izrada grafih paketa, 2h, Learning outcomes:4,5,6 11.Interaktivnost multimedijskih alata , 2h, Learning outcomes:4,5,6 12.Integracija grafike, animacije, teksta, zvuka i videa za kreiranje interaktivnog sadraja za CD, DVD i Web., 2h, Learning outcomes:4,5,6 13. Platforme za prezentaciju multimedijskih projekata, 2h, Learning outcomes:4,5,6 14.Optimiziranje AV suja, 2h, Learning outcomes:4,5,6 15. Prezentacija zavrnih radova, 2h, Learning outcomes:4,5,6				
Course content auditory	1. Pregled vjebi, na rada, upoznavanje, 2h, Learning outcomes:1,2,3 2. Klasifikacija programa i raarske opreme u multimedijskom dizajnu. , 2h, Learning outcomes:1,2,3,4,5 3. Pregled kolokvija, 2h, Learning outcomes:1,2,3,4 4. Obrada slike - Adobe Photoshop , 2h, Learning outcomes:1,2,3,4 5. Obrada slike - Adobe Photoshop 1, 2h, Learning outcomes:1,2,3,4 6.Obrada zvuka - Adobe Audition , 2h, Learning outcomes:4,5,6 7. Osnove Animacije, 2h, Learning outcomes:4,5,6 8. Pregled kolokvija II, 2h, Learning outcomes:1,2,3,4,5,6 9. Obrada videa - Adobe Premiere, 2h, Learning outcomes:4,5,6 10. Obrada videa - Adobe Premiere II, 2h, Learning outcomes:4,5,6 11. Priprema za snimanje materijala, 2h, Learning outcomes:4,5,6 12. Snimanje materijala, 2h, Learning outcomes:4,5,6 13. Montaa zavrnih radova, 2h, Learning outcomes:4,5,6 14. Finalizacija zavrnih radova II, 2h, Learning outcomes:4,5,6 15. Prezentacija zavrnih radova studenta, 2h, Learning outcomes:3,4				
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
Student activities:	Aktivnost ECTS (Classes attendance) 1 (Activity in class) 1 (Practical work) 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200111;
Proposal made by	Ivan Rajković

Code WEB/ISVU	23750/170026	**ECTS**	3.0	**Academic year**	2018/2019
Name	Practical Work				
Status	6th semester - Office Organization and Informatization (Izvanredni informatike) - elective course6th semester - E-business (Izvanredni informatike) - elective course6th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+90 (90+0+0+0) 0
Teachers	Auditory exercises:1. Prof. dr. sc. Jana Žiljak Gršić , mag. design Auditory exercises: Milan Bajić				
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				
Student activities:	Aktivnost (Written exam)		ECTS 3		
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	23594/156384	**ECTS**	4.0	**Academic year**	2018/2019
Name	Probability and Statistics				
Status	3rd semester - Office Organization and Informatization (Izvanredni informatike) - elective course3rd semester - E-business (Izvanredni informatike) - elective course3rd semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 60
Teachers	Lectures:1. dr.sc. Igor Urbiha prof.vis.šk. Auditory exercises:dr.sc. Igor Urbiha prof.vis.šk.				
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 , 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 , 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. 2. Ž. Pauše: Uvod u matematičku statistiku, Školska knjiga, Zagreb, 1993.				
Students obligations	No special requirements				
Knowledge evaluation during semester	Exams during semester				
Knowledge	There are three preliminary exams (three questions each), and if a student correctly				

evaluation after semester	solved at least one problem of each preliminary exam and correctly solved at least four problems of all three preliminary exams, it makes the student exempt from taking the written exam. The written part of the exam consists of five problems to be solved within 2 hours. A student may attempt to the oral part of the exam, if he has two correctly solved problems in the written part of the exam.	
Student activities:	Aktivnost (Written exam)	ECTS 4
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	Dr. Igor Urbiha	

Code WEB/ISVU	23617/156411	**ECTS**	3.0	**Academic year**	2018/2019
Name	Product Design				
Status	4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+30 (0+30+0+0) 45
Teachers	Lectures:1. Vesna Uglješić dipl. dizajner Lectures: Branimir Markulin Grgić Laboratory exercises: Vesna Uglješić dipl. dizajner				
Course objectives	To gain basic knowledge about product development as a combination of functional, structural and aesthetic characteristics				
Learning outcomes:	1.analiyze product design from the standpoint of usability and communication. Level:6 2.connect the factors and principles of design products. Level:6,7 3.analyze the impact, role, usefulness and attractiveness of design. Level:6 4.predict the activities of product design as part of company strategy. Level:6,7 5. make 2D concept products using CAD applications. Level:6 6.make a 3D model of the product using CAD applications. Level:6 7.present the designed product and argue its usability and usefulness. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers Homework presentation				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Other Modeling; laboratory exercises are done in pairs with Mechanical Engineering students				
Course content lectures	1.Introduction , 1h, Learning outcomes:1 2. Design as an element of communication corporate identity, brand identity, 1h, Learning outcomes:1 3.Product usability : ergonomic flexibility, technical reliability, 1h, Learning outcomes:1 4.Product usability: aesthetic sensibility, image consistency , 1h, Learning outcomes:1 5.The factors of design, 1h, Learning outcomes:2 6.Principles of design , 1h, Learning outcomes:2 7.Principles of design , 1h, Learning outcomes:2 8.The impact on the perception of design, 1h, Learning outcomes:3 9.The role of design in the learning process , 1h, Learning outcomes:3 10.The utility of design, 1h, Learning outcomes:3 11.Attractiveness of design, 1h, Learning outcomes:3 12. Decision making in design, 1h, Learning outcomes:4,7 13.The organization of design activities in a company, 1h, Learning outcomes:4,7 14.Design as a component of research and development, 1h, Learning outcomes:4,7 15.Management of the design process, 1h, Learning outcomes:4,6				
Course content laboratory	1.Choosing and defining project topic, 2h, Learning outcomes:1,2,3,4 2.Topic research and analysis, defining demands and goals , 2h, Learning outcomes:1,2,3,4 3.User analysis, defining target groups, 2h, Learning outcomes:1,2,3 4.Conception of possible solutions , 2h, Learning outcomes:2,3,4 5.Developing designer solutions using various methodologies, 2h, Learning outcomes:2,3,5 6.2D sketching, 2h, Learning outcomes:5 7.2D sketching, 2h, Learning outcomes:5 8.Presentation of the current stage of project , 2h, Learning outcomes:1,2,3,7 9.Working out the details and defining exact dimensions with emphasis on ergonomics, 2h, Learning outcomes:1,5 10.3D modelling of the product using dedicated software, 2h, Learning outcomes:6 11.3D modelling of the product using dedicated software, 2h, Learning outcomes:6 12.3D modelling of the product using dedicated software, 2h, Learning outcomes:6 13.Concept and creation of presentation portfolio, 2h, Learning outcomes:5,6,7 14.Concept and creation of presentation poster, 2h, Learning outcomes:5,6,7 15.Student projects presentation and discussion , 2h, Learning outcomes:1,2,3,7				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Special equipment CAD application				
Exam literature	W. Lidwell, K. Holden, J. Butler: Univerzalna načela dizajna, Mate d.o.o. 2013. V. Papanek: Dizajn za stvarni svijet, Nakladni zavod Marko Marulić, 1973. N. Šerić: Razvoj i dizajn proizvoda i upravljanje markom, Sveučilište u Splitu, 2009. T. Hauffe: Design, A Concise History, Laurence King, 1998.				

Students obligations	Attending classes (maximum of 3 absences in semester), done laboratory work, all project elements handed on time.
Knowledge evaluation during semester	Submition of predefined project elements; twice a semester.
Knowledge evaluation after semester	Submitting, presenting and defending the project. The project is scored according to the following criteria: analysis and concept 5 points conceptual and development sketches 5 points ergonomics 5 points aesthetics and visual representation 5 points presentation (portfolio + poster) 5 points The final grade is the arithmetic mean of all criteria.
Student activities:	Aktivnost ECTS (Project) 1 (Research) 1 (Classes attendance) 1
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	24005/185972	**ECTS**	7.0	**Academic year**	2018/2019
Name	Programming				
Status	2nd semester - IT Design (Izvanredni informatike) - obligatory course2nd semester - E-business (Izvanredni informatike) - obligatory course2nd semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (0+45+0+0) 135
Teachers	Lectures:1. Bojan Nožica dipl. ing, v.pred. Lectures:Prof.dr.sc. Slavica Ćosović Bajić Laboratory exercises:Prof.dr.sc. Slavica Ćosović Bajić Laboratory exercises: Andor Gužvanj Laboratory exercises: Bojan Nožica dipl. ing, v.pred. Laboratory exercises: Domagoj Tuličić				
Course objectives	To transfer the knowledge related to programming in C.				
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				
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.., 2h, Learning outcomes:2,3 2.., 2h, Learning outcomes:1,2,3,4,5,6 3.., 2h, Learning outcomes:1 4.., 2h, Learning outcomes:1,2,3 5.., 2h, Learning outcomes:1,2,3,6 6.., 2h, Learning outcomes:1,2,3,6 7.., 2h, Learning outcomes:3 8.., 2h, Learning outcomes:3 9.., 2h, Learning outcomes:4,5 10.., 2h, Learning outcomes:3,4,5 11.., 2h, Learning outcomes:3,4,5 12.., 2h, Learning outcomes:3,4,5 13.., 2h, Learning outcomes:3,4,5 14.., 2h, Learning outcomes:3,4,5,6 15.., 2h, Learning outcomes:3,4,5,6				
Course content laboratory	1.., 2h, Learning outcomes:1 2.., 2h, Learning outcomes:1 3.., 2h, Learning outcomes:1 4.., 2h, Learning outcomes:1,3 5.., 2h, Learning outcomes:1,2,3,6 6.., 2h, Learning outcomes:1,2,3,6 7.., 2h, Learning outcomes:4 8.., 2h, Learning outcomes:4 9.., 2h, Learning outcomes:4,5 10.., 2h, Learning outcomes:3,4,5 11.., 2h, Learning outcomes:3,4,5 12.., 2h, Learning outcomes:3,4,5 13.., 2h, Learning outcomes:3,4,5 14.., 2h, Learning outcomes:3,4,5,6 15.., 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, C++ Analiza i primjena, 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)
Student activities:	Aktivnost: (Written exam) — ECTS: 7
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	143185;155793;

Code WEB/ISVU	24003/185970	**ECTS**	6.0	**Academic year**	2018/2019
Name	Programming basics				
Status	1st semester - IT Design (Izvanredni informatike) - obligatory course1st semester - E-business (Izvanredni informatike) - obligatory course1st semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (0+45+0+0) 105
Teachers	Lectures:1. Bojan Nožica dipl. ing, v.pred. Laboratory exercises: Andor Gužvanj Laboratory exercises: Bojan Nožica dipl. ing, v.pred. Laboratory exercises: Domagoj Tuličić				
Course objectives	To transfer to students the basic knowledge related to programming in Python				
Learning outcomes:	1.ability to formulate basic algorithms by means of a pseudo code, a flowchart. Level:6,7 2.ability to identify basic elements. 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 Questions and answers Homework presentation				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Group problem solving				
Course content lectures	1.Introduction, problem solving, algorithms, pseudo code and flowcharts., 1h, Learning outcomes:1 2.Data types., 1h, Learning outcomes:1 3.Variable types, arithmetic expressions, operators., 1h, Learning outcomes:1,2 4.Python basic syntax. Input and output functions., 1h, Learning outcomes:2,3 5.Python basic syntax, decision making., 1h, Learning outcomes:2,3 6.Loops., 1h, Learning outcomes:2,3 7.Nested loops., 1h, Learning outcomes:3,4 8.Functions. Built-in functions. Modules., 1h, Learning outcomes:3,4 9.User defined functions. Modules., 1h, Learning outcomes:3,4 10.Tuples, strings and built-in functions., 1h, Learning outcomes:3,4,5 11.Lists, dictionary., 1h, Learning outcomes:4,5 12.Files I/O., 1h, Learning outcomes:4,5 13.Advanced programming., 1h, Learning outcomes:4,5 14.Eratosthenes sieve algorithm., 1h, Learning outcomes:3,4,5 15.Sorting algorithms., 1h, Learning outcomes:3,4,5				
Course content laboratory	1.Working with IDLE., 2h, Learning outcomes:1,2,3,4,5 2.Data types., 2h, Learning outcomes:1,2,3,4,5 3.Variable types, arithmetic expressions, operators., 2h, Learning outcomes:1,2,3,4,5 4.Basic programming. Debugging., 2h, Learning outcomes:1,2,3,4,5 5.Decision making., 2h, Learning outcomes:1,2,3,4,5 6.Loops., 2h, Learning outcomes:1,4,5 7.First midterm., 2h 8.Built-in functions., 2h, Learning outcomes:3,4 9.User defined functions., 2h, Learning outcomes:3,4 10. Strings., 2h, Learning outcomes:3,4,5 11.Lists. Dictionary., 2h, Learning outcomes:4,5 12.Files I/O., 2h, Learning outcomes:4,5 13.Practice., 2h, Learning outcomes:4,5 14.Second midterm., 2h 15.Extra term., 2h				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Basic literature: 1. L. Budin, P. Brođanac, Z. Markučič, S. Perić: Rješavanje problema programiranjem u Pythonu. Element, 2014. 2. L. Budin, P. Brođanac, Z. Markučič, S. Perić: Napredno rješavanje problema programiranjem u Pythonu. Element, 2014.				
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.				
Knowledge evaluation during semester	first midterm second midterm laboratory exercises				

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.	
Student activities:	Aktivnost (Written exam)	ECTS 6
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
ISVU equivalents:	143168;155792;	

Code WEB/ISVU	23624/156422	**ECTS**	3.0	**Academic year**	2018/2019
Name	Project Programming				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course4th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+15 (0+15+0+0) 60
Teachers	Lectures:1. Mia Čarapina dipl. ing., pred. Lectures: Vesna Uglješić dipl. dizajner Laboratory exercises: Mia Čarapina dipl. ing., pred.				
Course objectives	This course teaches students fundamentals of project software development.				
Learning outcomes:	1.ability to identify different phases of project life cycle. Level:6 2.ability to isolate user requirements. Level:6 3.ability to develop a software solution based on user requirements. Level:6,7 4.ability to develope software solution in team. Level:6,7 5.ability to adopt good programming practices. Level:6,7 6.ability to make software documentation. 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 laboratory exercises	Laboratory exercises on laboratory equipment Group problem solving Discussion, brainstorming Interactive problem solving				
Course content lectures	1.Introduction., 1h, Learning outcomes:1 2.Project cycle., 1h, Learning outcomes:1 3.The software process models., 1h, Learning outcomes:1 4.Tools for group collaboration., 1h, Learning outcomes:3,4 5.Requirements gathering., 1h, Learning outcomes:2,3 6.Requirements modeling., 1h, Learning outcomes:2,3 7.Organisation and management of project tasks., 1h, Learning outcomes:2,3 8.Organisation and management of project tasks. Comunication with the client., 1h, Learning outcomes:2,3 9.Design within the context of software engineering., 1h, Learning outcomes:3 10.Design within the context of software engineering., 1h, Learning outcomes:3 11.Tools for revision control and source code management. , 1h, Learning outcomes:3,4 12.Software development. Coding techniques and programming practices., 1h, Learning outcomes:3,4,5 13.Project documentation. Document structuring and formating., 1h, Learning outcomes:6 14.Quality management., 1h, Learning outcomes:3,5 15.Software testing., 1h, Learning outcomes:3,5				
Course content laboratory	1.Preparations for the project assignment., 1h, Learning outcomes:1 2.Tools for group collaboration., 1h, Learning outcomes:4,5 3.Requirements gathering., 1h, Learning outcomes:2,3 4.Requirements modeling., 1h, Learning outcomes:2,3 5.Organisation and management of project tasks., 1h, Learning outcomes:2,3 6.Design within the context of software engineering., 1h, Learning outcomes:3 7.Design within the context of software engineering., 1h, Learning outcomes:3 8.Tools for revision control and source code management. , 1h, Learning outcomes:3,4 9.Tools for revision control and source code management. , 1h, Learning outcomes:3,4 10.Tools for revision control and source code management. , 1h, Learning outcomes:3,4 11.Software development., 1h, Learning outcomes:3,4,5 12.Software development., 1h, Learning outcomes:3,4,5 13.Software development., 1h, Learning outcomes:3,4,5 14.Software development., 1h, Learning outcomes:3,4,5 15.Project documentation., 1h, Learning outcomes:6				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Tools				
Exam literature	Preporučena: 1) Prezentacije s predavanja objavljene na stranicama kolegija 2) Agile Project Management in Easy Steps; John Carroll; In Easy Steps Limited; 2015; ISBN: 978-1840786415 3) Software engineering: A Practitioners Approach; Roger S. Pressman; McGraw-Hill Science; 2009; ISBN: 978-0071267823 4) Software engineering; Ian Sommerville; Pearson; 2015; ISBN: 978-0133943030 5) Beginning Software Engineering; Rod Stephens; 2015; ISBN: 978-1118969144 6) Clean Code: A Handbook of Agile Software Craftsmanship; Robert C. Martin; Prentice Hall; 2008; ISBN: 978-0132350884				

	7) Version Control with Git: Powerful tools and techniques for collaborative software development; Jon Loeliger, Matthew McCullough; 2012; ISBN: 978-1449316389 8) Git Essentials; Ferdinando Santacroce; 2015; ISBN: 978-1785287909
Students obligations	Active presence on the exercises and presentation of given assignment.
Knowledge evaluation during semester	1) Written paper or presentation. 2) During the semester the student is monitored through the presentation of tasks in laboratory and teamwork project. The final grade is based on the quality of completed individual and team tasks through the semester.
Knowledge evaluation after semester	Theoretical questionnaires. The work during the semester (if any) is not calculated into the final grade.
Student activities:	Aktivnost ECTS (Written exam) 3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Mia Čarapina, dipl. inž.

Code WEB/ISVU	23744/170020	**ECTS**	5.0	**Academic year**	2018/2019
Name	Reprophotography				
Status	5th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+15 (0+15+0+0) 105
Teachers	Lectures:1. Aleksandra Bernašek Petrinec Laboratory exercises: Aleksandra Bernašek Petrinec				
Course objectives	To transfer to students the basic knowledge related to light, optics, photocemical processes, photography and reprophotography				
Learning outcomes:	1.Analyse stages of graphic reproduction. Level:6 2.Distinguish between analog and digital procedures. Level:6 3.Review the color management system. Level:6,7 4.Distinguish quality control devices. Level:6 5.Integration of raster systems. Level:6,7 6.Plan and implement process from idea to finished product (photo). Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers Seminar, students presentation and discussion Other				
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.Introductory lesson - assignment of seminar papers, 2h, Learning outcomes:1,2,3,4,5,6 2.Visual spectrum, 2h, Learning outcomes:1,3 3.Man and colors, 2h, Learning outcomes:3 4.Psychological influence of color, 2h, Learning outcomes:3 5.Colors mixing, 2h, Learning outcomes:3,4 6.Color management system basics, 2h, Learning outcomes:3 7.Color placement and color matching, 2h, Learning outcomes:3 8.Screening systems, 2h, Learning outcomes:4,5 9.Individualized screening, 2h, Learning outcomes:5 10.Digital image manipulations, 2h, Learning outcomes:1,2,6 11.Input devices, 2h, Learning outcomes:2,6 12.Output devices, 2h, Learning outcomes:2,6 13. Devices for measuring quality control, 2h, Learning outcomes:5 14.Device calibration and characterization, 2h, Learning outcomes:5 15.Fashion photography and portraits, 2h, Learning outcomes:6				
Course content laboratory	1.Working with canvas, gradation, colour management and determination of grayness , 2h, Learning outcomes:1 2.Converting color to black and white photos using several methods, 2h, Learning outcomes:3 3.Screen; black and white photos screening, 2h, Learning outcomes:5 4.Artificial coloring and retouching of digital photos , 2h, Learning outcomes:2 5.Photographic studio: photo shooting, 2h, Learning outcomes:6 6.Photo editing, 2h, Learning outcomes:1,2 7.Measurements with a densitometer and creation of Jones diagram , 2h, Learning outcomes:4 8.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6 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	
Student activities:	Aktivnost	ECTS
	(Activity in class)	1
	(Practical work)	1
	(Classes attendance)	1
	(Oral exam)	1
	(Written exam)	1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
ISVU equivalents:	200103;	
Proposal made by	Aleksandra Bernašek Petrinec, lecturer	

Code WEB/ISVU	23619/156413	**ECTS**	5.0	**Academic year**	2018/2019
Name	Social Networks				
Status	3rd semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. Doc. dr. sc. Lidija Tepeš Golubić v. pred. Laboratory exercises:mag.oec Kristina Perec Laboratory exercises: Vida Senci				
Course objectives	Critical thinking and interdisciplinary problem/situation approach				
Learning outcomes:	1.Suggest eventual solution. Level:6,7 2.Connect different (social) situations and apply the same. Level:6,7 3.Analyze the effect of social networking. Level:6 4.Present current situation/problem. Level:6,7 5.Evaluate possible future trends. Level:7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Seminar, students presentation and discussion Homework presentation				
Methods of carrying out laboratory exercises	Group problem solving Data mining and knowledge discovery on the Web Essay writing Discussion, brainstorming Workshop				
Course content lectures	1.Introductory lecture, 2h, Learning outcomes:1,5 2.Culture and society, 2h, Learning outcomes:2,4 3.The term of sociology, 2h, Learning outcomes:3,4 4.Social networking, 2h, Learning outcomes:3,5 5.Intercultural competence, 2h, Learning outcomes:3,4 6.Student homeworks, 2h, Learning outcomes:1,2,3,4,5 7.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5 8.Human computer interaction, 2h, Learning outcomes:1,3,4 9.New media, 2h, Learning outcomes:2,4 10.Media and technologie in education, 2h, Learning outcomes:2,3 11.Education and new communication technologies, 2h, Learning outcomes:1,2,3,4,5 12.Facebook effekt, 2h, Learning outcomes:1,2,3,5 13.Social media marketing, 2h, Learning outcomes:1,2,3,4,5 14.Student homeworks, 2h, Learning outcomes:1,2,5 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5				
Course content laboratory	1.Introductory lecture, 2h, Learning outcomes:1 2.The term of sociology, 2h, Learning outcomes:2,4 3.Culture and society, 2h, Learning outcomes:3 4.Social networking, 2h, Learning outcomes:3 5.Intercultural competence, 2h, Learning outcomes:3,4 6.Student homework, 2h, Learning outcomes:1,2,3,4,5 7.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5 8.Human computer interaction, 2h, Learning outcomes:4,5 9.New media, 2h, Learning outcomes:2,4 10.Media and technologie in education, 2h, Learning outcomes:1,2,4 11.Education and new communication technologies, 2h, Learning outcomes:1,2,4 12.Facebook effect, 2h, Learning outcomes:1,2,3,5 13.Social media marketing, 2h, Learning outcomes:2,3,4 14.Student homework, 2h, Learning outcomes:1,2,3,4,5 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Kirkpatrick D.: Facebook efekt, 2012. Jarvis J.: Što bi napravio Google, 2009.				
Students obligations	Classes, homework				
Knowledge evaluation during semester	Colloquium 1 and 2				
Knowledge evaluation after semester	Exam				
Student activities:	Aktivnost (Activity in class)		ECTS 1		

	(Written exam)	1
	(Written exam)	1
	(Oral exam)	1
	(Report)	1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	PhD. Lidija Tepeš Golubić, senior lecturer, 08.06.2015	

Code WEB/ISVU	23628/156600	**ECTS**	4.0	**Academic year**	2018/2019
Name	Sociotechnical approaches to the study of Information Systems				
Status	4th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+0 (0+0+0+0) 90
Teachers	Lectures:1. mr.sc. Sergej Lugović MBA				
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				
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				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector Lectures theoretical explanations illustrated with real case studies.				
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.				
Student activities:	Aktivnost (Written exam)			ECTS 4	
Remark	This course can be used for final thesis theme				
Prerequisites:	No prerequisites.				
Proposal made by	Droian Marjanović				

Code WEB/ISVU	23629/156601	**ECTS**	4.0	**Academic year**	2018/2019
Name	Sound Production				
Status	4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (0+30+15+0) 45
Teachers	Lectures:1. Milan Bajić Laboratory exercises: Milan Bajić				
Course objectives	Students will be able to independently perform the production of sound as an independent element or part of a multimedia project.				
Learning outcomes:	1.Identify basics of sound production. Level:6 2.Identify most frequently used equipment for sound recording and editing. Level:6 3.Understand best practice in sound production . Level:6,7 4.Apply theoretical knowledge on project work. Level:6,7 5.Plan and execute production work. Level:6,7 6.Plan and cooperate in team work. Individual project work. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Questions and answers Homework presentation				
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 Interactive problem solving Workshop				
Methods of carrying out seminars	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Essay writing Mind mapping Workshop				
Course content lectures	1.Course introduction, 2h, Learning outcomes:1 2.introduction to sound production, 2h, Learning outcomes:1 3.digital audio workstation, 2h, Learning outcomes:1 4.studio environment, 2h, Learning outcomes:2 5.microphones, 2h, Learning outcomes:2 6.audio console, 2h, Learning outcomes:2 7.digital audio editing, 2h, Learning outcomes:2,3,4 8.Mid term exam, 2h, Learning outcomes:1,2 9.audio formats and archive, 2h, Learning outcomes:3 10.studio recording, 2h, Learning outcomes:2,3,4,5,6 11.on location recording, 2h, Learning outcomes:2,3,4,5,6 12.sound production for video, 2h, Learning outcomes:2,3,4,5,6 13.internet radio and audio streaming, 2h, Learning outcomes:4,5 14.sound production at concert and conference, 2h, Learning outcomes:4,5 15.Final exam, 2h, Learning outcomes:2,3				
Course content laboratory	1.Lab introduction, 2h, Learning outcomes:1 2.Hands on with photo equipment, 2h, Learning outcomes:1,2,3 3.Hands on studio equipment and accessoires, 2h, Learning outcomes:1,2,3 4.Stduio light, 2h, Learning outcomes:2,3 5.Project research, 2h, Learning outcomes:1 6.Studio photography, 2h, Learning outcomes:1,2,3,4,5 7.Documentary photography, 2h, Learning outcomes:1,2,3,4,5 8.Individual studio work, 2h, Learning outcomes:1,2,3,4,5 9.Individual studio work, 2h, Learning outcomes:1,2,3,4,5 10.Individual studio work, 2h, Learning outcomes:1,2,3,4,5,6 11.Individual field work, 2h, Learning outcomes:1,2,3,4,5,6 12.Individual work, 2h, Learning outcomes:1,2,3,4,5,6 13.Individual work, 2h, Learning outcomes:1,2,3,4,5,6 14.Individual work, 2h, Learning outcomes:1,2,3,4,5,6 15.Presentation of digital portfolio, 2h, Learning outcomes:1,2,3,4,5,6				
Course content seminars	1. , 2h 2. , 2h 3. , 2h 4. , 2h				

	5. , 2h 6. , 2h 7. , 2h 8. , 2h 9. , 2h 10. , 2h 11. , 2h 12. , 2h 13. , 2h 14. , 2h 15. , 2h
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Video equipment
Exam literature	Audio production worktext: concepts, techniques, and equipment / David E. Reese, Lynne S. Gross, Brian Gross.
Students obligations	50 % attendance with the active participation and timely execution of the set of obligations related to the practical work Regular attendance (15 checks) Practical work (1 check)
Knowledge evaluation during semester	mid term exam final exam
Knowledge evaluation after semester	Oral exam: Attendance - 10 % (a criterion for the passage of 80 %) Theoretical exam - 50 % (a criterion for the passage of 50 %) Practical work - 40 % (a criterion for the passage of 80 %)
Student activities:	Aktivnost — ECTS (Classes attendance) — 1 (Written exam) — 1 (Project) — 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Milan Bajic

Code WEB/ISVU	23597/156389	**ECTS**	3.0	**Academic year**	2018/2019
Name	Spreadsheets				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+30 (30+0+0+0) 45
Teachers	Lectures:2. Danijela Pongrac , prof. Auditory exercises:prof. Marta Alić Auditory exercises: Danijela Pongrac , prof.				
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:6,7 3.ability to analyze and relate data in tables to data from external sources (other programs). Level:6 4.ability to compile a proposal / solution in the table for the presented problem. Level:6,7 5.ability to develop an individual solution to a problem by using programming tools. Level:6,7 6.ability to organize large amounts of data in tables, according to predefined criteria. Level:6,7 7.ability to understand the meaning of a widespread use of spreadsheets in business environment. Level:6,7 8.ability to prepare the BI analysis according to the given conditions on the table data. 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, AutoFit, AutoFill, Paste Special, 1h, Learning outcomes:7 2.Workbook and Worksheet - linking and protecting, Number format - coding and custumizing, Formula elements, Formula operator, Function snytax and arguments, Reference types in formula,Formula Autocomplete, Using names to work with range, 1h, Learning outcomes:1,7 3.Using names to work with range, Insert table and Subtotal function, Logical and Information Function, Lookup and Reference Function, Advanced Statistical Function SUM, COUNT and AVERAGE, Financial Function, 1h, Learning outcomes:1,4,7 4.Database function, Advanced filtering, Text Functions, Array Formulas, MegaFormulas, Array Constant and Array Transpose, Formula Errors and Debugging, 1h, Learning outcomes:1,4,7 5.MegaFormulas, Data Validation, Graphic Presentation, Outline view and Subtotal, Advanced Sorting, 1h, Learning outcomes:2,3,4,7 6.Data Connection, Pivot table, , 1h, Learning outcomes:2,3,4,6,7 7.External data connection, Linking and consolidating worksheets, Conditional formating, Web Query, Sparkline Graphic, 1h, Learning outcomes:2,3,4,6,7 8.Preliminary exam, 1h, Learning outcomes:4,5,7 9.Macro Recorder, Macro Security, Recording and Cleaning code, Construction WITH, VBA Object Model, Hierarchy of Object, Class and Collection, VB Editor, Property and Methods of Object, Manual code input - SUB procedure, 1h, Learning outcomes:5,7 10.Variable types, syntax; Assigning names, Mathematic and Logic Operator, Construction WITH, Construction FOR EACH NEXT, Construction IF THEN ELSE, Construction CASE, FOR NEXT Loop, DO WHILE Loop, Form Control and ActiveX Controls, 1h, Learning outcomes:4,5,7 11.VBA function - MsgBox and InputBox, Creating VBA user function with different number of argument, Type of code error, Add-In supplement, 1h, Learning outcomes:4,5,7 12.Creating Userforms, Properties of the Userform elements, Methods of the Userform, Events, Manual code input-Userform, 1h, Learning outcomes:4,5,7 13.Developing User Oriented Application; Students presentation and Discussion, 1h, Learning outcomes:4,5,7,8 14.Dashboard Construction , Students presentation and Discussion, 1h, Learning outcomes:4,5,7,8 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), RC Mark, AutoFill, Working with basic function and formulas (SUM, MIN, MAX, COUNT, AVERAGE, IF), 2h, Learning outcomes:1,2 2.Editing tables in diferent ways, Working and grouping Sheets, Custom number format, Naming formulas, Naiming Cell and Range, Protection of Workbook, Worksheet and Cell, Comments, Insert and Hyde Column/Row and Worksheet, 2h, Learning outcomes:1,3,7 3.Insert table with function SUBTOTAL, Working with different calcualtion using advanced function of sum, count and average, Reference function(VLOOKUP, HLOOKUP,MATCH, INDEX) Logical and Information function(IF, AND, OR, ISERROR, ISBLANK), 2h, Learning outcomes:1,4 4.Working with different calcualtion using text function (TRIM, CHAR, VALUE, LEFT, RIGHT, FIND, LEN, MID, UPPER, CONCATENATE) and finacial function(PMT, PV, RATE, FV), Working with different calcualtion using arrays formulas, Function(TRANSPOSE,TRIM, IFERROR), Working with megaformula, 2h, Learning outcomes:1,4 5.Examples of advanced filter with logical operators and conditions on a large array of data, Database function(DSUM,DMIN,DMAX,DAVERAGE,DCOUNT), Data validation, Advanced charting, Sparkline charts, Multiple sorting and filtering, Outline and Subtotal, 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.PowerPivot (relationships between column, hierarchy, view in Excel), Making of the DAX formula through the fields and as calculating function, Web Services, Consolidation and linking data from different workbook , Conditional Formating, 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, Relative and Apsolute range in macro, 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 (ActiveX i Form Control), 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.Making Dashboard with elements of function, formula, charts, ActiveX button and VBA code., 2h, Learning outcomes:4,5,7,8 14.Independent student work. Presentations of students practical work., 2h, Learning outcomes:1,2,5,7,8 15.Preliminary exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	Obavezna: 1. Prezentacije i radni materijali s predavanja i vježbi, dostupni na http://lms.tvz.hr 2. Walkenbach, John. Excel 2013 Bible. Published by JohnWiley Sons, Inc., Indianapolis, Indiana 3. Dunlop, Neil. Beginning Big Data with Power BI and Excel 2013. Published Apress, Springer Science+Business Media New York, 2015. 4. Ostali dostupni hrvatski i engleski priručnici za Microsoft Excel Additional literature: 1. Ferrari, A. Russo, M. Microsoft Excel 2013: Building Data Models with PowerPivot, Microsoft Press Book, 2013 2. Walkenbach, John. Excel 2013 Power Programming with VBA. Indianapolis, Indiana. Wiley Publishing, Inc. 2013 3. Excel Developer Center. https://msdn.microsoft.com/en-us/library/office/fp179694 (5.06.2017.)
Students obligations	maximum of 3 absences from lecturing maximum of 2 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
Student activities:	Aktivnost ECTS (Written exam) 3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	200097;
Proposal made by	Danijela Pongrac, prof.

Code WEB/ISVU	23914/181289	**ECTS**	6.0	**Academic year**	2018/2019
Name	Technology Entrepreneurship				
Status	6th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 120
Teachers	Lectures:1. mr.sc. Sergej Lugović MBA Lectures:2. doc.dr.sc. Dalija Kuvačić profesor visoke škole Auditory exercises: Dinko Horvat struč.spec.ing.techn.inf. Auditory exercises:mag.oec Kristina Perec				
Course objectives	To introduce students how to recognise business opportunity in technology development, information and				
Learning outcomes:	1.ability to analyse a company environment.. Level:6 2.ability to formulate a business strategy. Level:6,7 3.ability to generate a business plan and business reports. Level:6,7 4.ability to design a business organisation. Level:6 5.ability to be a leader in a company. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers Seminar, students presentation and discussion				
Methods of carrying out auditory exercises	Group problem solving Essay writing Discussion, brainstorming				
Course content lectures	1.Course introduction, 4h, Learning outcomes:1,2,3,4 2.The role of entrepreneurship in economy, 4h, Learning outcomes:1,2,3,4,5 3.Business opportunities, 4h, Learning outcomes:1,3,4 4.Vision and Business Model, 4h, Learning outcomes:1,3,4 5.Risk and Return, 4h, Learning outcomes:1,3,4 6.Marketing and Sales, 4h, Learning outcomes:1,2,3,4 7.Knowledge assessment, 4h, Learning outcomes:1,2,3,4 8.Intellectual Property, 4h, Learning outcomes:5 9.The new enterprise organization, 4h, Learning outcomes:1,2,5 10.Management of operations, 4h, Learning outcomes:1,4 11.Profit and Harvest, 4h, Learning outcomes:1,4 12.The Finacial Plan, 4h, Learning outcomes:1,2,3,4,5 13.Knowledge assessment, 4h, Learning outcomes:1,2,3,4,5 14.Business Model Canvas, 4h, Learning outcomes:1,2,3,4,5 15.Provjera znanja i Seminar, 2h, Learning outcomes:1,2,3,4,5				
Course content auditory	1.Lab, 2h, Learning outcomes:1 2.Lab, 2h, Learning outcomes:1 3.Lab, 2h, Learning outcomes:1 4.Lab, 2h, Learning outcomes:1 5.Lab, 2h, Learning outcomes:1 6.Lab, 2h, Learning outcomes:1 7.Lab, 2h, Learning outcomes:1 8.Lab, 2h, Learning outcomes:1 9.Lab, 2h, Learning outcomes:1 10.Lab, 2h, Learning outcomes:1 11.Lab, 2h, Learning outcomes:1 12.Lab, 2h, Learning outcomes:1 13.Lab, 2h, Learning outcomes:1 14.Lab, 2h, Learning outcomes:1 15.Lab, 2h, Learning outcomes:1				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector				
Exam literature	Technology Ventures: From Idea to Enterprise Thomas Byers, Richard Dorf, Andrew Nelson U prijevodu				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Mini-test#1#20#0$Kolokvij, teorijska pitanja#1#20#100$Seminarski rad#1#20#100$Prakti rad#1#20#100$Usmena provjera znanja#1#20#100$				
Knowledge evaluation after semester	Pismeni ispit#1#25#100$Usmeni ispit#1#25#100$Seminarski rad#1#25#100$Prakti rad#1#25#100$				
Student activities:	Aktivnost (Written exam) (Classes attendance)		ECTS 5 1		

Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	170015;
Proposal made by	mr.sc. Sergej Lugović

Code WEB/ISVU	23739/170015	**ECTS**	6.0	**Academic year**	2018/2019
Name	Technology Entrepreneurship				
Status	5th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 120
Teachers	Lectures:1. mr.sc. Sergej Lugović MBA Auditory exercises: Dinko Horvat struč.spec.ing.techn.inf. Auditory exercises:mag.oec Kristina Perec				
Course objectives	To introduce students how to recognise business opportunity in technology development, information and				
Learning outcomes:	1.ability to analyse a company environment.. Level:6 2.ability to formulate a business strategy. Level:6,7 3.ability to generate a business plan and business reports. Level:6,7 4.ability to design a business organisation. Level:6 5.ability to be a leader in a company. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers Seminar, students presentation and discussion				
Methods of carrying out auditory exercises	Group problem solving Essay writing Discussion, brainstorming				
Course content lectures	1.Course introduction, 4h, Learning outcomes:1,2,3,4 2.The role of entrepreneurship in economy, 4h, Learning outcomes:1,2,3,4,5 3.Business opportunities, 4h, Learning outcomes:1,3,4 4.Vision and Business Model, 4h, Learning outcomes:1,3,4 5.Risk and Return, 4h, Learning outcomes:1,3,4 6.Marketing and Sales, 4h, Learning outcomes:1,2,3,4 7.Knowledge assessment, 4h, Learning outcomes:1,2,3,4 8.Intellectual Property, 4h, Learning outcomes:5 9.The new enterprise organization, 4h, Learning outcomes:1,2,5 10.Management of operations, 4h, Learning outcomes:1,4 11.Profit and Harvest, 4h, Learning outcomes:1,4 12.The Finacial Plan, 4h, Learning outcomes:1,2,3,4,5 13.Knowledge assessment, 4h, Learning outcomes:1,2,3,4,5 14.Business Model Canvas, 4h, Learning outcomes:1,2,3,4,5 15.Provjera znanja i Seminar, 2h, Learning outcomes:1,2,3,4,5				
Course content auditory	1.Lab, 2h, Learning outcomes:1 2.Lab, 2h, Learning outcomes:1 3.Lab, 2h, Learning outcomes:1 4.Lab, 2h, Learning outcomes:1 5.Lab, 2h, Learning outcomes:1 6.Lab, 2h, Learning outcomes:1 7.Lab, 2h, Learning outcomes:1 8.Lab, 2h, Learning outcomes:1 9.Lab, 2h, Learning outcomes:1 10.Lab, 2h, Learning outcomes:1 11.Lab, 2h, Learning outcomes:1 12.Lab, 2h, Learning outcomes:1 13.Lab, 2h, Learning outcomes:1 14.Lab, 2h, Learning outcomes:1 15.Lab, 2h, Learning outcomes:1				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector				
Exam literature	Technology Ventures: From Idea to Enterprise Thomas Byers, Richard Dorf, Andrew Nelson U prijevodu				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Mini-test#1#20#0$Kolokvij, teorijska pitanja#1#20#100$Seminarski rad#1#20#100$Prakti rad#1#20#100$Usmena provjera znanja#1#20#100$				
Knowledge evaluation after semester	Pismeni ispit#1#25#100$Usmeni ispit#1#25#100$Seminarski rad#1#25#100$Prakti rad#1#25#100$				
Student activities:	Aktivnost (Written exam)		ECTS 6		
Remark	This course can be used for final thesis theme				
Prerequisites:	No prerequisites.				

ISVU equivalents:	181289;
Proposal made by	mr.sc. Sergej Lugović

Code WEB/ISVU	23618/156412	**ECTS**	6.0	**Academic year**	2018/2019
Name	Theory and Design Development				
Status	3rd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 120
Teachers	Lectures:2. Feđa Vukić Lectures:Prof. dr. sc. Jana Žiljak Gršić , mag. design Auditory exercises: Iva Kostešić				
Course objectives	The analysis and integration of the ideas and concepts of design in the context of society and culture . Students should combine terminology definitions and theoretical knowledge and formulate relevant guidelines for the development of the profession so that they know to apply in their own creative work . Through theoretical knowledge and key historical design guidelines adopted at the course , students will be able to evaluate and scrutinize designs .				
Learning outcomes:	1.distinguish key terminology of design for the purpose of governing their own project . Level : 6. Level:6 2.identify development areas of design. Level:6 3.determine the impact of technology on the development of design . Level : 6. Level:6 4.assess the relation of design to the social environment . Level : 6. Level:6,7 5.allocate communication peculiarities of modern design. Level:6 6.identify similarities / differences of different visual cultures. Level:6 7.create semantic logic of graphic design for electronic media and Web environments . Level : 6.7. Level:6,7 8.compare designs. Level:6,7 9.analyze prominent works of recognized graphic design solutions. Level:6 10.analyze globally recognized media solutions. Level:6 11.analyze exhibitions. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Seminar, students presentation and discussion				
Methods of carrying out auditory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Interactive problem solving Workshop				
Course content lectures	1.Introductory lecture, 2h 2.Origins of design, 2h, Learning outcomes:1 3.Critique of the machine and labour division, 2h, Learning outcomes:2 4.Material culture outside the context of market, 2h, Learning outcomes:3 5.Industry, art and culture, 2h, Learning outcomes:4 6.Industrial culture and art, 2h, Learning outcomes:5 7.Isotype, 2h, Learning outcomes:6 8.exam, 2h, Learning outcomes:7 9.Helvetica, 2h, Learning outcomes:7 10.Bauhaus i De Stijl, 2h, Learning outcomes:7 11.Social Systems and Communication, 2h, Learning outcomes:7 12.Styling, decoration and social system, 2h, Learning outcomes:8 13.Post World War II reconstruction and design, 2h, Learning outcomes:9 14.Design and the environment, 2h, Learning outcomes:10 15.exam, 2h, Learning outcomes:11				
Course content auditory	1.Introduction , 2h 2.Research methods - Photo Studies, 2h, Learning outcomes:1 3.Research methods - Picture Cards, 2h, Learning outcomes:2 4.Research methods - Word Clouds, 2h, Learning outcomes:3 5.Research methods - Image Boards, 2h, Learning outcomes:4 6.Research methods - AEIOU, 2h, Learning outcomes:5 7.Research methods - Brainstorming graphic organizers, 2h, Learning outcomes:6 8.Research methods - Cognitive mapping, 1h, Learning outcomes:7 Research methods - Mind mapping, 1h, Learning outcomes:1,2,3,4,5,6 9.Research methods - Personas, 2h, Learning outcomes:7 10.Research methods - Scenarios, 2h, Learning outcomes:7 11.Research methods - Storyboarding, 2h, Learning outcomes:7 12.Research methods - Stakeholder maps, 2h, Learning outcomes:8 13.Research methods - Territory maps, 2h, Learning outcomes:9 14.Research methods - Content inventory and audit, 2h, Learning outcomes:10 15.Presentation and critical discussion, 1h, Learning outcomes:11 assessment - Colloquium, 1h, Learning outcomes:7,8,9,10,11				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector				

Exam literature	F. Vukić, Teorija i povijest dizajna, Zagreb, 2012. B.Hanington, B. Martin, Universal Methods of Design, 2012. Christian Wurster, Computers an illustrated history, 2001. V. Margolin, F. Vukić, Hrvatski dizajn sad, Zagreb, 2009. M. Mrduljaš, D. Vidović, Dizajn i nezavisna kultura, Zagreb, 2010. M. Tomiša, M. Milković, Grafički dizajn i komunikacija, Vraždin, 2013.	
Students obligations	attendance exercises maximum 2 absence	
Knowledge evaluation during semester	2 tests Exercise tasks	
Knowledge evaluation after semester	exam + essay	
Student activities:	Aktivnost (Written exam) (Classes attendance) (Research)	ECTS 2 2 2
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	

Code WEB/ISVU	23746/170022	**ECTS**	5.0	**Academic year**	2018/2019
Name	TV and Video Recording				
Status	5th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (0+30+15+0) 75
Teachers	Lectures:1. Milan Bajić Lectures: Dinka Radonić Laboratory exercises: Milan Bajić Laboratory exercises: Dinka Radonić				
Course objectives	Students will be able to independently perform video recording as an independent element or part of a multimedia project.				
Learning outcomes:	1.define elements of broadcast equipment. Level:6 2.understand the basic principles of TV and video recording. Level:6 3.apply knowledge in practical work. Level:6,7 4.plan and advanced handle and use a camera and camera acessoires in making assignments. Level:6,7 5.plan, use and sketch work with artificial lighting. Level:6,7 6.Plan and cooperate in team work. Individual project work. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Questions and answers Homework presentation				
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 Interactive problem solving Workshop				
Methods of carrying out seminars	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Essay writing Mind mapping Workshop				
Course content lectures	1.Course introduction, 2h 2.Cameras and lenses, 2h, Learning outcomes:2 3.Artificial light sources, 2h, Learning outcomes:2,6 4.Framing and composition, 2h, Learning outcomes:1,2,3 5.exposure, focus, zooming, 2h, Learning outcomes:1,2,3 6.tripods, stabilizers, cranes, 2h, Learning outcomes:1,2,3 7.camera moves, 2h, Learning outcomes:1,2,3,4 8.Mid term exam, 2h 9.sound recording, 2h, Learning outcomes:1,2,3 10.shooting people and objects, 2h, Learning outcomes:1,2,3,4 11.eng shooting, 2h, Learning outcomes:1,2,3,4 12.efp shooting, 2h, Learning outcomes:1,2,3,4,5,6 13.interview lighting, 2h, Learning outcomes:1,2,3,4,5,6 14.underwater and aerial shooting, 2h, Learning outcomes:1,2,3,4,5,6 15.Final exam, 2h				
Course content laboratory	1.Lab introduction, 2h, Learning outcomes:3 2.studio environment, 2h, Learning outcomes:1,2,3 3.recording equipment, 2h, Learning outcomes:1,2,3 4.lighting equipment, 2h, Learning outcomes:1,2 5.framing, 2h, Learning outcomes:3,4 6.composition, 2h, Learning outcomes:3,4 7.shooting with natural lighting, 2h, Learning outcomes:3,4,5 8.shooting with artificial lighting, 2h, Learning outcomes:3,4,5,6 9.shooting studio introductions, 2h, Learning outcomes:3,4,5,6 10.shooting street survey, 2h, Learning outcomes:3,4,5 11.interview lighting and shooting, 2h, Learning outcomes:3,4,5,6 12.Individual work, 2h, Learning outcomes:4,5,6 13.Individual work, 2h, Learning outcomes:4,5,6 14.Individual work, 2h, Learning outcomes:4,5,6 15.Presentation of digital portfolio, 2h				
Course content seminars	1. , 2h 2. , 2h				

	3. , 2h 4. , 2h 5. , 2h 6. , 2h 7. , 2h 8. , 2h 9. , 2h 10. , 2h 11. , 2h 12. , 2h 13. , 2h 14. , 2h 15. , 2h
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Video equipment
Exam literature	Video production handbook / Gerald Millerson, Jim Owens Lighting for digital video and television / John Jackman
Students obligations	50 % attendance with the active participation and timely execution of the set of obligations related to the practical work Regular attendance (15 checks) Practical work (1 check)
Knowledge evaluation during semester	mid term exam final exam
Knowledge evaluation after semester	Oral exam: Attendance - 10 % (a criterion for the passage of 80 %) Theoretical exam - 50 % (a criterion for the passage of 50 %) Practical work - 40 % (a criterion for the passage of 80 %)
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Digitalna fotografija

Code WEB/ISVU	23748/170024	**ECTS**	5.0	**Academic year**	2018/2019
Name	UNIX Systems Administration				
Status	6th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:1. dr.sc.rač. Davor Cafuta , prof.v.šk. Laboratory exercises:2. dr.sc.rač. Ivica Dodig , prof.v.š. Laboratory exercises: Andrej Vitez				
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.-, 2h 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.-, 2h 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.
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Uvod u UNIX sustave
Proposal made by	Ivica Dodig, Davor Cafuta (08.01.2014)

Code WEB/ISVU	23616/156410	**ECTS**	4.0	**Academic year**	2018/2019
Name	Video production Processes				
Status	3rd semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 30
Teachers	Lectures: Ivan Rajković Laboratory exercises: Dinka Radonić Laboratory exercises: Ivan Rajković Laboratory exercises: Višen Tadić struč.spec.art				
Course objectives	The object of the course is to familiarize the basic principles of video production, definition of the image and sound modification throughout the production phases				
Learning outcomes:	1.ability to formulate production blocks. Level:6,7 2. comment the performance of the project. Level:6 3.paln and organize strategy for video production. Level:6,7 4.plan and create AV content for the Internet platform. Level:6,7 5.analize basic concepts of video production. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Homework presentation Oral presentations				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Interactive problem solving Workshop Laboratory excercises				
Course content lectures	1.Pregled kolegija, na rada, upoznavanje, 2h, Learning outcomes:1,2,3,4,5 2.Primjeri iz prakse, 2h, Learning outcomes:1,2,5 3.Osnovni produkcijski procesi, 2h, Learning outcomes:1,5 4.Mediji, multimedija, produkcija, 2h, Learning outcomes:1,5 5.Produkcijska studija, 2h, Learning outcomes:1,2,3 6.Predprodukcijska faza projekta, 2h, Learning outcomes:3,4 7.Elevator pitch, 2h, Learning outcomes:3,4 8.Timski rad, 2h, Learning outcomes:1,2,3,4,5 9.Osnovni oblici video zapisa, 2h, Learning outcomes:3,4,5 10.Produkcijske pripreme projekta, 2h, Learning outcomes:1,2,3,4 11.Postprodukcijske faze projekta, 2h, Learning outcomes:3,4 12.Distribucija materijala, 2h, Learning outcomes:3,4 13.Marketing video zapisa, 2h, Learning outcomes:1,4,5 14.Kako uspjeno prezentirati, 2h, Learning outcomes:2,3,4,5 15.Prezentacija izvedenih radova, 2h, Learning outcomes:1,2,3,4,5				
Course content laboratory	1.Uvodne vjebe, 2h, Learning outcomes:2 2.Osnovne video kamere, 2h, Learning outcomes:2,3,4 3.Analizira video materijala, 2h, Learning outcomes:2,3,4 4.Osnove zvuka, 2h, Learning outcomes:2,3,4 5.Analiza snimljenih audio zapisa, 2h, Learning outcomes:2,3,4 6.Osnove rasvjete, 2h, Learning outcomes:2,3,4 7.Analiza snimljenih materijala, 2h, Learning outcomes:1,2,3,4 8.Priprema ponude projekta, 2h, Learning outcomes:3,4,5 9.Izlaganje projekta, 2h, Learning outcomes:3,4,5 10.Izvedba produkcijske studije, 2h, Learning outcomes:2,3,4 11.Priprema za produkciju, 2h, Learning outcomes:2,3,4 12.Snimanje materijala, 2h, Learning outcomes:2,3 13.Osnove montae, 2h, Learning outcomes:2 14.Montaa pripremljenih materijala, 2h, Learning outcomes:2,3,5 15.Zavravanje projekta, 2h, Learning outcomes:5				
Required materials	Basic: classroom, blackboard, chalk... Special purpose computer laboratory Whiteboard with markers Overhead projector Video equipment Laboratory excercises				
Exam literature	Preporučena 1. "Television Production Handbook", Herbert Zetti				
Students obligations	maximum of 2 absences from exercises				
Knowledge evaluation during semester	Colloquium #2#50#100$				

Knowledge evaluation after semester	Written and oral exam.	
Student activities:	Aktivnost (Project) (Classes attendance)	ECTS 3 1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	

Code WEB/ISVU	23740/170016	**ECTS**	6.0	**Academic year**	2018/2019
Name	Visual Communication Design				
Status	5th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:1. Vesna Uglješić dipl. dizajner Lectures:Prof. dr. sc. Jana Žiljak Gršić , mag. design Laboratory exercises:mag.des. Ulla Leiner Maksan Laboratory exercises: Vesna Uglješić dipl. dizajner				
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 including user expirience. 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 element, user interface. 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, user experince, 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, user interface, 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.
Student activities:	Aktivnost ECTS (Written exam) 6
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Grafički dizajn
Proposal made by	Jana Žiljak Vujić, PhD

Code WEB/ISVU	23608/156401	**ECTS**	5.0	**Academic year**	2018/2019
Name	Web application development				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - elective course4th semester - E-business (Izvanredni informatike) - elective course4th semester - IT Design (Izvanredni informatike) - elective course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	Lectures:dr.sc. Alen Šimec v. predavač Laboratory exercises: Petar Osterman Laboratory exercises:dr.sc. Alen Šimec v. predavač				
Course objectives	To transfer to students the basic knowledge related to Web application design				
Learning outcomes:	1.ability to prepare a computer for a presentation of Web applications. Level:6 2.ability to distinguish between different programming tools 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:6,7 4.ability to combine the 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 create 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 Simulations Modelling Discussion Questions and answers Seminar, students presentation and discussion Lectures, examples from real life, creation methodology, independent work				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Interactive problem solving Workshop				
Course content lectures	1.Introductory lecture and teach students about the responsibilities and teaching material., 2h, Learning outcomes:1 2.Introduction to HTML5 and what it is. Examples from practice. The difference between HTML and XHTML., 2h, Learning outcomes:2 3.Formatting an HTML5 document and create links. Definition of CSS and how to use it with the HTML document. Examples from practice., 2h, Learning outcomes:2 4.HTML5 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:3 5.A client-server architecture, the characteristics of the client and the server, Apache Web server and how it works., 2h, Learning outcomes:3 6.Introduction to PHP scripting language, server side web applications., 2h, Learning outcomes:4 7.Examination of the first part of the theory, html, forms, CSS, basic web server and its function, php scripting language., 2h, Learning outcomes:4 8.PHP syntax and its usage, the PHP variables and labeling rules., 2h, Learning outcomes:5 9.Data types and strings, using operators and loops., 2h, Learning outcomes:5 10.Application of the loop in the programming environment, data fields, require and include commands., 2h, Learning outcomes:6 11.MySQL database, its application and what they do. Examples of how to create a relational database., 2h, Learning outcomes:6 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:5,6 13.What is Javascript, which is its application and what it is used, examples in practice, 2h, Learning outcomes:6,7 14.Web application security, how to protect yourself and which are the most common forms of attacks on web applications, 2h, Learning outcomes:6,7 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				
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:1 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:3 6.Repetition of knowledge and development of Internet sites on a virtual server using HTML markup text, forms, CSS, PHP., 2h, Learning outcomes:3 7.Examination of the first part of practice, HTML, forms, CSS, basic web server and its function, php scripting language., 2h, Learning outcomes:4 8.Introducing the virtual environment Xampp applications, run applications required for operation of the virtual server,				

	solving tasks., 2h, Learning outcomes:4 9.Solving problems using PHP syntax, PHP variables and labeling rules in HTML, 2h, Learning outcomes:5 10.Solving problems in PHP, data types, strings, use the operator and the loop, 2h, Learning outcomes:5 11.Application of the loop in the programming environment, data fields, require and include commands, 2h, Learning outcomes:5 12.Using MySql database, creating databases, tables, fields in the table, define the fields, their values#8203;#8203;, the determination of the primary and secondary key., 2h, Learning outcomes:6 13.Connecting to MySQL database with the programming code in PHP, and the appointment of a query to the database (read data from the database, data modification and deletion of data), the print data from the database to display user, 2h, Learning outcomes:6,7 14.Using JavaScript in your application and protection of Web applications from attacks, web application security, 2h, Learning outcomes:6,7 15.Examination of the second part of the practice, php (syntax, data types, data fields, loops), MySQL database, SQL queries to the database, XML, RSS., 2h
Required materials	Basic: classroom, blackboard, chalk... Special purpose computer laboratory Overhead projector Tools Special equipment Web server package
Exam literature	Šimec, Alen; Programiranje i optimizacija Internet stranica u HTML5 okruženju; Tehničko veleučilište u Zagrebu; 2015; Šimec, Alen; Uvod u HTML, XHTML i CSS; Tehničko veleučilište u Zagrebu; 2011; Čarapina, M.: XAMPP - upute za instalaciju i korištenje, 2012., Tehničko veleučilište u Zagrebu; Nixon, Robin; Learning PHP, MySQL, JavaScript, CSS HTML5, 3rd Edition; O'Reilly Media; 2014.; Seyed M.M. "Saied Tahaghoghi; Hugh E. Williams; Learning MySQL; O'Reilly Media; 2007. PHP (www.php.net); Apache (www.apache.org) MySQL (www.mysql.com); W3C preporuke (www.w3c.org); W3Schools Online Web Tutorials (www.w3schools.com);
Students obligations	Attendance and active participation in lectures 15 points Attendance and active participation in training 15 points Essay and project 20 points
Knowledge evaluation during semester	1st Colloquium (theory and tasks) 25 points 2nd Colloquium (theory and tasks) 25 points
Knowledge evaluation after semester	Written exam 100 points
Student activities:	Aktivnost — ECTS (Classes attendance) — 1 (Written exam) — 2 (Project) — 2
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Alen Šimec, PhD

Code WEB/ISVU	23600/156393	**ECTS**	3.0	**Academic year**	2018/2019
Name	Web Browsers and Navigation				
Status	4th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+60 (0+60+0+0) 15
Teachers	Lectures: Aleksandra Bernašek Petrinec Lectures:prof.dr.sc. Klaudio Pap Laboratory exercises: Aleksandra Bernašek Petrinec Laboratory exercises: Darija Ćutić , mag. ing. graph. techn.				
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 evaluation during semester	Regular attendance#15#10#0$Colloquium, numerical assignments#3#90#0$	
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam	
Student activities:	Aktivnost	ECTS
	(Written exam)	1
	(Oral exam)	1
	(Practical work)	1
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	23754/170030	**ECTS**	6.0	**Academic year**	2018/2019
Name	Web Design				
Status	6th semester - E-business (Izvanredni informatike) - obligatory course6th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 90
Teachers	Lectures:4. dr.sc. Maja Turčić pred. Laboratory exercises: Mario Janković mag. ing. graph. techn.				
Course objectives	To transfer to students the basic knowledge related to Web design: concept, design and realisation				
Learning outcomes:	1.ability to devise a public presentation. Level:6,7 2.ability to prepare a Web page to be uploaded and posted on the Internet. Level:6,7 3.ability to create interactive graphic applications. Level:6,7 4.ability to present a project development. Level:6,7 5.ability to check the functionality. Level:6 6.ability to develop an authentic and usable Web page. Level:6,7 7.ability to test the functionality of author works. Level:6 8.ability to design a task based Web page as an author work . Level:6 9.ability to create tender documentation. Level:6 10. ability to give comments on imperfections of certain solutions, to take a critical attitude. Level:6 11.ability to identify the current state of affairs on the Web and anticipate the development by groups. Level:6 12..ability to give comments on advantages of certain solutions, depending on their purpose. Level:6 13.ability to distinguish between different groups of Web sites, depending on a subject.. Level:6				
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:9,13 2.basic web design principles, the difference of media, 2h, Learning outcomes:2,12 3.wireframing, 2h, Learning outcomes:11 4.static and dinamic layout, 2h, Learning outcomes:10 5.responsive layout, 2h, Learning outcomes:6,10 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:5 9.preparation of images and graphics for web , 2h, Learning outcomes:3 10.background design and animation, 2h, Learning outcomes:3,6 11.forms, link and table design, 2h, Learning outcomes:5,6 12.user experience importance, 2h, Learning outcomes:5,6 13.usability of a web page, 2h, Learning outcomes:5,6,7 14.project presentation, 2h, Learning outcomes:1,5 15.no lesson, 2h				
Course content laboratory	1.familiarising with the tools, 2h, Learning outcomes:7,11 2.wireframe web design , 2h, Learning outcomes:6,8 3.making of the layout grid , 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:4,5,6,7,8,10,11 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:3,8 11.responsive web design, 2h, Learning outcomes:3,8 12.responsive design continued, 2h, Learning outcomes:3,8 13.web page testing, 2h, Learning outcomes:2,5,7 14.project assesment, 2h, Learning outcomes:2,3,4,5,6,7,8,10 15.project presentation, 2h, Learning outcomes:1,9				
Required materials	Special purpose computer laboratory Overhead projector Video equipment				
Exam literature	1. Jason Beaird: The principles of beautiful web design 2. Joe Clark: Building Accessible Websites 3. Niko Macdonald: What is web design?				
Students obligations	Attendance (maximum of 2 absences)				
Knowledge evaluation during	Attendance Project production				

semester	2 tests 0-4 points: 1 5 points: 2 6-7 points: 3 8-9 points: 4 10 points: 5	
Knowledge evaluation after semester	Project presentation Written exam 0-4 points: 1 5 points: 2 6-7 points: 3 8-9 points: 4 10 points: 5	
Student activities:	Aktivnost (Written exam)	ECTS 6
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	

Code WEB/ISVU	23752/170028	**ECTS**	4.0	**Academic year**	2018/2019
Name	Web Interactive Programming				
Status	6th semester - E-business (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	Lectures:1. Ognjen Staničić dipl. ing. Laboratory exercises: Ognjen Staničić dipl. ing.				
Course objectives	To transfer to students the basic knowledge related to the programming technologies of interactive Web applications with the emphasis on JavaScript				
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.Data types and functions, 2h, Learning outcomes:4,5 3.Loops and object, 2h, Learning outcomes:3 4.Strings and arrays, 2h, Learning outcomes:1,7 5.Document object model and HTML forms, 2h, Learning outcomes:1,4 6.JavaScript events, 2h, Learning outcomes:1,3 7.Arraylike object, image object, timeout, 2h, Learning outcomes:1,2,3 8.Browser object model , 2h, Learning outcomes:1,5,6 9.Style object, JavaScript APIs, ECMAScript 6, 2h, Learning outcomes:1,5,6 10.Introduction to SVG, 2h, Learning outcomes:8 11.SVG - grandients and filters, 2h, Learning outcomes:6,7,8 12.SVG - animations, 2h, Learning outcomes:6,7,8 13.jQuery, 2h, Learning outcomes:1,6,7 14.JavaScript frameworks (AngularJS), 2h, Learning outcomes:1 15.No classes, 2h				
Course content laboratory	1.No classes, 2h 2.No classes, 2h, Learning outcomes:1,4,5 3.JavaScript fundamentals, functions, 2h, Learning outcomes:1,3 4.Arrays and strings, 2h, Learning outcomes:1,5 5.DOM - interactive quiz, 2h, Learning outcomes:4 6.Events - form registration, 2h, Learning outcomes:1,4,5 7.1st exam, 2h, Learning outcomes:1,6 8.Timeout, images - slideshow, 2h, Learning outcomes:1 9.Style, window, 2h, Learning outcomes:1,6 10.AJAX, 2h, Learning outcomes:1,3 11.No classes, 2h 12.jQuery, 2h, Learning outcomes:1,6,7 13.Compensations, 2h, Learning outcomes:1,7 14.2nd exam, 2h, Learning outcomes:1,7 15.No classes, 2h				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	1. Marijn Haverbeke: "Eloquent JavaScript" 2. Peter Gasston: "Moderni web - responzivni web dizajn" 3. Adam Freeman: "Pro AngularJS"				
Students obligations	Regular attendance, maximum of 2 absences from exercises				
Knowledge evaluation during semester	Regular attendance, tests, programming assignments and exams				
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam				

Student activities:	Aktivnost	ECTS
	(Written exam)	1
	(Oral exam)	1
	(Practical work)	2
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	dipl. ing. O. Staničić	

Code WEB/ISVU	23741/170017	**ECTS**	4.0	**Academic year**	2018/2019
Name	Web Interactive Programming				
Status	5th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	Lectures:1. Ognjen Staničić dipl. ing. Laboratory exercises: Ognjen Staničić dipl. ing.				
Course objectives	To transfer to students the basic knowledge related to the programming technologies of interactive Web applications with the emphasis on JavaScript				
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.Data types and functions, 2h, Learning outcomes:4,5 3.Loops and object, 2h, Learning outcomes:3 4.Strings and arrays, 2h, Learning outcomes:1,7,8 5.Document object model and HTML forms, 2h, Learning outcomes:1,4,5 6.JavaScript events, 2h, Learning outcomes:1,3 7.Practice using examples, 2h, Learning outcomes:1,2,3 8.Arraylike object, image object, timeout, 2h, Learning outcomes:1,2,3 9.Browser object model, 2h, Learning outcomes:1,5,6 10.Style object, JavaScript APIs, ECMAScript 6, 2h, Learning outcomes:5,6,8 11.Server communication, AJAX, 2h, Learning outcomes:1,3 12.jQuery, 2h, Learning outcomes:6,7 13.JavaScript frameworks (AngularJS), 2h, Learning outcomes:1 14.No classes, 2h, Learning outcomes:1 15.No classes, 2h				
Course content laboratory	1.No classes, 2h 2.No classes, 2h, Learning outcomes:1,4,5 3.JavaScript fundamentals, functions, 2h, Learning outcomes:1,3 4.Arrays and strings, 2h, Learning outcomes:1,5,8 5.DOM - interactive quiz, 2h, Learning outcomes:4 6.Events - form registration, 2h, Learning outcomes:1,4,5 7.1st exam, 2h, Learning outcomes:1,6 8.Timeout, images - slideshow, 2h, Learning outcomes:1 9.Style, window, 2h, Learning outcomes:1,6 10.AJAX, 2h, Learning outcomes:1,3 11.No classes, 2h 12.jQuery, 2h, Learning outcomes:1,6,7 13.Compensations, 2h, Learning outcomes:1,7 14.2nd exam, 2h, Learning outcomes:1,7 15.No classes, 2h				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	1. Marijn Haverbeke: "Eloquent JavaScript" 2. Peter Gasston: "Moderni web - responzivni web dizajn" 3. Adam Freeman: "Pro AngularJS"				
Students obligations	Regular attendance, maximum of 3 absences from exercises				
Knowledge evaluation during semester	Regular attendance, tests, programming assignments				
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam				
Student activities:	Aktivnost (Written exam)			ECTS 1	

	(Oral exam) (Practical work)	1 2
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	dipl. ing. O. Staničić 25. 5. 2017	

Code WEB/ISVU	23733/170009	**ECTS**	3.0	**Academic year**	2018/2019
Name	Word Processing				
Status	5th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	Lectures:1. Doc. dr. sc. Lidija Tepeš Golubić v. pred. Auditory exercises: Vida Senci Auditory exercises: Doc. dr. sc. Lidija Tepeš Golubić v. pred.				
Course objectives	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.Scientific and technical writing, 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.Preparing project documentation, 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.Scientific and technical writing, 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	Attending classes/exercises and participation in the process	
Knowledge evaluation during semester	During the semestar students have 2 preliminary written exams. If the exams were positively eveluated, the student does not have to attend the final exam. Otherwise there is an oral exam.	
Knowledge evaluation after semester	Written and/or oral exam	
Student activities:	Aktivnost	ECTS
	(Written exam)	1
	(Oral exam)	1
	(Activity in class)	1
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	Lidija Tepeš Golubić, v.pred.	

Code WEB/ISVU	23620/156415	**ECTS**	6.0	**Academic year**	2018/2019
Name	XML Programming				
Status	4th semester - Office Organization and Informatization (Izvanredni informatike) - obligatory course4th semester - E-business (Izvanredni informatike) - obligatory course4th semester - IT Design (Izvanredni informatike) - obligatory course				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Lectures:dr.sc. Alen Šimec v. predavač Laboratory exercises: Davor Lozić pred.				
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:1 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:3 6.XML structure and vertical view of an XML document., 2h, Learning outcomes:3 7.Examination of the first part of the theory, XML standards, XML syntax and rules of writing, architecture and publishing., 2h 8.XML processing instructions, comments, links to the document and how to format XML content., 2h, Learning outcomes:4 9.What are XML entities and their role, the syntax and the need for XML namespaces., 2h, Learning outcomes:5 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:5 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:6 12.Safety data communications using the XML Scheme., 2h, Learning outcomes:6,7 13.Writing rules and extensibility of XML Scheme, creating your own data types, attribute definitions., 2h, Learning outcomes:7,8 14.JSON format writing rules and what is JSON, JSON and XML format relationship, JSON schema, 2h 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... Special purpose computer laboratory Whiteboard with markers Overhead projector XAMPP application
Exam literature	Šimec, Alen; Programiranje i optimizacija Internet stranica u HTML5 okruženju; Tehničko veleučilište u Zagrebu; 2015; Šimec, Alen; Uvod u HTML, XHTML i CSS; Tehničko veleučilište u Zagrebu; 2011; W3C preporuka; Extensible Markup Language (XML) (www.w3c.org); W3Schools Online Web Tutorials (www.w3schools.com); Fawcett J., Ayers D., Quin L. R. E., Beginning XML, 5th Edition, John Wiley Sons, 2012.; Simon St. Laurent, Michael Fitzgerald; XML Pocket Reference, 3rd Edition; O'Reilly Media; 2005. Doug Tidwell; XSLT, 2nd Edition; O'Reilly Media; 2008. Priscilla Walmsley; XQuery, Search Across a Variety of XML Data; O'Reilly Media; 2007. XML.com, O'Reilly, www.xml.com; Holzner S., Inside XML, Pearson Education, 2000; Ray E.T., Learning XML, 2nd edition, O Reilly, 2003;
Students obligations	Attendance and active participation in lectures 15 points Attendance and active participation in training 15 points Essay and project 20 points
Knowledge evaluation during semester	1st Colloquium (theory and tasks) 25 points 2nd Colloquium (theory and tasks) 25 points
Knowledge evaluation after semester	Written exam 100 points
Student activities:	Aktivnost — ECTS (Classes attendance) — 1 (Written exam) — 2 (Project) — 2 (Practical work) — 1
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Alen Šimec, PhD