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TEHNIČKI FAKULTET

University of Rijeka
FACULTY OF ENGINEERING

GODIŠNJAK TEHNIČKOG FAKULTETA Sveučilišta u Rijeci

ANNUAL REPORT OF THE FACULTY OF ENGINEERING University of Rijeka

2016./2017.

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LEKTURA | PROOFREADING:
Marta Lončarević (hrvatski / Croatian);
mr. sc. / M. Sc. Elisa Velčić Janjetić, v. pred / Sen. Lect (engleski / English)

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ADRESA UREDNIŠTVA | EDITORIAL BOARD ADDRESS:
Godišnjak Tehničkog fakulteta Sveučilišta u Rijeci
51000 Rijeka, Vukovarska 58, Hrvatska / Croatia

Tel.: +385 (0)51 / 651 - 444
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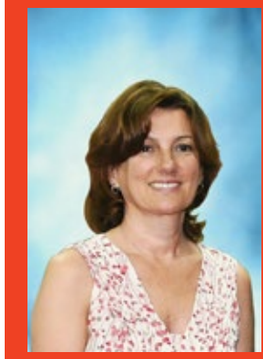

Dragi prijatelji Tehničkog fakulteta!

Pred vama se nalazi Godišnjak posvećen pedeset i sedmoj godini postojanja i djelovanja Tehničkoga fakulteta Sveučilišta u Rijeci. U njemu smo saželi aktivnosti naših djelatnika i studenata, kao i postignuća ostvarena tijekom akademske godine 2016./17.

Zahvaljujući rezultatima sustavnog provođenja strategije temeljene na izvrsnosti u nastavnoj, znanstvenoj i stručnoj djelatnosti, naš se Fakultet pozicionirao kao visoko organizirana i prepoznatljiva sastavnica Sveučilišta u Rijeci te kao jedna od vodećih institucija u Hrvatskoj koja odgaja i obrazuje stručnjake iz područja strojarstva, brodogradnje, elektrotehnike i računarstva. Takav status možemo zahvaliti i kontinuiranom ulaganju u unapređivanje uvjeta rada u nastavnim i laboratorijskim prostorima. U akademskoj godini 2016./2017. uloženo je gotovo četiri milijuna kuna u nabavku nove laboratorijske opreme, razvoj računalne infrastrukture te održavanje prostora Fakulteta. Osim toga, u suradnji s tvrtkama AITAC i CADCAM Grupe osnovan je 3DEXPERIENCE STEM Lab opremljen najmodernijom tehnologijom za konstruiranje, te je našim studentima i na taj način omogućeno da idu ukorak s razvojem najnaprednijih tehnologija za konstruiranje i razvoj proizvoda.

Postupak reakreditacije naših sveučilišnih poslijediplomskih studija od strane Agencije za znanost i visoko obrazovanje potvrdio je da su naši doktorski studiji usklađeni s najnaprednijim europskim normama. Osim toga, u ovoj smo akademskoj godini kompletirali našu „paletu“ poslijediplomskih studija akreditacijom sveučilišnog poslijediplomskog doktorskog studija iz polja računarstva.

Dear Friends of the Faculty of Engineering!

You are holding the latest edition of our Yearbook, which is dedicated to the 57th anniversary of foundation and work of the Faculty of Engineering in Rijeka. We have summarised in it the activities of our staff and students as well as the achievements realised during the 2016/2017 academic year.

Thanks to the results of systematic implementation of the Strategy based on excellence in teaching, research and professional activities, the Faculty has established itself as a highly organised and recognisable constituent institution of the University of Rijeka and as one of the leading institutions in Croatia, educating professionals in the field of Mechanical Engineering, Naval Architecture, Electrical Engineering and Computer Engineering. Such a status is certainly due to the continuous investment in improving the working conditions in teaching and laboratory premises. In the 2016/2017 academic year, nearly four million kuna was invested in purchasing new laboratory equipment, developing computer infrastructure and in the maintenance of the Faculty premises. In addition, in partnership with AITAC and CADCAM Group, the 3DEXPERIENCE STEM Lab has been established with state-of- the-art technology for design, thus enabling our students to keep pace with the development of the most advanced technologies for product design and development.

The process of reaccreditation of our university postgraduate studies by the Agency for Science and Higher Education has confirmed that our doctoral studies are in line with the most advanced European norms. Furthermore, in this academic year, we completed our “set“ of postgraduate studies with the accreditation of

Po prvi je puta na našem fakultetu, u suradnji s Pomorskim fakultetom i Građevinskim fakultetom, organizirana konferencija My First Conference namijenjena mlađim kolegama te njihovoj pripremi za sudjelovanje na simpozijima. Na simpoziju je izlagao 31 doktorand i diplomant, uključujući i dva pozvana predavanja.

Kako sve ono što radimo nije ostalo nezapaženo, potvrđuju i ovogodišnje istaknute nagrade i priznanja našim nastavnicima: prof. dr. sc. Josip Brnić izabran je u počasno zvanje gostujućeg profesora na Huazhong University of Science and Technology u Kini, prof. dr. sc. Zlatan Car dobio je Državnu nagradu za znanost za 2015. u kategoriji popularizacija i promidžba znanosti za područje tehničke znanosti; izv. prof. dr. sc. Ivan Štajduhar dobitnik je Nagrade Zaklade Sveučilišta u Rijeci za 2015. u kategoriji Znanstvenici za tehničke i prirodne znanosti; izv. prof. dr. sc. Miroslav Vrankić dobitnik je nagrade Ponos Hrvatske za 2016. za izum tehničkih pomagala koja olakšavaju život osobama s invaliditetom; prof. dr. sc. Tomislav Mrakovčić i mr. sc. Elisa Velčić Janjetić, v. pred., dobitnici su nagrade za nastavnu izvrsnost za ak. god. 2016./17. koju dodjeljuje Sveučilište u Rijeci.

Kako u nastavi i znanosti, naši su se nastavnici i studenti istaknuli i u sportu: sportaši našega fakulteta osvojili su titulu najuspješnijeg fakulteta u muškoj i ukupnoj konkurenciji, imamo najuspješnijeg sportaša i najuspješnijeg voditelja Unisport lige 2015.-2016.; na jedriličarskoj regati Barcolana 2016., u akvatoriju tršćanskog zaljeva, posada našega fakulteta osvojila je treće mjesto u monotipskom jedriličarskom natjecanju Fincantieri cup 2016.; na 19. Riječkoj regati u mornarskom veslanju, u organizaciji Pomorskog fakulteta iz Rijeke, ekipa Tehničkog fakulteta, uz veliki angažman izv. prof. dr. sc. Saše Sladića, osvojila je prvo mjesto.

Naši studentski timovi (Riteh Racing Team, RITEH Waterbike i Adria Hydrofoil Team u suradnji s Pomorskim fakultetom) značajno doprinose promociji Fakulteta te omogućuju studentima da na zabavan i dinamičan način steknu mnoga praktična znanja i iskustva. U protekloj akademskoj godini naši su timovi postigli značajne uspjehe. Riteh Racing Team sudjelovao je na natjecanjima Baltic Open Bohemia 2017 u Češkoj te ostvario izvanredne rezultate: prvo mjesto na utrci ubrzanja, te treća mjesta u Hill Climb kategoriji, Autocross utrci, Utrci izdržljivosti i sveukupno treće mjesto u klasi 1C. Na natjecanju FS Italy 2017 u Italiji osvojili su četvrto i šesto mjesto u utrkama izdržljivosti i sveukupno treće mjesto u klasi 1C. Waterbike tim sudjelovao je na regati Ilawi u Poljskoj. Adria Hydrofoil tim je na natjecanju u St. Tropezu u Francuskoj ostvario veliki uspjeh time što je bio jedini tim koji je zadovoljio sve discipline s istom konfiguracijom.

Koristim ovu prigodu da svim djelatnicima i studentima čestitam pedeset i sedmu obljetnicu Fakulteta i zahvalim im na njihovom doprinosu razvoju naše ustanove.

Radnoj skupini, koju je i ove godine, kao glavni urednik, predvodio doc. dr. sc. Sanjin Kršćanski, a uz njega su je činili doc. dr. sc. Loredana Simčić, poslijedoktorand dr. sc. Neven Munjas, asistent Diego Sušanj, asistentica Ivana Hreljac i student Šimun Rogoznica, zahvaljujem na trudu koji su uložili u pripremu i uređenje cjelokupne građe.

U Rijeci, 5. listopada 2017.

Dekanica
Prof. dr. sc. Jasna Prpić-Oršić

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U Rijeci, 5. listopada 2017.

Dekanica
Prof. dr. sc. Jasna Prpić-Oršić

That these activities of our staff do not pass unnoticed is confirmed by the fact that this year too our teachers were winners of distinguished awards and recognitions. So Prof. D. Sc. Josip Brnić was elected Honorary Professor at the Huazhong University of Science and Technology in China. Prof. D. Sc. Zlatan Car received the State Award for Science for 2015 in the category of popularisation and promotion of science in the field of engineering sciences. Prof. D.Sc. Ivan Štajduhar won the 2015 Award of the Foundation of the University of Rijeka in the category of scientists in the fields of engineering and natural sciences. Prof. D. Sc. Miroslav Vrankić received the 2016 Pride of Croatia Award for the invention of technical aids that enhance the quality of life of people with disabilities. Prof. D. Sc. Tomislav Mrakovčić and M. Sc. Elisa Velčić Janjetić, senior lecturer, won the Excellence in Teaching Award for the 2016/2017 ac. year, awarded by the University of Rijeka.

Besides in teaching and in science, our teachers and students have also achieved remarkable results in sports. Our athletes have won the title of the most successful faculty in male and overall competition; we have the most successful athlete and the most successful leader of the Unisport League 2015-2016. At the 2016 Barcolana Sailing Regatta in the waters of the Gulf of Trieste, the crew of our faculty won the third place in the Monotype Sailing Competition Fincantieri Cup 2016. At the 19th Rijeka`s Regatta in Maritime Rowing, organised by the Faculty of Maritime Studies in Rijeka, the crew of the Faculty of Engineering, with a great engagement of Assoc. Prof. Saša Sladić, won the first place.

Our student teams (Riteh Racing Team, RITEH Waterbike and Adria Hydrofoil Team in cooperation with the Faculty of Maritime Studies) continuously contribute to the promotion of the Faculty and enable students to gain significant practical knowledge and experience in a pleasurable and dynamic way. In the last academic year, our teams have achieved significant results. The Riteh Racing Team participated in the Baltic Open Bohemia 2017 competitions in the Czech Republic and achieved remarkable results: the first place in the acceleration race, and the third places in the Hill Climb category, Autocross and Endurance races, and the overall third place in class 1C. At the FC Italy 2017, they won the fourth and sixth place in endurance racing and the overall third in the 1C class. The Waterbike team participated in the Ilawi regatta in Poland. Adria Hydrofoil team achieved great success in St Tropez in France, being the only team that participated successfully in all disciplines with the same configuration.

I would like to use this opportunity to congratulate all the staff and students on the 57th anniversary of the Faculty and thank them for their contribution to the development of our institution.

I express my gratitude also to this year`s working group, the editor-in-chief Assist. Prof. D. Sc. Sanjin Kršćanski, Assist. Prof. D. Sc. Loredana Simčić, postdoc D. Sc. Neven Munjas, Assistant Diego Sušanj, Assistant Ivana Hreljac and student Šimun Rogoznica. Thank you for the effort you invested in the preparation of the material and the edition of this Yearbook.

In Rijeka, 5th October 2017

Dean
Prof. D. Sc. Jasna Prpić-Oršić

1 opće informacije general information

Tehnički fakultet Sveučilišta u Rijeci stožerna je visokoškolska i znanstvenoistraživačka institucija na području tehničkih znanosti, ne samo na Sveučilištu u Rijeci nego i u regiji u kojoj djeluje, konkurentna na europskom i svjetskom tržištu znanja. Fakultet danas objedinjuje djelatnost jedanaest zavoda, i to:

The Faculty of Engineering of the University of Rijeka is a leading higher education, scientific and research institution in the field of engineering sciences not only at the University of Rijeka, but also in the region where is situated. It is competitive on the European and the world knowledge market. The Faculty encompasses 11 departments, namely:

- Zavoda za automatiku i elektroniku
  Department of Automation and Electronics
- Zavoda za brodogradnju i inženjerstvo morske tehnologije
  Department of Naval Architecture and Ocean Engineering
- Zavoda za elektroenergetiku
  Department of Electrical Power Engineering
- Zavoda za industrijsko inženjerstvo i management
  Department of Industrial Engineering and Management
- Zavoda za konstruiranje u strojarstvu
  Department of Mechanical Engineering Design
- Zavoda za matematiku, fiziku, strane jezike i kineziologiju
  Department of Mathematics, Physics, Foreign Languages and Kinesiology
- Zavoda za materijale
  Department of Materials Science and Engineering
- Zavoda za mehaniku fluida i računarsko inženjerstvo
  Department of Fluid Mechanics and Computational Engineering
- Zavoda za računarstvo
  Department of Computer Engineering
- Zavoda za tehničku mehaniku
  Department of Engineering Mechanics
- Zavoda za termodinamiku i energetiku
  Department of Thermodynamics and Energy Engineering

U sklopu zavoda djeluje 36 katedri i 50 laboratorija, a na Fakultetu djeluju i Računalni centar, Knjižnica, te Financijska služba, Služba nabave i komercijale, Služba općih i kadrovskih poslova, Služba studentske evidencije i Tehnička služba. Od 178 zaposlenika 77 ih je u znanstveno-nastavnim, 8 u nastavnim i 34 u suradničkim zvanjima, 8 je znanstvenih novaka, sedam je zaposlenika na projektima Hrvatske zaklade za znanost, a 44 je djelatnika u administrativnim i stručnim službama. Na Fakultetu radi i veći broj vanjskih suradnika. Fakultet izvodi sveučilišne preddiplomske i sveučilišne diplomske studijske programe na području strojarstva, brodo-

The departments include 36 sections and 50 laboratories, and the Faculty also has a Computing Centre, a Library as well as an Accounting Division, Procurement Office, the General and Personnel Office, the Student Affairs Office and the Technical Service. Of the total number of 178 employees, 77 are in teaching-research, 8 in teaching and 34 in associate positions, 8 junior researchers, seven members of staff work on projects funded by the Croatian Science Foundation, and 44 work in the administrative and professional services. The Faculty engages a large number of external associates. The Faculty offers undergraduate

gradnje, elektrotehnike i računarstva te stručne preddiplomske studijske programe na području strojarstva, brodogradnje i elektrotehnike, kao i trogodišnji treći ciklus obrazovanja koji omogućava stjecanje doktorata znanosti na području tehničkih znanosti, i to na polju strojarstva, brodogradnje, elektrotehnike, temeljnih tehničkih znanosti te interdisciplinarnih tehničkih znanosti.

Do sada je na Tehničkom fakultetu u Rijeci diplome steklo 137 doktora znanosti, 95 magistara znanosti, 2899 diplomiranih inženjera (od čega 2335 strojarstva, 311 brodogradnje i 253 elektrotehnike), 1536 inženjera (od čega 717 strojarstva, 108 brodogradnje i 711 elektrotehnike), 1006 magistara inženjera (od čega 424 strojarstva, 95 brodogradnje, 392 elektrotehnike i 95 računarstva), 1434 sveučilišnih prvostupnika inženjera (od čega 684 strojarstva, 98 brodogradnje, 444 elektrotehnike i 208 računarstva) te 456 stručnih prvostupnika inženjera (od čega 174 strojarstva, 44 brodogradnje i 238 elektrotehnike). Danas tu studira više od 2000 studenata.

Tehnički fakultet ima dugu tradiciju izdavanja znanstvenih i stručnih radova. Tiskanje Zbornika radova započinje još 1970. godine, a 1988. godine spomenuta edicija mijenja naziv u Zbornik Tehničkog fakulteta Rijeka. Naziv se ponovo mijenja 1995. godine u Engineering Review, a pod tim nazivom časopis se tiska i danas. Osim znanstvenih i stručnih radova, djelatnici Fakulteta objavili su i mnogobrojne knjige i udžbenike.

Na Fakultetu je od 24. studenog 2000. godine aktivan Alumni klub Tehničkoga fakulteta Sveučilišta u Rijeci (skraćeno ALUMNI TFR) osnovan s primarnim ciljem izgradnje i jačanja veza i suradnje između bivših studenata i Tehničkoga fakulteta, ali i osobne suradnje između bivših studenata. Predsjednik ALUMNI TFR je prof. dr. sc. Zoran Mrša.

Dobrovoljno darivanje krvi na Fakultetu provodi se još od 1980. godine. U novije doba ta hvalevrijedna aktivnost provodi se organizirano od 2002. godine. U akademskoj godini 2016./2017. održali smo tri akcije (19. 10. 2016., 8. 1. 2017. i 17. 5. 2017.) pri čemu je sakupljeno preko 150 doza ove dragocjene tekućine. Proteklih godina glavni organizator darivanja krvi je prof. dr. sc. Roberto Žigulić, a pomažu mu i članovi Kluba 25. Krv u podjednakom broju daruju i zaposlenici i studenti.

Na TFR od 1990. godine djeluje i podružnica Nezavisnog sindikata znanosti i visokog obrazovanja. Osim zaštite prava svojih članova, sindikalna podružnica na Fakultetu obavlja i zadatke iz djelokruga rada Zaposleničkoga vijeća koje na fakultetu nije konstituirano. Sindikalni povjerenici Podružnice su prof. dr. sc. Roberto Žigulić iz redova nastavnoga osoblja i Žarko Burić iz redova nenastavnoga osoblja.

and graduate university study programmes in mechanical engineering, naval architecture, electrical engineering and computer engineering as well as undergraduate vocational study programmes in mechanical engineering, naval architecture and electrical engineering. It also offers a three-year doctoral study in the area Engineering Sciences, in the fields of Mechanical Engineering, Naval Architecture, Electrical Engineering, Fundamental Engineering Sciences and Interdisciplinary Engineering Sciences.

So far, the Faculty of Engineering in Rijeka has delivered 137 D. Sc. and 95 Master of Science degrees. Of the former 2899 Graduate Engineer Diplomas 2335 were in Mechanical Engineering, 311 in Naval Architecture and 253 in Electrical Engineering; and of 1536 Engineer Diplomas 717 were in Mechanical Engineering, 108 in Naval Architecture and 711 in Electrical Engineering. The Bologna programme has produced 1006 Master Engineers (424 Mechanical Engineering, 95 Naval Architecture, 392 Electrical Engineering and 95 Computer Engineering), 1434 University Bachelor Engineers (684 Mechanical Engineering, 98 Naval Architecture, 444 Electrical Engineering and 208 Computer Engineering) as well as 456 Vocational Bachelor Engineers (174 Mechanical Engineering, 44 Naval Architecture and 238 Electrical Engineering). At present more than 2000 students study at the Faculty.

The Faculty of Engineering has a long tradition of publishing scientific and technical papers. Proceedings were first published as far back as in 1970, and as of 1988 under the name Proceedings of the Faculty of Engineering in Rijeka. In 1995, this was renamed into Engineering Review, which is still in use today. In addition to scientific and technical papers, the faculty staff has published numerous books and textbooks.
The Alumni Club of the Faculty of Engineering in Rijeka (ALUMNI TFR) was founded on 24th November 2000 with the primary aim of establishing and strengthening ties and cooperation not only between alumni and the Faculty but also among the alumni themselves. The chair of the ALUMNI TFR is Prof. D. Sc. Zoran Mrša.

Voluntary blood donation at the Faculty has been carried out since 1980. So in the last year, three such events were organized (on19th October 2016, 8th January 2017 and 17th May 2017), where more than 150 doses of this precious liquid were collected. In recent years, the main organizer of the blood donation has been Prof. D. Sc. Roberto Žigulić, assisted by members of Club 25, the blood being donated by equal number of staff and students.

Since 1990, a subsidiary of the Independent Union of Science and Higher Education Employees of Croatia has been active at the Faculty of Engineering. Apart from protecting the rights of its members, the union branch carries out tasks within the scope of Workers`s Council, which has not been organized at the Faculty. The Union representatives of the Subsidiary are Prof. D. Sc. Roberto Žigulić, representing the teaching staff, and Žarko Burić the non-teaching staff.

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3. RUN ICA ON 5 SETS OF EPOCHS
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- AUDIO VS.
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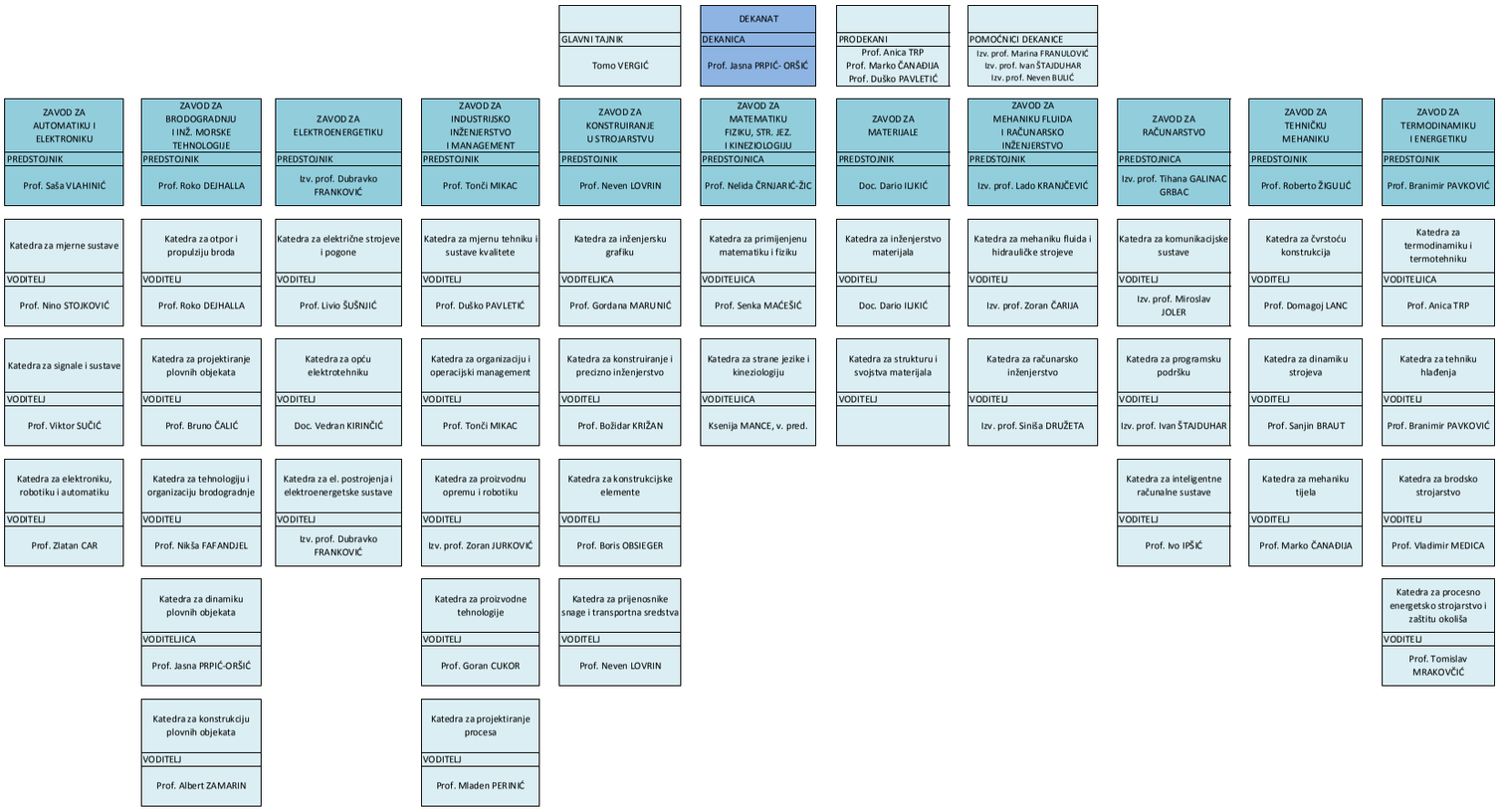
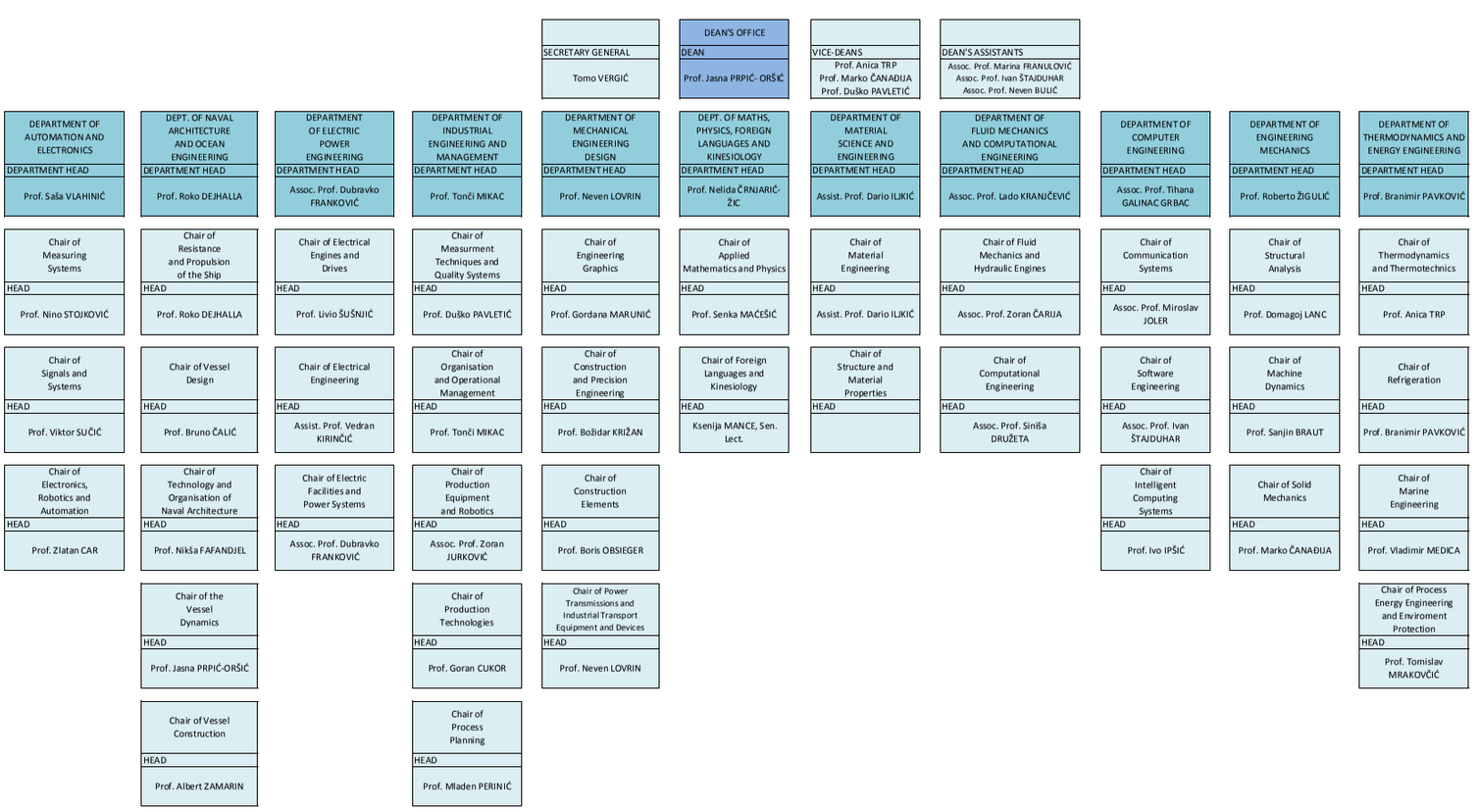
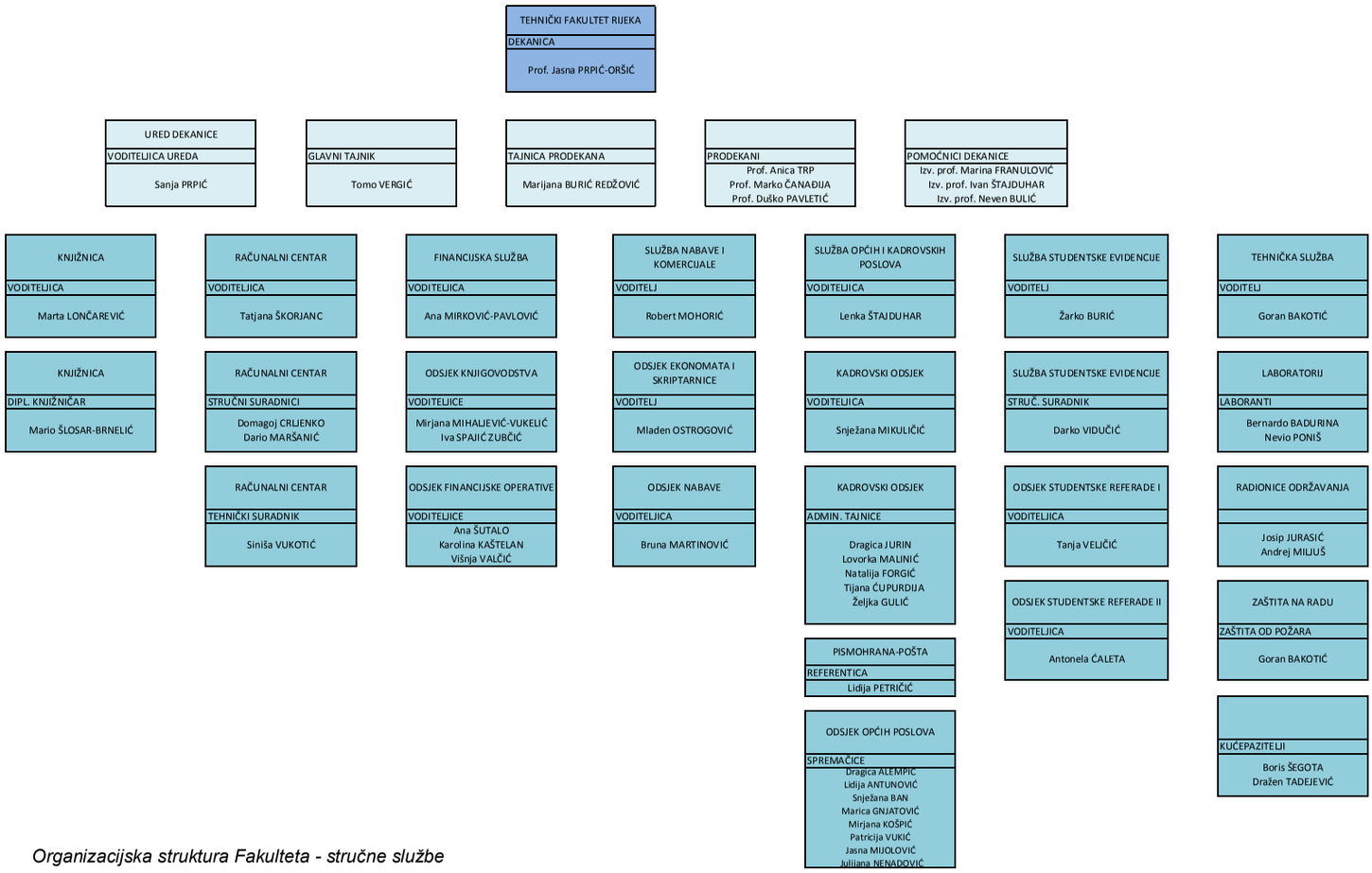


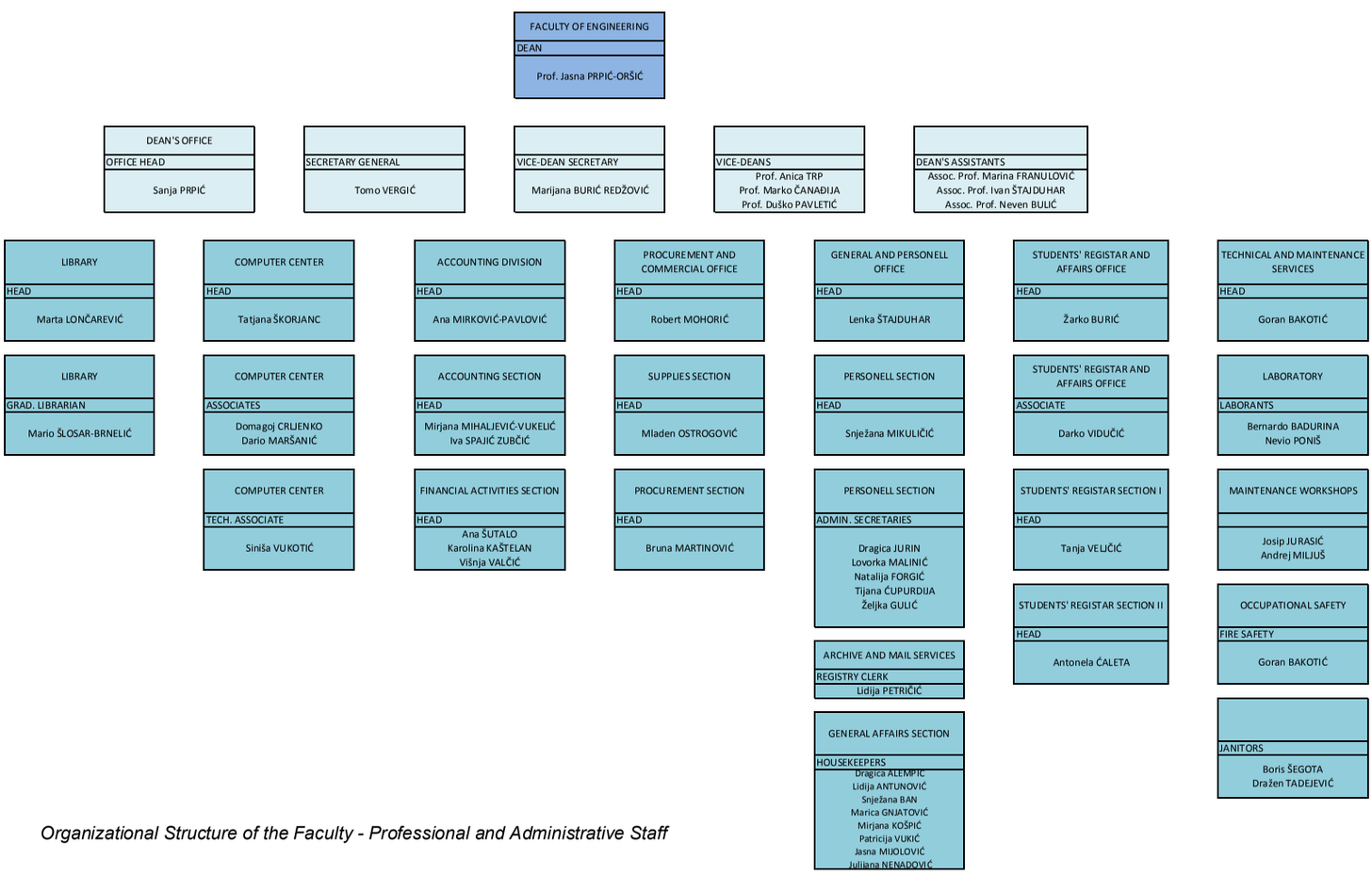
Organizacijska struktura Fakulteta - zavodi i katedre



Organisational Structure of the Faculty - Departments and Chairs



Organizacijska struktura Fakulteta - stručne službe



Organizational Structure of the Faculty - Professional and Administrative Staff

2 fakultet u akademskoj godini 2016./2017.
the faculty in the academic year 2016/2017

2.1 opće informacije
general information

Na Tehničkom fakultetu tijekom akademske godine 2016./2017. u različitim fazama studija aktivno je studiralo 2260 studenata, a svoj studij u tom razdoblju uspješno je završilo 164 magistara inženjera, 177 sveučilišnih prvostupnika i 75 stručnih prvostupnika. U istoj je akademskoj godini na našem Fakultetu šestero kandidata obranilo doktorske disertacije.

Fakultet kontinuirano ulaže u unapređivanje uvjeta rada u nastavnim i laboratorijskim prostorima. U akademskoj godini 2016./2017. uloženo je gotovo četiri milijuna kuna u nabavku nove laboratorijske opreme, razvoj računalne infrastrukture te održavanje prostora Fakulteta.

Kao i prethodnih godina, Fakultet je tijekom ak. god. 2016./2017. uložio više od milijun kuna vlastitih novčanih sredstava u nabavku opreme radi osuvremenjivanja i unapređenja nastavnih aktivnosti.

U ožujku 2017. godine Fakultetsko vijeće je prihvatilo izmjene studijskih programa preddiplomskog i diplomskog sveučilišnog studija Računarstva te je cjelokupna dokumentacija zatim upućena na daljnji postupak na Sveučilište. Senat Sveučilišta je u svibnju 2017. godine donio odluku o izmjenama i dopunama studijskih programa. Usvojenim izmjenama i dopunama zamijenjeni su postojeći izborni kolegiji novima, osuvremenjeni su sadržaji na većem broju kolegija čime je omogućeno povećanje atraktivnosti i prilagođavanje studijskih programa potrebama tržišta rada. Oba su studijska programa akreditirana i za izvođenje na engleskom jeziku.

Kao i prethodnih godina, krajem rujna 2017. održano je uvodno predavanje za studente 1. godine preddiplomskih sveučilišnih i stručnih studija, na kojem su studentima koji započinju studij dane osnovne informacije o studijima i studiranju. U zadnjem tjednu rujna za ove su studente održani pripremni seminari iz matematike i programiranja zbog ponavljanja određenih sadržaja i pripreme studenata za studij.

Tijekom akademske godine 2016./2017. na Tehničkom fakultetu se odvijao znanstvenoistraživački rad u okviru 41 znanstvenog projekta, od čega 6 znanstvenih projekata Hrvatske zaklade za znanost, 2 EU projekta, 24 projekta financiranih od strane Sveučilišta u Rijeci, 2 bilateralna projekta i 7 istraživačkih projekata s gospodarstvom.

In the 2016/2017 academic year 2260 students studied actively at the Faculty of Engineering, of whom 164 earned the master's degree, 177 the university bachelor's degree and 75 the vocational bachelor's degree. In the same year, six candidates defended their doctoral thesis at our Faculty.

The Faculty continuously invests in the improvement of working conditions in teaching and laboratory premises. In the 2016/2017 academic year, nearly four million kuna was invested in the purchase of new laboratory equipment, the development of computer infrastructure and the maintenance of the Faculty premises.

As in previous years, during the 2016/2017 academic year the Faculty invested more than one million kuna from its own funds for the purchase of equipment in order to modernise and improve teaching activities.

In March 2017, the Faculty Council accepted amendments to the study programmes of undergraduate and graduate university studies of Computer Engineering and the whole documentation was sent to the University for further processing. In May 2017, the Senate of the University adopted the amendments to these study programmes. The adopted amendments replaced the existing elective courses with new ones, modernised the content of a large number of courses which enabled the enhancement of attractiveness and adaptation of the study programmes to the needs of the labour market. Both study programmes are also accredited for performing in English.

As in previous years, at the end of September 2017, an introductory lecture was held for students of the 1st year of undergraduate university and vocational studies, where students who started their studies were provided with basic information about the studies and studying. In the last week of September, preparatory seminars in maths and programming were held for these students to revise certain contents and prepare them for the studies.

Tijekom akademske godine 2016./2017., Tehnički fakultet nastavlja s realizacijom mobilnosti studenata i profesora u sklopu Erasmus+ programa tako što je studentima omogućena mobilnost u svrhu studijskog boravka i obavljanja stručne prakse, dok se mobilnost nastavnog i nenastavnog osoblja ostvaruje u svrhu održavanja nastave, odnosno stručnog usavršavanja.

Tehnički fakultet trenutno ima 23 bilateralna ugovora sa Sveučilištima iz Austrije, Cipra, Češke, Finske, Francuske, Italije, Litve, Mađarske, Poljske, Portugala, Rumunjske, Slovenije, Srbije i Švedske.

U akademskoj godini 2016./2017. naši studenti ostvarili su četiri studijske mobilnosti i jednu mobilnost za obavljanje stručne prakse, dok smo istovremeno realizirali dvanaest dolaznih studentskih mobilnosti i dvije dolazne studentske mobilnosti za stručnu praksu. Troje je naših profesora realiziralo mobilnost u svrhu održavanja nastave, a iz istog smo razloga ugostili četiri strana profesora. Dva su gostujuća profesora boravila na fakultetu u svrhu usavršavanja.

Suradnja s gospodarstvom kao i s drugim znanstvenim i obrazovnim ustanovama iznimno je bitan segment djelatnosti Fakulteta. Stoga je i u akademskoj godini 2016./2017. nastavljeno s umrežavanjem i poticanjem zajedničkog rada na znanstvenim i stručnim projektima, a sklopljeno je i više ugovora i sporazuma o znanstvenoistraživačkoj, obrazovnoj i stručnoj suradnji. Nastavljeno je i s uređenjem radnih prostora Fakulteta; saniran je krov novog mosta, zamijenjene su dotrajale ploče te je osuvremenjena prezentacijska oprema učionica, uređeni su zidovi i podovi u više učionica, kabineta i ureda. Kontinuirano se uređuje i okoliš Fakulteta čime se omogućava ugodniji i učinkovitiji rad, studiranje i boravak na Fakultetu.

During the 2016/2017 academic year, scientific-research work was carried out within the framework of 41 scientific projects, of which six were projects of the Croatian Science Foundation, two were EU projects, 24 projects were funded by the University of Rijeka, two bilateral projects and seven research projects with the economy.

During the 2016/2017 academic year, the Faculty of Engineering continued the realisation of the mobility of students and professors within the framework of the Erasmus+ programme, so that mobility is provided to students in order to study and complete professional practice, while mobility of the teaching and non-teaching staff is provided for the purpose of teaching, that is professional development.

The Faculty of Engineering currently has 23 bilateral agreements with universities from Austria, Cyprus, the Czech Republic, France, Italy, Lithuania, Hungary, Poland, Portugal, Romania, Slovenia, Serbia and Sweden.
In the 2016/2017 academic year, four of our students used the study mobility programme and one used it for professional practice, while at the same time we received twelve students and two mobilities for professional practice. Three of our teachers used the mobility to hold classes, while we hosted four foreign teachers for the same purpose. Two visiting professors stayed at the Faculty for the purpose of professional development.

The collaboration with the economy as well as with other scientific and educational institutions is an extremely important segment of the Faculty's activities. Therefore, in the 2016/2017 academic year, the Faculty continued with the networking and encouragement of cooperation on scientific and professional projects, and several contracts and agreements on scientific-research, educational and professional cooperation were concluded. The Faculty continued to maintain its working premises; the roof of the new bridge was repaired, mouldy panels were replaced, the presentation equipment of classrooms was modernized, walls and floors in several classrooms, studies and offices were arranged. The environment of the Faculty is continually maintained, which makes working, studying as well as sojourning more pleasant and efficient.

2.2 studenti nagrađeni u ak. godini 2016./2017.
awarded students in the 2016/2017 academic year

nagrada za akademski uspjeh | award for academic achievements

PREDDIPLOMSKI SVEUČILIŠNI STUDIJ | UNDERGRADUATE UNIVERSITY STUDY

Studij / Study	Godina / Year	Ime i prezime / Name and surname	Prosjek usvojenosti znanja, vještina i kompetencija / Knowledge, skills and competences average		ECTS
			godine / year	studija / study	
Strojarstvo/ Mechanical Engineering	1.	Marko Mirković	93%	93%	60
	2.	Anja Mirić	91%	90%	120
Elektrotehnika/ Electrical Engineering	1.	Antonio Žerjav	88%	88%	60
	2.	Matteo Samsa	92%	91%	120
Računarstvo/ Computer Engineering	1.	Mateja Napravnik	92%	92%	60
	2.	Ivana Žužić	92%	90%	120

SVEUČILIŠNI PRVOSTUPNICI INŽENJERI | UNIVERSITY BACHELOR ENGINEERS

Studij/ Study	Ime i prezime/ Name and surname	Prosjek usvojenosti znanja, vještina i kompetencija/ Knowledge, skills and competences average
Strojarstvo/ Mechanical Engineering	Martin Zlatić	87%
Brodogradnja/ Naval Architecture	Karlo Stilinović	70%
Elektrotehnika/ Electrical Engineering	Mislav Selec	83%
Računarstvo/ Computer Engineering	Tomislav Milanović	91%

DIPLOMSKI SVEUČILIŠNI STUDIJ | GRADUATE UNIVERSITY STUDY

Studij / Study	Godina / Year	Ime i prezime / Name and surname	Prosjek usvojenosti znanja, vještina i kompetencija / Knowledge, skills and competences average		ECTS
			godine / year	studija / study	
Strojarstvo/ Mechanical Engineering	1.	Tomislav Bazina	97%	97%	60
Brodogradnja/ Naval architecture	1.	Ivan Sulovsky	91%	91%	60
Elektrotehnika/ Electrical Engineering	1.	Korino Bogović	94%	94%	60
Računarstvo/ Computer Engineering	1.	Leo Brdar	94%	94%	60

MAGISTRI INŽENJERI | MASTER ENGINEERS

Studij/ Study	Ime i prezime/ Name and surname	Prosjek usvojenosti znanja, vještina i kompetencija/ Knowledge, skills and competences average
Strojarstvo/ Mechanical Engineering	Fran Ledić	99%
Brodogradnja/ Naval Architecture	Andro Bakica	89%
Elektrotehnika/ Electrical Engineering	Nikola Lopac	99%
Računarstvo/ Computer Engineering	Franko Hržić	97%

PREDDIPLOMSKI STRUČNI STUDIJ | VOCATIONAL STUDY

Studij / Study	Godina / Year	Ime i prezime / Name and surname	Prosjek usvojenosti znanja, vještina i kompetencija / Knowledge, skills and competences average		ECTS
			godine / year	studija / study	
Strojarstvo/ Mechanical Engineering	1.	Leo Škerjanec	80%	80%	60
	2.	Ivana Čabrijan	83%	76%	120

STRUČNI PRVOSTUPNICI INŽENJERI | BACHELOR ENGINEERS

Studij/ Study	Ime i prezime/ Name and surname	Prosjek usvojenosti znanja, vještina i kompetencija/ Knowledge, skills and competences average
Strojarstvo/ Mechanical Engineering	Darko Pavlović	88%

nagrada dekanice za studentski aktivizam | dean's award for student activism

ENA BADŽEK

- Studentica 2. godine diplomskog sveučilišnog studija strojarstva
  Student of the 2nd year of Graduate University Study of Mechanical Engineering

ENDI MILETIĆ

- Student 2. godine diplomskog sveučilišnog studija elektrotehnike
  Student of the 2nd year of Graduate University Study of Electrical Engineering

nagrada dekanice za popularizaciju fakulteta | dean's award for the popularization of the faculty

RITEH RACING TEAM

rektorova nagrada | rector's award

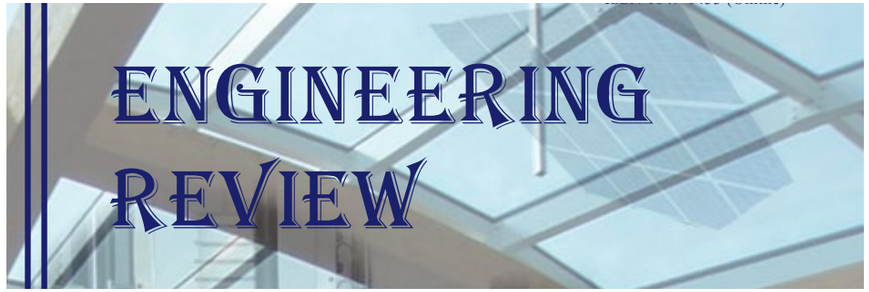
FRANKO HRŽIĆ

- Nagrađen Rektorovom nagradom za studentski znanstveni rad na osnovu objavljenog znanstvenog rada na konferenciji International Conference on Smart Systems and Technologies, SST 2017.
  Awarded with the Rector's award for student scientific work on the basis of the published scientific paper at the International Conference on Smart Systems and Technologies, SST 2017.

NIKOLA LOPAC

- Nagrađen Rektorovom nagradom za izvrsnost.
  Awarded with the Rector's Award for Academic Excellence.

2.3 časopis "engineering review"
the journal "engineering review"



Tehnički fakultet Sveučilišta u Rijeci ima dugu tradiciju izdavanja znanstvenih radova. Publiciranje znanstvenih radova djelatnika Tehničkog fakulteta seže u 1970. godinu kada započinje tiskanje Zbornika radova. Godine 1988. spomenuta edicija mijenja naziv u Zbornik Tehničkog fakulteta Rijeka i konačno 1995. godine uspostavlja se naziv Engineering Review, pod kojim se časopis i danas tiska.

Sve spomenute edicije bile su na raspolaganju za objavu radova kako nastavnog osoblja samog fakulteta, tako i svima zainteresiranima. Fakultet nastoji zainteresirati znanstvenu javnost za publiciranje znanstvenih radova, a sve radi širenja razmjene znanstvenih postignuća temeljenih na istraživačkom radu. Područja iz kojih se u časopisu mogu objavljivati radovi prvenstveno obuhvaćaju strojarstvo, brodogradnju, temeljne tehničke znanosti, elektrotehniku, računalne znanosti i građevinarstvo. U ovom smislu časopis predstavlja jednu od rijetkih baza za publiciranje radova iz vrlo širokog dijapazona tehničkog područja. Razmatraju se i radovi koji su kvalitetni, a nisu izravno iz tehničkog područja, već mogu biti, primjerice, iz prirodnih znanosti, ali imaju određenu poveznicu s područjem tehnike. Do sada je u razvitak i uređivanje časopisa uloženo puno truda, posebice pod vodstvom glavnog urednika prof. dr. sc. Branimira Barišića, čija je svestrana aktivnost naglo prekinuta njegovom tragičnom i preranom smrću. Za sve uloženo dugujemo mu iskrenu zahvalnost.

Nakon potpisanog ugovora o suizdavaštvu časopisa Engineering Review između Tehničkog fakulteta Sveučilišta u Rijeci (dekan prof. dr. sc. Goran Turkalj) i Građevinskog fakulteta Sveučilišta u Rijeci (dekanica prof. dr. sc. Aleksandra Deluka Tibljaš), nastavljaju se aktivnosti oko izdavanja.

The Faculty of Engineering of the University of Rijeka has a long tradition of publishing scientific papers. Significantly, the publication of scientific papers by the employees of the Faculty of Engineering dates back to 1970, when the first issue of Proceedings was published. In 1988, this edition was renamed the Proceedings of the Rijeka Faculty of Engineering and finally in 1995, the journal was renamed again into Engineering Review, its present title.

All these editions have readily published papers written not only by the teaching staff of the Faculty but also by all other interested authors. The Faculty makes every effort to arouse interest of the scientific community in the publication of scientific papers, all with the aim of disseminating and sharing scientific achievements based on research work. Papers eligible for publication in the journal are primarily those from the field of mechanical engineering, naval architecture, fundamental engineering sciences, electrical engineering, computer engineering and civil engineering. In this sense, the journal is one of the few bases that publish papers covering a wide range of engineering areas. However, quality papers not directly from the engineering area are also taken into consideration, for instance, those from the field of natural sciences but linked in a way to the area of engineering. A lot of effort has been invested in developing and editing the journal, particularly, under the leadership of Editor-in Chief, Prof. D. Sc. Branimir Barišić, whose versatile activities were put to an abrupt halt because of his tragic and untimely death. Heartfelt thanks to him for all his contribution.

The Faculty of Engineering of Rijeka University and the Faculty of Civil Engineering of Rijeka

Izdavanje časopisa Engineering Review, od druge polovice 2011. godine, nastavlja se pod vodstvom glavnog urednika prof. dr. sc. Josipa Brnića (Editor- in- Chief) te pomoćnih urednika (Associate Editors): izv. prof. dr. sc. Marine Franulović, prof. dr. sc. Kristiana Lenića, prof. dr. sc. Aleksandre Deluka Tibljaš, izv. prof. dr. sc. Tihane Galinac Grbac i izv. prof. Dubravka Frankovića. Rad je prihvaćen za objavu u časopisu nakon dviju pozitivnih recenzija i obavljene jezične lekture. Jezičnu lekturu svih radova, nakon njihovih pozitivnih recenzija, vrlo uspješno obavlja prof. Ksenija Mance. Računalna rješenja pružaju izv. prof. dr. sc. Lado Kranjčević i Tatjana Škorjanc, dipl. ing. Broj članova Editorial Boarda kao i broj članova Advisory Editorial Boarda je proširen. Članovi oba uredništva su eminentni domaći i inozemni profesori i stručnjaci. Veliku pomoć u pripremi, uređivanju i tiskanju radova pružaju nastavnici, asistenti i znanstveni novaci Tehničkog fakulteta: doc. dr. sc. Sven Maričić, dr. sc. Željko Vrcan, dr. sc. Neven Munjas, dr. sc. Andrea Andrijašević, dr. sc. Boris Delač, dr. sc. Ivan Volarić te dr. sc. Ivica Androjić i Andrea Načinović Margan s Građevinskog fakulteta u Rijeci.

Časopis Engineering Review indeksiran je u: Aluminum Industry Abstracts, Advanced Polymers Abstracts, Cambridge Scientific Abstract (CSA), Ceramic Abstracts/World Ceramics Abstracts, Compendex, Composites Industry Abstracts, Computer and Information Systems Abstracts, Copper Technical Reference Library, Corrosion Abstracts, Electronics and Communications Abstracts, Engineered Materials Abstracts, High Technology Research Database with Aerospace, Mechanical & Transportation Engineering Abstracts, METADEX, SCImago, SCOPUS, Web of Science (Emerging Sources Citation Index, od 2015. god.)

Zadovoljstvo je istaknuti kako je časopis, temeljem SCIMAGO kategorizacije rangiranja časopisa u 2012. godini, bio svrstan u Q4 (četvrta kvartila), a u 2014. i u 2015. godini je u Q2. SCIMAGO kategorizacija časopisa temeljena je na bazi SCOPUS. Časopis je uređen za elektroničku obradu svih podataka i elektroničku komunikaciju od prijave radova do recenzentskih postupaka i priopćavanja rezultata podnositeljima (autorima) radova. Časopis ima široku bazu domaćih i inozemnih recenzenata i ona se stalno dopunjava. Svaki rad recenziraju najmanje dva recenzenta od kojih je najmanje jedan inozemni. Za prihvaćanje rada niti jedna recenzija ne smije biti negativna.

University entered into a Contract on co-edition of Engineering Review, signed respectively by Deans Prof. D. Sc. Goran Turkalj and Prof. D. Sc. Aleksandra Deluka Tibljaš, thus ensuring the continuation of its publication.

As of the second half of 2011, Engineering Review has been published under the guidance of Editor-in Chief Prof. D. Sc. Josip Brnić, and Associate Editors: Assoc. Prof. D. Sc. Marina Franulović, Prof. D. Sc. Kristian Lenić, Prof. D. Sc. Aleksandra Deluka Tibljaš, Assoc. Prof. D. Sc. Tihana Galinac Grbac and Assoc.Prof. D. Sc. Dubravko Franković. A paper is accepted for publication in the journal after two positive reviews, after which language editing of all papers is carried out by Ksenija Mance, B.A. Assistance with computer solutions has been provided by Assoc. Prof. D. Sc. Lado Kranjčević and Tatjana Škorjanc, B.Sc. Furthermore, the member lists of both Editorial Board and Advisory Editorial Board have increased and now include prominent domestic and foreign professors and experts. A great assistance in the preparation and publication of papers is received by teachers, assistants and junior researchers of the Faculty of Engineering: Assist. Prof. D. Sc. Sven Maričić, D. Sc. Željko Vrcan, D. Sc. Neven Munjas, D. Sc. Andrea Andrijašević, D. Sc. Boris Delač, D. Sc. Ivan Volarić, as well as D. Sc. Ivica Androjić and Andrea Načinović Margan from the Faculty of Civil Engineering in Rijeka.

Engineering Review has the following indexing: Aluminum Industry Abstracts, Advanced Polymers Abstracts, Cambridge Scientific Abstract (CSA), Ceramic Abstracts/World Ceramics Abstracts, Compendex, Composites Industry Abstracts, Computer and Information Systems Abstracts, Copper Technical Reference Library, Corrosion Abstracts, Electronics and Communications Abstracts, Engineered Materials Abstracts, High Technology Research Database with Aerospace, Mechanical & Transportation Engineering Abstracts, METADEX, SCImago, SCOPUS, Web of Science (Emerging Sources Citation Index, of 2015).

We are pleased to point out that according to the 2012 SCImago categorization of journals our journal was included in Q4 (fourth quartile), and in 2014 and 2015 in Q2. The SCImago categorization of journals is based on the SCOPUS database. The journal uses electronic processing of all data, so that information on paper application, review procedures and results are electronically communicated to the authors.

Časopis se objavljuje na engleskom jeziku u tri broja godišnje, a radovi su dostupni online (Hrčak, Tehnički fakultet u Rijeci) te u tiskanom obliku. Časopis također može objaviti određeni broj kvalitetnih radova s određenog kongresa, s tim da njihova kvaliteta bude zagarantirana jednom recenzijom kongresa i jednom novom recenzijom. Spomenuti radovi idu u prijavu istom procedurom kao i svi drugi radovi. Na kraju valja spomenuti kako je zainteresiranost za publiciranjem radova u časopisu prilično velika, a ponude za objavljivanjem dolaze iz inozemstva i iz Hrvatske. Ovakvoj zainteresiranosti svakako doprinosi uređeni sustav prijave, recenzija, indeksiranost i komunikacija s autorima.

The journal has a broad base of national and international reviewers, which is constantly being supplemented. Each paper is reviewed by at least two referees, one of whom must be foreign. For the acceptance of the paper, all reviews have to be positive. The journal is published in English, in three issues annually, and the papers are available online (Hrčak, Faculty of Engineering Rijeka) and in printed form. The journal can also include a certain number of quality papers from a congress provided that their quality is guaranteed by one review of the congress and another new review. These papers undergo the same application procedure as all other papers. Finally, it is worth mentioning that lots of authors from Croatia and abroad have shown their interest in publishing their scientific papers in Engineering Review. Communication with authors, an ordered system of application, review and indexing highly contribute to the importance of the journal.

2.4 alumni tfr
alumni fer

Alumni klub Tehničkog fakulteta Sveučilišta u Rijeci, skraćenoga naziva ALUMNI TFR, udruga je osnovana s primarnim ciljem uspostave i jačanja veza i suradnje između bivših studenata Tehničkoga fakulteta, ali i između bivših studenata međusobno. Udruga je osnovana pod nazivom Akademski klub doktora znanosti, magistara znanosti, diplomiranih inženjera i inženjera Tehničkoga fakulteta Sveučilišta u Rijeci na Osnivačkoj skupštini održanoj u Mramornoj dvorani Pomorskoga i povijesnoga muzeja Hrvatskoga primorja i Rijeke, dana 24. studenoga 2000. godine, u sklopu obilježavanja 40 godina djelovanja Fakulteta.

Svrha ALUMNI TFR je očuvanje tradicije Tehničkoga fakulteta Sveučilišta u Rijeci, promicanje ugleda Fakulteta u Republici Hrvatskoj i inozemstvu, skrb za razvitak i napredak Fakulteta, njegovanje i razvitak etike inženjerskoga poziva, utjecaj na stvaranje javnoga znanstvenog i stručnog mišljenja o svim bitnim pitanjima razvoja struke i znanosti te njihove primjene, utjecaj na razvitak i napredak spoznaje o potrebi očuvanja prirode i čovjekova okoliša, izgradnja i jačanje veza i suradnje između bivših studenata i Fakulteta, poticanje i uspostava veza i suradnje Fakulteta i sličnih obrazovnih, razvojnih i istraživačkih institucija u Republici Hrvatskoj i u svijetu, promicanje ugleda inženjerske struke te uspostava i razvijanje suradnje sa sličnim udrugama kod nas i u svijetu.

The Alumni Club of the Faculty of Engineering, Rijeka University (ALUMNI FER) is an association established with the primary aim of fostering and strengthening liaisons and cooperation between the former alumni and the Faculty and among the alumni themselves. The association, founded under the name of Academic Fellowship, comprises holders of PhD, master`s and bachelor`s degrees (including former graduate and vocational engineers) of the Faculty of Engineering of the University of Rijeka. It was established at the Inaugural Meeting held in the Marble Hall of the Maritime and History Museum of Croatian Littoral Rijeka on 24 November 2000 to mark the 40th anniversary of the Faculty.

The purpose of the ALUMNI FER is to preserve the tradition of higher education at the Faculty of Engineering of Rijeka University, to promote the reputation of the Faculty in the Republic of Croatia and abroad, to care for its development and progress, to nurture and foster ethics in the engineering profession, to exert influence on the creation of public scientific and professional opinion about all important issues in the development of profession and science, and on the development and advancement of awareness about the need to preserve the nature and the environment. Moreover, the aim is also to strengthen relations and cooperation between the former alumni and the Faculty,

Na dan 30. 9. 2017. godine, ukupni broj registriranih članova ALUMNI TFR je 2150. U ak. god. 2016./2017. predsjednik ALUMNI TFR je prof. dr. sc. Zoran Mrša, dipl. ing., potpredsjednici su prof. dr. sc. Roko Dejhalla, dipl. ing i Danko Venturini, dipl. ing., a tajnik je dr. sc. Vedran Kirinčić, dipl. ing. U predsjedništvu su: prof. dr. sc. Zmagoslav Prelec, dipl. ing., prof. dr. sc. Roko Dejhalla, dipl. ing., prof. dr. sc. Jasna Prpić-Oršić, dipl. ing. i dekanica Tehničkoga fakulteta, prof. dr. sc. Bernard Franković, dipl. ing., dr. sc. Aleksandar Regent, dipl. ing., prof. dr. sc. Božidar Križan, dipl. ing., Zlatko Komadina, dipl. ing., dr. sc. Serđo Klapčić, dipl. ing., Davor Lukeš, dipl. ing., Ante Maras, dipl. ing., dr. sc. Vedran Kirinčić, dipl. ing., Mladen Merlak, dipl. ing., prof. dr. sc. Zoran Mrša, dipl. ing., prof. dr. sc. Danko Venturini, dipl. ing. Likvidatorom je imenovan prof. dr. sc. Vladimir Medica, dipl. ing. Nadzorni odbor čine: mr. sc. Slavko Štambuk, dipl. ing., prof. dr. sc. Duško Pavletić, dipl. ing. i Davor Mihovilić, dipl. ing. U organizaciji ALUMNI TFR, tijekom ak. god. 2016./2017., realizirane su sljedeće aktivnosti:

to encourage the establishment of links and cooperation between the Faculty and similar educational, developmental and research institutions in Croatia and worldwide, to promote the reputation of the engineering profession and establish and develop cooperation with similar organizations at home and abroad.

On 30 September 2017, the ALUMNI FER counted 2150 registered members. The ALUMNI FER board elected at the electoral assembly held on 23 January 2015 comprised: Prof. D.Sc. Zoran Mrša, M.Eng.,chairman, vice chairmen Prof. D. Sc.Roko Dejhalla, M.Eng., and Danko Venturini, M.Eng., and secretary D. Sc. Vedran Kirinčić, M.Eng. The current members include: Prof. D. Sc. Zmagoslav Prelec, M.Eng., Prof. D. Sc. Roko Dejhalla, M.Eng., Prof. D. Sc Jasna Prpić-Oršić, M.Eng. and Dean of the Faculty of Engineering, Prof. D. Sc. Bernard Franković, M.Eng., D. Sc. Aleksandar Regent, M.Eng., Prof. D. Sc. Božidar Križan, M.Eng., Zlatko Komadina, M.Eng., D. Sc. Serđo Klapčić, M.Eng., Davor Lukeš, M.Eng., Ante Maras, M.Eng., D. Sc. Vedran Kirinčić, M.Eng., Mladen Merlak, M.Eng., Prof. D. Sc.Zoran Mrša, M.Eng. and Danko Venturini, M.Eng. and Prof. D. Sc. Vladimir Medica, M.Eng. as liquidator. The current members of the Supervisory Board are: M.Sc. Slavko Štambuk, M.Eng., Prof. D. Sc. Duško Pavletić, M.Eng. and Davor Mihovilić, M.Eng. During the 2016/2017 academic year, the following activities were realized by the ALUMNI FER

- *5. 12. 2016. organiziran je susret 7. generacije studenata TFR*
  5th December 2016. a meeting of the 7th student generation of the Faculty of Engineering was organized
- *5. 12. 2016. organizirano je predavanje dr. sc. Andreja Korbara, dipl. ing., pod nazivom: „Vlastiti razvoj ratnih brodova, podmornica i ostalih sredstava podvodne tehnologije važan su faktor naše nacionalne sigurnosti“.*
  5th December 2016. D. Sc. Andrej Korbar, M. Eng. gave a lecture on "Our own development of war ships, submarines and other marine constructions are important elements of national security".
- *7. 4. 2017. organizirano je predavanje izv. prof. dr. sc. Miroslava Vrankića, dipl. ing., pod nazivom „Asistivna tehnologija za kvalitetniji život osoba s invaliditetom“.*
  7th April 2016. Assoc. Prof. D. Sc. Miroslav Vrankić, M. Eng. Gave lecture on "Asistive technology for better life of invalidated people".
- *23. 5. 2017. organizirano je predavanje izv. prof. dr. sc. Ivana Štajduhara, dipl. ing., pod nazivom: "Umjetna inteligencija u medicini".*
  23rd May 2017. Assoc. Prof. D. Sc. Ivan Štajduhar, M. Eng. gave lecture on "Artificial inteligence in medicine".
- *23. 5. 2017. održan je sastanak Predsjedništva Alumni kluba TFRijeka*

23rd May 2017. the meeting of Presidency of Alumni Club TFRijeka took place

- *24. 5. 2017. organizirano je predavanje dr. sc. Branka Belamarića, dipl. ing., pod nazivom: „Višeciljno donošenje odluke o strategiji održavanja broda uzimajući u obzir utjecaj na okoliš“.*
  24th May 2017. D. Sc, Branko Belamarić, M. Eng. gave a lecture on "Multipurpose decision making in the ship maintenance strategy taking in account ecology".
- *29. 5. 2017. potpisani su ugovori o donacijama po 2000 kuna kojima je ALUMNI TFR donirao studentske projekte na Fakultetu i to: Formula Student, Adria Hydrocontest Team i Riteh Waterbike Team.*
  29th May 2017. donation contracts were signed (of 2,000 kn each), whereby the ALUMNI FER subsidised the Faculty student projects, i.e. "RiTeh - Formula Student", "Adria Hydrocontest Team" and "RiTeh - Waterbike Team".

2.5 doktorske disertacije obranjene u akademskoj godini 2016./2017.
doctoral dissertations defended in academic year 2016/2017

IME I PREZIME | NAME AND SURNAME:
Marijan Cukrov

POLJE | SCIENTIFIC FIELD:
Interdisciplinarne tehničke znanosti / Interdisciplinary Engineering Sciences

NAZIV RADA | TITLE:
Modeli implementacije sustava morskih autocesta u funkciji zaštite okoliša
Model of implementation of the motorways of the sea system in function of environmental protection

MENTOR(I) | SUPERVISOR(S):
izv. prof. dr. sc. / Assoc. Prof. D. Sc. Alen Jugović
prof. dr. sc. / Prof. D. Sc. Tomislav Mrakovčić

DATUM OBRANE | DATE OF DEFENCE:
18. 11. 2016.

Sažetak:

Prometni sustav, posebice cestovni sustav prijevoza kao jedan od trenutno najdominantnijih sustava, uzrokuje iznimno štetne posljedice po društvo i okoliš. Očituje se kroz povećanu emisiju štetnih ispušnih plinova, prometna zagušenja, prometne nesreće, povećanu razinu buke te povećani stres i razna oboljenja svih sudionika prometnog sustava te društva općenito. Navedeno je posebice izraženo na gusto naseljenim urbanim područjima. Modernizacija intermodalnog prijevoznog sustava moguća je kroz implementaciju sustava morskih autocesta kao njegova ekološki i socio-ekonomski održivog podsustava i jedan je od načina za smanjenje spomenutih štetnih posljedica. Može se zaključiti kako je od iznimne važnosti osigurati daljnji ekološki i socio-ekonomski održivi razvoj sustava morskih autocesta kako bi isti bio u izravnoj funkciji zaštite društva i očuvanja okoliša.

Summary:

The transport system, especially road transport system, as one of the most dominant systems, causes extremely harmful consequences for society and the environment. It is manifested through the increased emission of harmful exhaust gases, traffic congestions, traffic accidents, increased level of noise, higher levels of stress and various diseases of all participants of the transport system and society in general. Mentioned is particularly pronounced in the densely populated urban areas. Implementation and modernization of intermodality through the Motorways of the Sea (MoS) as it's ecological and socio-economic sustainable subsystem, is the efficient way to reduce the above mentioned consequences. It may be concluded that it is extremely important to ensure further ecological and socio-economic sustainable development of MoS, in order to keep it in direct function of protecting the society and preserving the environment.

IME I PREZIME | NAME AND SURNAME:
Boris Delač

POLJE | SCIENTIFIC FIELD:
Strojarstvo / Mechanical Engineering

NAZIV RADA | TITLE:
Optimizacija energetskih sustava zgrada približno nulte energije korištenjem dinamičkih simulacija
Optimization of energy systems for nearly zero energy buildings using dynamic simulations

MENTOR(I) | SUPERVISOR(S):
prof. dr. sc. / Prof. D. Sc. Branimir Pavković
prof. dr. sc. / Prof. D. Sc. Kristian Lenić

DATUM OBRANE | DATE OF DEFENCE:
14. 2. 2017.

Sažetak:

U doktorskoj disertaciji obrađen je optimirani pristup analizi zgrada s njihovim tehničkim sustavima koje se obnavljaju u cilju postizanja zgrade približno nulte energije. Pristup se temelji na primjeni numeričkih dinamičkih simulacijskih modela koji uključuju zgradu i tehničke sustave, na kojima se provodi cjelovita parametarska optimizacija. Pristupom se uvažava međusobna interakcija zgrade i tehničkih sustava kroz njeno oblikovanje i svojstva koja utječu na potrošnju energije, karakteristiku opreme, konfiguraciju i strategiju upravljanja tehničkih sustava, uz uvažavanje promjenjivih rubnih uvjeta. Pogodnost primjene numeričkih dinamičkih simulacija za analizu tehničkih sustava zgrada približno nulte energije utvrđena je kroz izradu numeričkih dinamičkih modela i njihovo vrednovanje usporedbom s rezultatima eksperimentalnih mjerenja stvarnih sustava. Modeliranje potrošnje toplinske energije provedeno je na višezonskom modelu zgrade u programskom paketu Trnsys. Postavljeni su numerički dinamički simulacijski modeli tehničkih sustava koji omogućuju nove

Summary:

The optimized tool for analysis of existing buildings with technical systems in scope of achieving nearly zero energy building in building refurbishment is developed in the presented thesis. The approach is based on the application of numerical dynamic simulation of a building with integrated technical system in a complete parametric optimization. The mutual interaction of building with its technical system is comprised through its design and features that affect energy consumption, characteristic of equipment, design and management strategy of a technical system, including dynamic boundary conditions. The feasibility of numerical simulations application for dynamic analysis of nearly zero energy buildings technical systems is determined through the development of numerical dynamic models which are validated by comparison with field measurements results. Heat consumption modelling is carried out on a multi-zone building model using Trnsys software. The set of numerical dynamic simulations of technical systems is created which enables new scientific conclusions on system configuration

znanstvene spoznaje o njihovoj konfiguraciji i kriterijima za primjenu te usmjeravaju i olakšavaju projektiranje tehničkih sustava zgrada približno nulte energije u čvrstoj vezi s arhitektonsko – građevinskim mjerama toplinske zaštite zgrade. Izrađeni su novi numerički modeli kompresijskih dizalica topline voda – voda i zrak – voda prošireni uvođenjem karakteristika uređaja kod djelomičnog opterećenja i mogućnošću djelomičnog i potpunog povrata topline prikladni za rad na Trnsys simulacijskom sučelju. Formuliran je optimizacijski problem određivanja fizikalnih svojstava zgrade u interakciji s tehničkim sustavima, za koji je razvijena specijalizirana optimizacijska metoda bazirana na genetskom algoritmu. Simulacijski alat razvijen u disertaciji omogućava detaljne analize za postizanje cjelovitih optimalnih tehničkih rješenja kroz energetske, ekonomske i ekološke pokazatelje. Alat je testiran i primijenjen za područje umjerene mediteranske klime kroz lokacije jadranske Hrvatske. Preporučena su optimalna rješenja koja mogu osigurati ostvarenje toplinske razine potrošnje zgrade približno nulte energije kod njene obnove. Ukazano je na nedostatke postojećih definicija zgrada približno nulte energije u regulativi Republike Hrvatske. Razvijeni alat može poslužiti boljoj analizi i uspostavljanju kriterija za referentne zgrade približno nulte energije, ne samo u području jadranske već i kontinentalne Hrvatske i šire, u cilju pomoći kod donošenja budućih propisa jer predstavlja jedinstven pristup identifikacije rješenja.

and criteria for the application. These simulations facilitate the design of technical systems of nearly zero energy buildings in connection with passive energy efficiency measures. New numerical models of water to water and air to water compression heat pumps are created by implementing the characteristics at partial load conditions and the possibility of partial and total heat recovery. The models are suitable for operation in Trnsys simulations. The formulated optimization problem determines the physical properties of building envelope in interaction with building technical systems. This specialized optimization method is based on a genetic algorithm. This simulation tool provides a detailed analysis for the achievement of complete optimal technical solutions through energy, economic and environmental indicators. In scope of thesis, the tool has been tested and applied in the area of mild Mediterranean climate, the Croatian part of Adriatic coast. The optimal solutions that can ensure the achievement of the consumption level of nearly zero energy building are recommended. The shortcomings of the existing definition of nearly zero energy buildings it the Croatian regulations are pointed out. This tool can be used for better analysis and establishing of criteria for the nearly zero energy reference buildings. It is suitable for application in Croatia and beyond in order to help in decision on future regulations because it represents an unique approach to identify solutions.

IME I PREZIME | NAME AND SURNAME:
Tea Marohnić

POLJE | SCIENTIFIC FIELD:
Strojarstvo / Mechanical Engineering

NAZIV RADA | TITLE:
Procjena cikličkih i zamornih parametara čelika na osnovi njihovih monotonih značajki primjenom umjetnih neuronskih mreža
Estimation of cyclic and fatigue parameters of steels based on their monotonic properties using artificial neural networks

MENTOR(I) | SUPERVISOR(S):
izv. prof. dr. sc. / Assoc. Prof. D. Sc. Robert Basan

DATUM OBRANE | DATE OF DEFENCE:
18. 4. 2017.

Sažetak:

U doktorskoj disertaciji obrađen je problem procjene cikličkih Ramberg–Osgoodovih i zamornih Basquin–Coffin–Mansonovih parametara čelika na osnovi monotonih značajki primjenom umjetnih neuronskih mreža.

Za potrebe istraživanja iz relevantne je literature i putem on-line baze podataka o materijalima MATDAT prikupljen velik broj eksperimentalnih podataka za čelike. Pregledom postojećih istraživanja utvrđeno je da se podjelom čelika u skupine prema kriteriju udjela legirajućih elemenata može poboljšati točnost procjene cikličkih i zamornih parametara na osnovi monotonih značajki. U skladu s tim, čelici su grupirani u nelegirane, niskolegirane i visokolegirane čelike. Različitost vrijednosti cikličkih i zamornih parametara spomenutih grupa čelika i formalno je potvrđena provođenjem jednofaktorske analize varijance i Welchovog testa. Dodatno provedenim post-hoc analizama utvrđena je različitost na razini parova nelegiranih, niskolegiranih i visokolegiranih čelika. Provođenjem unaprijedne selekcije određene su monotone značajke relevantne za procjenu svakog od cikličkih i zamornih parametara različitih skupina čelika. Na osnovi rezultata statističkih analiza, predložena je procjena cikličkih i zamornih parametara primjenom neuronskih mreža, zasebno za svaku skupinu čelika i uz korištenje samo onih monotonih značajki koje su se pokazale statistički relevantnim za procjenu pojedinog parametra. Za učinkovitije korištenje prikupljenih podataka u razvoju neuronskih mreža primijenjena je metoda k-struke unakrsne validacije. Rezultati dobiveni razvijenim umjetnim neuronskim mrežama vrednovani su usporedbom s eksperimentalnim vrijednostima cikličkih i zamornih parametara, ali i onima dobivenim postojećim empirijskim metodama procjene. Za odabrani skup podataka umjetne neuronske mreže pokazale su se uspješnijim od empirijskih metoda procjene većine cikličkih i zamornih parametara i ponašanja različitih skupina čelika.

Razvijeni pristup procjeni cikličkih i zamornih parametara na osnovi lako dostupnih monotonih značajki primjenom neuronskih mreža može poslužiti jednostavnijem, točnijem i bržem određivanju opteretivosti i trajnosti čeličnih dijelova i konstrukcija u raznim industrijskim djelatnostima (automobilskoj, zrakoplovnoj i dr.). Razvojem pouzdanog sustava za procjenu cikličkih i zamornih parametara smanjuje se potreba za eksperimentalnom karakterizacijom cikličkog i zamornog ponašanja materijala u ranim fazama razvoja proizvoda u kojima se vrednuju različiti materijali i konstrukcijska rješenja, što za posljedicu ima i smanjenje troškova i vremena potrebnih za razvoj proizvoda.

Summary:

Research presented in this doctoral thesis deals with estimation of cyclic Ramberg–Osgood and fatigue Basquin–Coffin–Manson parameters i.e. behaviour of steels on the basis of their monotonic properties using artificial neural networks.

For the purpose of this study, a large number of experimental data for steels were collected from relevant literature and online Materials Properties Database MATDAT. The overview of existing methods showed that separate consideration of steels divided according to the content of alloying elements could improve the accuracy of estimations of cyclic and fatigue parameters on the basis of their monotonic properties. Thus, steels were divided into unalloyed, low-alloy and high-alloy steels. Differences among cyclic and fatigue parameters of steels divided in such a way were formally confirmed by performing one-way analysis of variance and Welch's test. Additionaly, pairwise differences between groups were found to exist by performing post-hoc analyses. Further detailed statistical analysis was performed by means of forward selection, and monotonic properties relevant for estimation of each cyclic and fatigue parameter of each group of steels were established. Based on results of performed statistical analyses, estimation of cyclic and fatigue parameters using artificial neural networks was proposed, separately for each parameter and each steel subgroup, using only monotonic properties that proved to be relevant for estimation of particular parameter. Data collected were efficiently used by implementing kfold cross-validation technique in artificial neural network development. Results obtained by artificial neural networks have been evaluated in comparison with experimental values and values obtained by existing empirical estimation methods. For test data used, artificial neural networks proved to be more successful than empirical methods for estimation of most of the cyclic and fatigue properties and behaviour of different steel subgroups.

Estimation of cyclic and fatigue parameters from readily available monotonic properties using artificial neural networks can facilitate load capacity and durability analyses of steel components and structures during early stages of product design in various industrial applications (automotive, aeronautical etc.), reduce the need for experimental characterisation of material behavior and decrease time and costs of product development.

2.5 doktorske disertacije obranjene u 2016./2017. doctoral dissertations defended in 2016/2017

IME I PREZIME | NAME AND SURNAME:
Marko Fabić

POLJE | SCIENTIFIC FIELD:
Strojarstvo / Mechanical Engineering

NAZIV RADA | TITLE:
Model osiguranja kvalitete upravljanja projektima remonta rafinerijskih postrojenja
Quality assurance model in refinery plants turnaround project management

MENTOR(I) | SUPERVISOR(S):
prof. dr. sc. / Prof. D. Sc. Duško Pavletić

DATUM OBRANE | DATE OF DEFENCE:
12. 6. 2017.

Sažetak:

Provođenje projekta remonta kao najznačajnijeg poduhvata održavanja putem projektnog zadatka iznimno je složeno te nerijetko završava neuspjehom. Dostupna literatura u obliku knjiga i znanstveno-stručnih radova temelji se najčešće na osobnim iskustvima autora te na empirijskim podacima bez značajne znanstvene metodološke analize. Takvi podaci su vrlo često subjektivni, značajni kao smjernice u istraživanju, ali znanstveno neutemeljeni. Jedan od razloga nedostupnosti literature o projektima remonta je upravo složenost znanstvenog područja koje objedinjava tematiku upravljanja održavanjem, kvalitetom i projektima.

Svrha i ciljevi ovoga rada su definiranje koncepta modela osiguranja kvalitete upravljanja projektima remonta rafinerijskih postrojenja. Definiranje koncepta modela temelji se na šest varijabli međusobno povezanih putem pet hipoteza. Svih pet hipoteza modela testirano je logističkom regresijom. Dobiveni rezultati potvrdili su međuodnos varijabla te su sve hipoteze potvrđene. Najznačajniji doprinos je definiranje uspješnosti za projekt remonta te definiranje i implementacija varijable složenosti. Varijabla složenosti je od iznimnog značaja za uspješnost projekta remonta. Analizom modela potvrđeno je da se povećanjem složenosti smanjuje uspješnost. Na osnovi dobivenih rezultata zaključuje se da se povećanjem kvalitete pojedinih elemenata modela povećava uspjeh upravljanja projektom, čime se u konačnici pozitivno utječe na postizanje ciljeva, tj. uspješnost projekta remonta.

Nadalje, u sklopu ovog istraživanja provelo se djelomično testiranje postavljenog modela osiguranja kvalitete upravljanja projektima remonta rafinerijskih postrojenja na projektu remonta realiziranog tijekom 2013. godine u Rafineriji nafte Rijeka pod projektnim nazivom TA-13. Analiza postavljenog modela izvršena je na osnovi deskriptivnih podataka. Analizom je utvrđeno da deskriptivni podaci pružaju indikacije da bi postavljeni odnosi modela mogli biti i statistički potvrđeni, pod uvjetom da je uzorak reprezentativan i dovoljno velik.

Summary:

Implementation of the turnaround project, as the most significant maintenance project, through the project task is extremely complex, and often ends in failure. Available literature in the form of books, resesarch and professional papers are based mostly on personal experiences and the empirical data without significant scientific methodological analysis. Such data are subjective, significant as a guidelines in the study, but scientifically not substantiated. One of the reasons of unavailability of the literature on turnaround projects is the complexity of the scientific field that combines topics: maintenance management, quality management and project management.

The purpose and objectives of this study are defining the concept of quality assurance model of turnaround refinery plants project management. Defining the concept of the model is based on the six interrelated variables connected through the five hypotheses. All five of the model hypotheses were tested using logistic regression. The obtained results confirmed the interrelationship between variables, and all hypotheses were verified. The most significant contribution is defining the success for the turnaround project and definition and implementation of the complexity variable. The variable complexity is of great importance for the success of the turnaround project. The analysis of the model confirmed that the increase in the complexity decreases the success. Based on the obtained results it is concluded that the increase in the quality of individual elements of the model increases the success of project management, which ultimately has a positive effect on the achievement of the objectives ie. the success of the turnaround project.

Furthermore, as part of the research conducted testing of presented quality assurance model of turnaround refinery plants project management. on the turnaround project realized during 2013 in Rijeka Refinery under the project name TA-13. Analysis of the presented model is performed on the basis of descriptive data. The analysis shows that descriptive data provide indication that the set model relations could be statistically confirmed, provided that the sample is representative and large enough.

IME I PREZIME | NAME AND SURNAME:
Mauro Maretić

POLJE | SCIENTIFIC FIELD:
Strojarstvo / Mechanical Engineering

NAZIV RADA | TITLE:
Prilog razvoju bestrujnoga postupka otvrdnjavanja površine nehrđajućeg čelika
Contribution to the development of electroless process of hardening stainless steel surface

MENTOR(I) | SUPERVISOR(S):
prof. dr. sc. / Prof. D. Sc. Božo Smoljan

DATUM OBRANE | DATE OF DEFENCE:
20. 6. 2017.

Sažetak:

Povećanje tvrdoće površine austenitnog čelika postupkom bestrujnoga nanošenja Ni-P prevlake, uz postizanje adekvatne adhezivnosti prevlake, zahtjevan je zadatak inženjerstva površina. Cilj ovog istraživanja bio je proširenje dosadašnjih spoznaja u području bestrujnoga niklanja te proširenje spoznaja o samoj Ni-P prevlaci, sa svrhom poboljšanja svojstava nanesene prevlake i razvoja postupka bestrujnoga nanošenja Ni-P prevlake na austenitni čelik. Osnovna razlika postupka bestrujnoga niklanja i ostalih galvanskih postupaka je u tome što se postupak bestrujnoga niklanja izvodi bez korištenja izvora električne struje, uranjanjem supstrata u elektrolit, pri čemu dolazi do disocijacije površinskih atoma supstrata, uz istovremenu disocijaciju elektrolita. Prevlaka se stvara vezivanjem kationa nikla iz elektrolita sa negativno nabijenom površinom supstrata. Provedena opsežna teorijska i eksperimentalna istraživanja dovela su do novih saznanja koja su omogućila optimizaciju tehnološkog procesa postupka bestrujnoga nanošenja Ni-P prevlake na osnovni materijal – austenitni čelik oznake X5CrNiMo17-12-2 (HRN EN). U ovom radu po prvi puta predložena je aktivacija površine

Summary:

Hardening of austenitic stainless steel surface by electroless deposition of Ni-P coating and achieving its adequate adhesion is a demanding task of surface engineering. Widening of the existing knowledge of electroless nickel plating and knowledge regarding Ni-P layer itself, with purpose of improvement of properties of the deposited layer and development of the electroless Ni-P plating process, was the main goal of this research. In comparison to other galvanic processes, electroless nickel plating is performed with no electricity source used, by immersion of material in the electrolyte which causes dissociation of material's surface atoms and electrolyte dissociation at the same time. Coating is created by nickel cations from electrolyte, which are binding to the negatively charged material surface. By theoretical and experimental research, new findings, which enabled optimization of technological process of electroless Ni-P plating of the base material – X5CrNiMo17-12-2 (HRN EN) austenitic stainless steel, have been found. In this thesis, activation of the surface of the austenitic steel by adding an aluminum electrode in the electroless nickel plating has been proposed for the first time.

austenitnog čelika dodavanjem aluminijske elektrode u procesu bestrujnoga niklanja austenitnog nehrđajućeg čelika. Na taj način izostavljena je aktivacija površine austenitnog čelika „nickel strike“ postupkom stvaranja tankog sloja nikla na površini, što u dosadašnjoj praksi nije bilo moguće. Također, utvrđeni su optimalni parametri postupka toplinske obrade, kojima se poboljšava adhezivnost nanesene Ni-P prevlake, dok su analizom mikrostrukture ustanovljene promjene u mikrostrukturi koje poboljšavaju adhezivnost nanesene prevlake. Uz adekvatna svojstva prevlake, za potrebe industrijske proizvodnje bitna je i cijena tehnološkog postupka nanošenja prevlake. Razvijeni tehnološki proces nanošenja Ni-P prevlake na austenitni čelik aktivacijom površine čelika aluminijskom elektrodom proširio je spektar tehnoloških procesa nanošenja Ni-P prevlake i dao veću mogućnost odabira ekonomičnijeg postupka u procesu proizvodnje, ovisno o vrsti proizvodnje i obliku izradaka, što za posljedicu ima veću konkurentnost proizvođača na tržištu. Ovim istraživanjima otvoreni su novi horizonti u razvoju postupaka bestrujnoga nanošenja Ni-P prevlaka na austenitni čelik te doneseni zaključci koji mogu utjecati na poboljšanje postupka bestrujnoga nanošenja Ni-P prevlake, kao i na ekonomičniju proizvodnju.

In this way, activation of the surface by nickel strike method of producing a thin nickel layer on the surface has been left out, which was not possible in practice so far. Optimal parameters of heat treatment which increase adhesion of deposited Ni-P coating have been determined and by analysis of microstructure, microstructural changes which increase adhesion of the deposited layer have been determined as well. For the industrial purpose, except adequate mechanical properties of the coating, cost of technological process of deposition is important as well. Developed technological process of deposition of Ni-P coating on the austenitic steel by activation of the steel surface using aluminum electrode has expanded the range of available technological processes of deposition of Ni-P coating, and has given the greater possibility of choosing more economical production procedure, depending on the production type and specimen shape. Consequently, it gives greater competitiveness to manufacturers. By this research, new horizons in the development of electroless deposition of Ni-P coating on the austenitic steel have been opened. Conclusions of this research improve process and cost effectiveness of production of these coatings.

IME I PREZIME | NAME AND SURNAME:
Ivan Volarić

POLJE | SCIENTIFIC FIELD:
Elektrotehnika / Electrical Engineering

NAZIV RADA | TITLE:
Poboljšanje koncentracije signala u vremensko-frekvencijskoj domeni primjenom adaptivnog komprimiranog uzorkovanja
Signal concentration enhancement in the time-frequency domain using adaptive compressive sensing

MENTOR(I) | SUPERVISOR(S):
prof. dr. sc. / Prof. D. Sc. Viktor Sučić

DATUM OBRANE | DATE OF DEFENCE:
4. 9. 2017.

Sažetak:

Signali s vremenski promjenjivom frekvencijom najbolje se prikazuju u zajedničkoj vremensko-frekvencijskoj domeni gdje su trenutne frekvencije komponentni glavne značajke signala. Međutim, najčešće korištene metode računanja vremensko-frekvencijskih distribucija (VFD) uvode neželjene artefakte, otežavajući njihovu interpretaciju. Jedan od načina za prevladavanje navedenog ograničenja je metoda koja koristi komprimirano uzorkovanje (KU) za uklanjanje artefakata, dok je neizbježni gubitak rezolucije smanjen primjenom rekonstrukcijskog algoritma za rješavanje bezuvjetnog optimizacijskog problema.

Postojeća metodologija primjene KU uvelike se oslanja na korisnički definiranim parametrima, posebice na području KU i na ulaznim parametrima rekonstrukcijskog algoritma, koji se najčešće odabiru eksperimentalno. Ovakav pristup rezultirao je nepouzdanošću opisane metode, pošto parametri odabrani za jedan signal neće nužno rezultirati dobrim rješenjem za neki drugi signal.

U ovoj doktorskoj disertaciji predložena su tri algoritma, rezultirajući adaptivnim rješenjem opisanog problema. Prvi predloženi algoritam adaptivno odabire KU područje, dok su preostala dva predložena algoritma adaptivni algoritmi za rekonstrukciju signala temeljeni na pravilu presjecišta intervala pouzdanosti i na Renyovoj entropiji. Predloženi rekonstrukcijski algoritmi mogu se koristiti u kombinaciji s algoritmom za odabir KU područja u svrhu dodatnog poboljšanja koncentracije rezultirajuće VFD. Predloženi algoritmi testirani su na sintetički generiranim signalima, kao i na signalima iz stvarnog života, a dobiveni rezultati su uspoređeni sa rezultatima dobivenim korištenjem suvremenih algoritma za VFD rekonstrukciju.

Summary:

Signals with the time-varying frequency content are best represented in the joint time-frequency domain, with the components instantaneous frequency laws being their key nonstationary features. However, the most commonly used methods for the time-frequency distribution (TFD) calculation generate unwanted artifacts, making their interpretation more difficult. In order to overcome this limitation, a number of methods have been proposed utilizing the compressive sensing (CS) for the artifact removal, while the unavoidable resolution loss is reduced by the signal reconstruction algorithm which, in its core, solves a linear unconstrained optimization problem.

The performance of the existing methodology relies primarily on the user-predefined parameters, namely the CS area and input parameters of the sparse reconstruction algorithm, which are in most cases chosen experimentally. This approach has resulted in the unreliability of the sparse TFD methods, as the parameters which perform well for one signal will not necessarily perform equally for a different signal.

In order to overcome this problem, three adaptive methods are proposed in this thesis, jointly resulting in an adaptive data-driven solution. The first proposed algorithm, adaptively detects the CS area, while the remaining two algorithms are adaptive sparse reconstruction algorithms based on the intersection of confidence intervals rule and the localized Renyi entropy, respectively. The proposed adaptive sparse reconstruction algorithms can be used in the conjunction with the adaptive CS area selection method in order to increase the concentration of the resulting sparse TFD even further. The here-proposed methods are tested on synthetical and real-life signals, and the obtained results are compared with the results obtained with the currently available state-of-the-art sparse TFD reconstruction methods.

2.5 doktorske disertacije obranjene u 2016./2017. doctoral dissertations defended in 2016/2017

2.6 aktivnosti, zbivanja i konferencije
activities, events and conferences

2.6.1 intech2017

Konferenciju IN-TECH 2017 organizirala je udruga World Association for Innovative Technologies (WAIT) i održana je u Ljubljani, Slovenija, od 11. do 13. rujna 2017. godine.

Konferencija promovira razvoj novih tehnologija, te njihovu implementaciju u industriji. Konferencija ne bi bila moguća bez međunarodne suradnje Sveučilišta u Rijeci - Tehničkog fakulteta i Tehničkog Sveučilišta u Pragu - Strojarskog fakulteta. To je bila osma po redu IN-TECH konferencija; prijašnje su bile u Pragu, Bratislavi, Rijeci, Budimpešti, Leiriji, Dubrovniku i Pragu.

Konferencija je održana na Sveučilištu u Ljubljani - Strojarskom Fakultetu. Sudionici su na raspolaganju imali tri konferencijske dvorane za prezentacije i poster sekciju tijekom konferencije. Na IN-TECH 2017 konferenciji bilo je prisutno preko 100 sudionika iz 25 zemalja sa preko 90 znanstvenih i stručnih referata.

Conference In-Tech 2017 was organized by the World Association for Innovative Technologies (WAIT) and was held in Ljubljana, Slovenia, from September 11th to September 13th, 2017.

The conference promotes the development of new technologies and their implementation in the industry. This conference would not be possible without the international cooperation of the University of Rijeka - Faculty of Engineering and the Czech Technical University in Prague - Faculty of Mechanical Engineering. It was the 8th IN-TECH conference: the previous ones were held in Prague, Bratislava, Rijeka, Budapest, Leiria, Dubrovnik and Prague.

The conference was held at University of Ljubljana – Faculty of Mechanical Engineering. Participants had had three conference halls for their scientific discussions and poster session. At IN-TECH 2017 100 participants from 25 countries were present, with about 90 scientific and technical papers presented.

Konferenciju je otvorio predsjednik WAIT organizacije prof. dr. sc. Zlatan Car, predstavnik Sveučilišta u Rijeci, koji se u uvodnom govoru zahvalio svim sudionicima, naglasivši važnost međunarodne suradnje zbog povezanosti znanstvenika iz različitih područja čime se povećavaju znanstveni doprinosi. Izv. prof. dr. sc. Tomaž Pepelnjak, kao domaćin sa Sveučilišta u Ljubljani, je istaknuo značaj promoviranja i razvoja mladih znanstvenika i njihove suradnje na međunarodnoj razini, što je jedna od intencija ovoga skupa. U naredna dva dana u sklopu konferencije održano je 60 prezentacija znanstvenih radova. Također, na konferenciji je bilo izloženo preko 30 postera. Konferencija je završila ceremonijom zatvaranja na kojoj su dodijeljene nagrade najboljim radovima, posterima i izlaganjima.

The conference was opened by the president of the WAIT organization Prof. D. Sc. Zlatan Car representative from University of Rijeka who in his opening speech thanked all the participants and pointed out the importance of international cooperation because of the association of scientists from different areas in order to achieve significant scientific contributions. Assoc. Prof. D. Sc. Tomaž Pepelnjak as host form University of Ljubljana pointed out significance of promotion and development of young scientists and their cooperation on the international level, which is one of the intentions of this conference. In the next two days, about 60 scientific papers were presented. Also at the conference over 30 posters were presented. The conference ended with closing ceremony at which best papers, posters and presentations were awarded.

2.6.2 mipro2017

MIPRO – 40. međunarodni skup informacijskih i komunikacijskih tehnologija, elektronike i mikroelektronike održao se u Opatiji u razdoblju od 22. svibnja do 26. svibnja 2017. godine. Tehnički fakultet Sveučilišta u Rijeci bio je jedan od suorganizatora ovog najvećeg nekomercijalnog skupa u Hrvatskoj i šire. Osnovna svrha skupa je predstaviti i diskutirati o glavnim trendovima u razvoju i primjeni informacijsko-komunikacijskih tehnologija u industriji, edukaciji, znanosti i lokalnoj upravi. U sklopu MIPRO skupa, međunarodni programski odbor u kojem aktivno djeluju i djelatnici Tehničkog fakulteta, pripremio je bogat program i održano je 11 konferencija, 1 specijalna sesija, 8 okruglih stolova, radionica i niz drugih događanja. Ove godine MIPRO je okupio više od 1200 akreditiranih učesnika, objavljeni su zbornici radova sa skoro 400 radova s međunarodnom recenzijom autora iz 30 zemalja.

MIPRO – The 40th International Convention on Information and Communication Technologies, Electronics and Microelectronics was held in Opatija from May 22 until May 26, 2017. The Faculty of Engineering of Rijeka University was one of the co-organizers of this largest non-commercial ICT convention in Croatia and beyond. The main purpose of this event was to present and discuss the main trends in development and application of information-communication technologies in industry, education, science and local governance. As part of the MIPRO conference, the international program committee in which active employees of the Faculty of Engineering are active, prepared a rich program. There were 11 conferences, 1 special session, 8 roundtables, and a series of other events. This year, MIPRO was attended by more than 1,200 registered participants, and the conference proceedings were published containing almost 400 papers with an international review and authors from 30 countries.

Svečano otvorenje MIPRO 2017.
/ Opening ceremony of MIPRO 2017

2.6.3 msb2017

Ove godine Tehnički fakultet Sveučilišta u Rijeci organizirao je specijalnu sekciju pod nazivom „Modeliranje ponašanja sustava“, kao kolocirajući događaj na 40. ICT MIPRO konferenciji. Specijalna sekcija održana je 23. svibnja 2017. godine u Opatiji, u Republici Hrvatskoj.

Osnovni cilj ove specijalne sekcije bio je prikupljanje znanja i iskustava iz područja modeliranja ponašanja sustava iz različitih domena primjene te omogućavanje foruma za prezentaciju, diskusiju i diseminaciju najnovijih znanstvenih dostignuća u području modeliranja ponašanja sustava. Posebno se poticala prijava radova koji opisuju rad u nastanku, prezentacije alata, tehničkih radova, te disusiju o izazovima, kao mogućih budućih smjerova istraživanja u tom području.

Sve pristigle prijave recenzirao je međunarodni programski odbor. Ukupno je prihvaćeno 11 znanstvenih radova objavljenih kao dio MIPRO zbornika radova dostupnih u IEEE Xplore bazi i prezentiranih na specijalnoj sekciji. Konferencija je otvorena pozvanim predavanjem profesora Khalila D. Drira sa Sveučilišta u Toulouse u Francuskoj, s predavanjem na temu “Multiscale Modelling: a Perspective for Mastering Architectural Design Complexity in Internet of Thing Platforms and Smart Applications”.

Ova specijalna sekcija organizirana je u sklopu znanstvenog projekta “Evolving Software Systems: Analysis and Innovative Approaches for Smart Management” (EVOSOFT) kojega financira Hrvatska zaklada za znanost pod brojem UIP-2014-09-7945, uz potporu istraživanjima Sveučilišta u Rijeci broj 13.09.2.2.16.

This year, the Faculty of Engineering in Rijeka organised a special session titled “Modelling System Behaviour” as a catching event at the 40th ICT MIPRO conference. The MSB 2017 special session was held on May 23, 2017, in Opatija, Croatia.

The main objective of the MSB workshop was to collect knowledge and experience from the area of modelling system behaviour in various domains of application and to provide a forum for presentation, discussion and dissemination of the latest scientific achievements in the area of modelling system behaviour. The workshop particularly encouraged submission of papers describing work in progress, the presentation of tools, technical work, and discussion of challenges as possible future directions of research in this area.

All submissions received were reviewed by the International Programme Board. In total 11 scientific papers were accepted, published as part of the MIPRO proceedings available in IEEE Xplore database and presented at the conference. The conference was opened by the invited lecturer Prof. Khalil D. Drira from the University of Toulouse in France, who gave a lecture titled “Multiscale Modelling: A Perspective for Mastering the Architectural Design Complexity in Internet of Thing Platforms and Smart Applications”.

This special section was organized within the scientific project “Evolving Software Systems: Analysis and Innovative Approaches for Smart Management” (EVOSOFT) funded by the Croatian Science Foundation project UIP-2014-09-7945 and by the University of Rijeka Research Grant 13.09.2.2.16.

Predavanje s MSB konferencije, Opatija, 23. svibnja 2017.
/ Lecture at the MSB conference, Opatija, May 23, 2017.

2.6.4 4. ljetna škola CAD modeliranja
the 4th CAD modelling summer school

Tehnički fakultet Sveučilišta u Rijeci, u suradnji s Prvom sušačkom hrvatskom gimnazijom u Rijeci, organizirao je 4. ljetnu školu CAD modeliranja, održanu od 26. do 30. lipnja 2017. godine. Neki od ciljeva bili su stjecanje osnovnih znanja potrebnih za oblikovanje i interpretaciju inženjerske grafike korištenjem tradicionalnih alata i računala te uočavanje važnosti i uloge grafike za vizualizaciju i dokumentiranje. Dodatni poticaj za provedbu ljetne škole bila je popularizacija znanosti i Tehničkog fakulteta kod učenika srednjih škola, posebno kod polaznika gimnazijskih programa.

PROGRAM RADA ŠKOLE

Kroz predavanja i praktični rad polaznici su se upoznali s osnovama tradicionalnih i CAD tehnika pri izradi 2D i 3D geometrijskog modela. Tradicionalne tehnike uključuju skiciranje, a CAD tehnike uključuju programsku opremu za izradu tehničke dokumentacije Autodesk AutoCAD 2016. Polaznicima su također pokazane mogućnosti paketa programske opreme za izradu parametarskih modela CATIA V5-6R2016 (Dassault Systèmes). Na kraju rada škole prezentirana im je oprema koja služi za brzu izradu prototipa (3D printer) kao i sama mogućnost primjene formirane baze podataka 3D CAD modela predmeta nastale modeliranjem u sklopu nastave ili korištenjem 3D skenera.

POPIS PREDAVAČA

Kao organizatori i predavači u radu škole od 2014. godine sudjelovali su prof. dr. sc. Gordana Marunić, doc. dr. sc. Vladimir Glažar, doc. dr. sc. Goran Gregov i poslijedoktorand dr. sc. Ervin Kamenar. Školu je do danas uspješno završilo više od 80 polaznika, uglavnom učenika trećih i četvrtih razreda srednjih škola iz Rijeke i okolice.

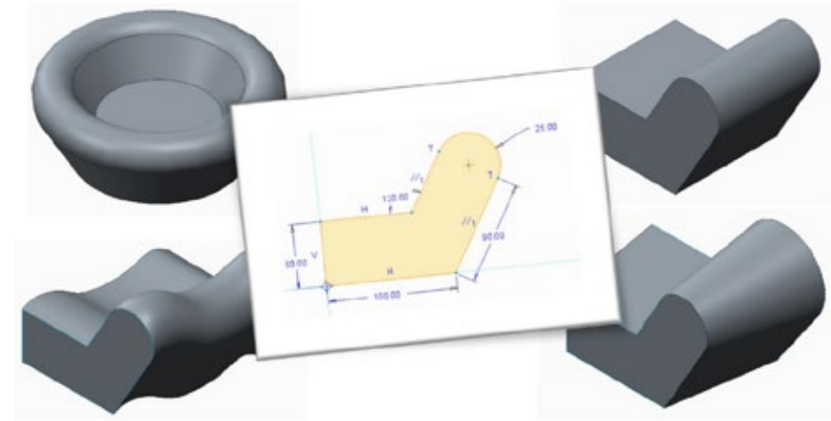
The Faculty of Engineering of the University of Rijeka organised in a collaboration with the First Croatian Grammar School of Sušak in Rijeka the 4th Summer School in CAD Modelling, which was held from 26th to 30th June 2017. It was intended to enable the participants to acquire the basic knowledge needed for design and interpretation of the engineering graphics using traditional tools and computers, as well as to appreciate the significance and role of graphics in visualisation and documentation. An additional objective for the organisation of the Summer School was the popularisation of science and promotion of the Faculty of Engineering in high schools, especially grammar schools.

PROGRAMME OF THE SCHOOL

Through lectures and practical work, the participants were acquainted with the basics of traditional and CAD techniques for creating 2D and 3D geometric models. Traditional techniques included sketching, while CAD techniques included Autodesk AutoCAD 2016 software for creating technical documentation. Participants were also presented with the possibilities of the software package for the creation of parametric models CATIA V5-6R2016 (Dassault Systèmes). At the end of the School, they were familiarized with the equipment which is used for rapid prototyping (3D printer) and also with the possibility to apply the database of the 3D CAD model of objects which were modelled within classes or obtained using the 3D scanner.

LIST OF LECTURERS

As of 2014, Prof. D. Sc. Gordana Marunić, Assist. Prof. D. Sc. Vladimir Glažar, Assist. Prof. D. Sc. Goran Gregov and D. Sc. Ervin Kamenar (postdoc) have participated in the activity of the School as organisers and lecturers. Moreover, more than 80 participants have attended the School to date, mainly third and fourth year high school students from Rijeka and the surrounding areas.



2.6.5 my first conference

U zajedničkoj organizaciji Tehničkog, Građevinskog i Pomorskog fakulteta Sveučilišta u Rijeci, 28. rujna 2017. godine održana je prva konferencija za doktorande iz područja Tehničkih znanosti. Naziv konferencije je My First Conference i održana je na engleskom jeziku. Osim dva pozvana predavača, sudjelovalo je i 29 doktoranada i diplomanata. Iako je konferencija organizirana prvenstveno za studente Sveučilišta u Rijeci, sudjelovanje na konferenciji omogućeno je i studentima sa svih drugih sveučilišta. Namjera je organizatora da se ova konferencija održava jednom godišnje, u zadnjem tjednu rujna.

Konferencija je organizirana prvenstveno za studente doktorskih studija i ambicioznije studente diplomskih studija inženjerstva. Radi privlačenja čim većeg broja sudionika, sudjelovanje na konferenciji je besplatno. Osnovni razlozi za organizaciju ovakve konferencije jesu sljedeći:

- Pozitivna kritika aktualnih istraživanja doktorskih studenata. U skladu s tim, radovi ne moraju predstavljati dovršena istraživanja.
- Doktorski studenti imaju mogućnosti usavršiti prezentacijske vještine.
- Povezivanje studenata s različitih institucija, što bi u konačnici trebalo rezultirati interdisciplinarnim istraživačkim projektima.
- Okruženje međunarodne konferencije simulira se uporabom engleskog jezika kao radnog jezika konferencije.
- Većina doktorskih studenata imaju obvezu redovitog javnog predstavljanja rezultata istraživanja, te se sudjelovanjem na konferenciji regulira i ova obveza.

Po pitanju tematike, pozvana predavanja bavila su se autorskim pravima u znanosti i sučelju između mozga i računala, popularno poznatim kao “čitač misli”. Redoviti radovi bavili su se temama iz termodinamike i mehanike, alternativnim izvorima energije, problemima iz domene pomorstva i oceanskog inženjerstva, softverskog inženjerstva, elektrotehnike te inženjerstva općenito.

In the organization of the Faculty of Engineering, Civil Engineering and Maritime Studies of the University of Rijeka, the first conference for Ph.D. students in the field of engineering sciences was held on 28 September 2017. The name of the conference is My First Conference and it was held in English. In addition to two invited lecturers, 29 Ph.D. students and graduates participated. Although the conference was organized primarily for students of the University of Rijeka, students from other universities were also able to participate. The organizers' intention is to hold this conference once a year, in the last week of September.

The conference is organized primarily for students of doctoral studies and more ambitious graduate students of engineering. To attract as many participants as possible, the participation at the conference is free. The main reasons for organizing this conference are:

- Positive criticism of the current research of doctoral students. Thus, the research does not have to be completed.
- Doctoral students have the opportunity to improve their presentation skills.
- Connecting students from different institutions, which should ultimately result in interdisciplinary research projects.
- The international conference environment is simulated by using English as the working language of the conference.
- Most doctoral students must regularly present the results of their research, and by participating in the conference, this obligation is also regulated.

Regarding the topic, invited lectures were concerned with copyright in science and the interface between the brain and the computer, popularly known as the "reader of thoughts". Regular papers focused on the topics of thermodynamics and mechanics, alternative energy sources, marine and ocean engineering problems, software engineering, electrical engineering and engineering in general.

2.6.6 hrzz projekti
hrzz projects

NAZIV PROJEKTA | PROJECT TITLE:
OPTIMIZIRANJE I MODELIRANJE TERMALNIH PROCESA MATERIJALA
OPTIMISATION AND MODELLING OF THERMAL PROCESSES OF MATERIALS – *OMOTPOM*

Glavni istraživač
prof. dr. sc. Božo Smoljan, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Članovi istraživačkog tima
prof. dr. sc. Branimir Lela, Fakultet elektrotehnike, strojarstva i brodogradnje, Sveučilište u Splitu, Hrvatska
prof. dr. sc. Dražen Živković, Fakultet elektrotehnike, strojarstva i brodogradnje, Sveučilište u Splitu, Hrvatska
prof. dr. sc. Domagoj Rubeša, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Loreta Pomenić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Zvonimir Kolumbić, Filozofski fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Dario Iljkić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Sunčana Smokvina Hanza, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Mauro Maretić, Tehnička škola, Pula, Hrvatska
Lovro Štic, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Andrej Borić, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Neven Tomašić, poslijediplomant, Reneteh Ogulin d.o.o., Hrvatska
Hrvoje Novak, poslijediplomant, NMP Produkt d.o.o. , Hrvatska
Goran Salopek, poslijediplomant, Filozofski fakultet, Sveučilište u Rijeci, Hrvatska
Zvonimir Dadić, poslijediplomant, Fakultet elektrotehnike, strojarstva i brodogradnje, Sveučilište u Splitu, Hrvatska
Nikša Čatipović, poslijediplomant, Fakultet elektrotehnike, strojarstva i brodogradnje, Sveučilište u Splitu, Hrvatska

Sažetak projekta

Termalni procesi materijala među najvažnijim su čimbenicima u proizvodnji i povećanju pouzdanosti inženjerskih komponenti. Termalni procesi poput toplinske obrade, lijevanja, oblikovanja u vrućem stanju i zavarivanja omogućuju proizvodnju komponenti zahtijevanog oblika i zahtijevanih svojstava. Cilj optimiziranja i modeliranja termalnih procesa materijala je razvoj modela i računalnih simulacija termalnih procesa materijala te primjene alata i kalupa u termalnim procesima.

Tijekom termalnih procesa materijala proučavat će se prijenos topline, mikrostrukturne pretvorbe, mehanička svojstva te distorzije i zaostala naprezanja, za što je potreban ujedinjeni termo-mehaničko-metalurški pristup.

Razvit će se računalni programi za simulaciju prijenosa topline, mikrostrukturnih transformacija, mehaničkih svojstava, distorzija i zaostalih naprezanja. Programi će se razvijati uzimanjem u obzir zahtijevanog oblika obratka, zahtijevane raspodjele mehaničkih svojstava i raspodjele mikrostrukture, a pritom uz zahtjeve izbjegavanja pukotina i minimiziranja distorzija i zaostalih naprezanja.

Principal investigator
Prof. Božo Smoljan, D. Sc., Faculty of Engineering, University of Rijeka, Croatia

Team members
Prof. Branimir Lela, D. Sc., Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia
Prof. Dražen Živković, D. Sc., Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia
Prof. Domagoj Rubeša, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Loreta Pomenić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Zvonimir Kolumbić, D. Sc., Faculty of Humanities and Social Science, Rijeka, Croatia
Assist. Prof. Dario Iljkić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Sunčana Smokvina Hanza, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Mauro Maretić, D. Sc., Technical High School, Pula, Croatia
Lovro Štic, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia
Andrej Borić, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia
Neven Tomašić, D. Sc. student, Reneteh Ogulin d.o.o., Croatia
Hrvoje Novak, D. Sc. student, NMP Produkt d.o.o. , Croatia
Goran Salopek, D. Sc. student, Faculty of Humanities and Social Sciences, University of Rijeka, Croatia
Zvonimir Dadić, D. Sc. student, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia
Nikša Čatipović, D. Sc. student, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia

Project summary

Thermal processing of materials is one of the most important factors in production and reliability of engineering components. All varieties of material thermal processing technology, from heat treatment, casting and hot metal forming, to the welding, not only manufactures workpieces of required shapes but also optimizes their final properties. Objective of the optimisation of thermal processes of materials is development of models and computer simulations of thermal processes of materials and study of optimizing the application of tools and dies in thermal processing of materials.

During the thermal processing, physical processes and material properties such as: heat transfer, microstructure transformations, mechanical properties and distortions and residual stresses will be studied primarily. To solve these tasks, joined thermo-mechanic-metallurgical approach will be required. The computer program for simulation of heat transfer, microstructure transformations, mechanical properties, distortions and residual stresses during the thermal processes will be analyzed.

To meet the needs of industry to control and optimize the thermal process parameters, developed computer programs for simulation of the thermal processes will be accomplished by considering the achievement of: Required workpiece shape; Desired mechanical property distribution; Desired microstructure distribution by: Avoidance of cracking; Reduction of both distortion and residual stresses.

NAZIV PROJEKTA | PROJECT TITLE:
ZELENIJI PRISTUP PROJEKTIRANJU BRODA I OPTIMALNOM PLANIRANJU RUTE
GREENER APPROACH TO SHIP DESIGN AND OPTIMAL ROUTE PLANNING - GASDORP

Glavni istraživač
prof. dr. sc. Jasna Prpić – Oršić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Članovi istraživačkog tima
prof. dr. sc. Odd Magnus Faltinsen, Norveško sveučilište znanosti i tehnologije, Trondheim, Norveška
prof. dr. sc. Roko Dejhalla, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Tomislav Mrakovčić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Vladimir Medica, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof.dr. sc. Duško Pavletić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Igor Rudan, Pomorski fakultet, Sveučilište u Rijeci, Hrvatska
izv. prof. dr. sc. Nikola Račić, Pomorski fakultet, Sveučilište u Splitu, Hrvatska
doc. dr. sc. Ozren Bukovac, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Principal investigator
Prof. Jasna Prpić – Oršić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia

Team members
Prof. Odd Magnus Faltinsen, D. Sc., Norwegian University of Science and Technology, Trondheim, Norway
Prof. Roko Dejhalla, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Tomislav Mrakovčić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Vladimir Medica, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Duško Pavletić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Igor Rudan, D. Sc., Faculty of Maritime Studies, University of Rijeka, Croatia
Assoc. prof. Nikola Račić, D. Sc., Faculty of Maritime Studies, University of Split, Croatia
Assist. prof. Ozren Bukovac, D. Sc., Faculty of Engineering, University of Rijeka, Croatia

doc. dr. sc. Dunja Legović, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Marko Valčić, Pomorski fakultet, Sveučilište u Rijeci, Hrvatska
Natalija Vitali, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Sažetak projekta

Točan izračun održive brzine broda u stvarnim uvjetima na moru važan je iz ekonomskih i ekoloških aspekata. Pouzdana procjena gubitka brzine broda u stvarnim uvjetima okoliša omogućuje točnija predviđanja povećanja snage i potrošnje goriva kao i emisiju plinova. Tehnološka poboljšanja na brodovima, kao što su poboljšani dizajn trupa i unapređenje energetskih i pogonskih sustava, mogla bi potencijalno smanjiti emisiju CO2 do 35 %. Ove se mjere djelotvorno mogu kombinirati s drugim operativnim mjerama, kao što su optimalno planiranje rute.

Predloženo se istraživanje provodi u tri glavna područja: 1. poboljšanje metodologije procjene brzine broda, potrošnje goriva i emisije stakleničkih plinova u stvarnim vremenskim uvjetima;
2. optimizacija brodskog trupa i brodskog porivnog sustava koji rade u stvarnom vremenskim uvjetima;
3. optimizacija plovidbene rute, uzimajući u obzir sve relevantne parametre.

Cilj je poboljšati značajke broda vodeći računa o pitanju zaštite okoliša, stvaranje tzv eko-učinkovitog ili "zelenog" broda.

Assist. prof. Dunja Legović, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. prof. Marko Valčić, D. Sc., Faculty of Maritime Studies, University of Rijeka, Croatia
Natalija Vitali, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia

Project summary

The accurate calculation of attainable ship speed at actual sea is essential from both the economic and environmental standpoint. Reliable ship speed loss estimation under real environmental conditions allows a more accurate prediction of power increase and fuel consumption as well as gas emissions from ships. Nowadays, this second issue has become very important because of the problem of global warming. Following the increasing awareness of the environmental and human health concerns of shipping, legislative measures have been taken on both national and global level, strictly determining (as of January 1, 2013) that new ships over 400 gross tonnage, to comply with the regulations, should have emissions of CO2 under limiting value. Technological enhancement of ships, like improved hull design as well as power and propulsion systems could potentially reduce CO2 emission up to 35 %. These measures could effectively be combined with several other operational measures, such as weather routing and voyage planning in order to ensure minimized fuel consumption and CO2 emissions from ships on every voyage.

The proposed research will be conducted in three main areas: 1. Improvement of the methodology of estimation of ship speed, fuel consumption and greenhouse gases (GHG) emissions (especially CO2) in real weather conditions, 2. Optimization of the ship hull (bow and stern) and ship propulsion system operating in real weather condition, 3. Optimization of the ship route by taking into account all the relevant parameters: weather prediction, attainable ship speed on waves, the main engine performance and navigation constrains.

The objective is to improve the ship design and performance taking into consideration the environmental issue, creating the so called eco-efficient or “green” ship. The project team consists of scientists who are experts in the naval architecture, mechanical engineering and marine engineering field, which allows solving the afore-mentioned problem at a multidisciplinary level.

NAZIV PROJEKTA | PROJECT TITLE:
POVEĆANJE ENERGETSKE UČINKOVITOSTI IZMJENJIVAČA TOPLINE - HEXENER
ENHANCEMENT OF THE HEAT EXCHANGER ENERGY EFFICIENCY – HEXENER

Glavni istraživač
prof. dr. sc. Anica Trp, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Članovi istraživačkog tima
prof. dr. sc. Kristian Lenić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Branimir Pavković, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Igor Bonefačić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Vladimir Glažar, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Igor Wolf, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Paolo Blecich, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Boris Delač, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Mateo Kirinčić, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Fran Torbarina, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Sažetak projekta

Predmet istraživanja projekta je povećanje energetske učinkovitosti izmjenjivača topline. Istraživanja će biti usmjerena na analizu izmjene topline i povećanja energetske učinkovitosti raznih tipova lamelnih izmjenjivača topline kao i latentnog spremnika topline kojega možemo smatrati posebnim tipom izmjenjivača. Znanstveno-istraživački ciljevi obuhvaćaju: numeričko i eksperimentalno istraživanje utjecaja geometrijskih karakteristika izmjenjivača topline na fizikalni proces izmjene topline i učinkovitost, numeričko i eksperimentalno istraživanje utjecaja pogonskih uvjeta izmjenjivača topline na fizikalni proces izmjene topline i učinkovitost, numeričko i eksperimentalno istraživanje utjecaja pogonskih uvjeta, geometrije i karakteristika akumulatora topline na izmjenu topline i učinkovitost latentnih spremnika topline te istraživanje pohrane energije u sustavu obnovljivih izvora energije s latentnim spremnikom. Očekivani znanstveni doprinos istraživanja je proširenje postojećih znanstvenih spoznaja vezanih za povećanje energetske učinkovitosti lamelnih izmjenjivača topline, latentnog spremnika topline kao komponente sustava te cijelog sustava obnovljivih izvora energije s latentnim spremnikom.

Principal investigator
Prof. Anica Trp, D. Sc., Faculty of Engineering, University of Rijeka, Croatia

Team members
Prof. Kristian Lenić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Branimir Pavković, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Igor Bonefačić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Vladimir Glažar, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Igor Wolf, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Paolo Blecich, D. Sc., Postdoctoral researcher, Faculty of Engineering, University of Rijeka, Croatia
Boris Delač, D. Sc., Postdoctoral researcher, Faculty of Engineering, University of Rijeka, Croatia
Mateo Kirinčić, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia
Fran Torbarina, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia

Project summary

The research topic of the project is enhancement of the heat exchanger energy efficiency. Investigations will focus on the analysis of heat transfer and the enhancement of energy efficiency of various fin and tube heat exchangers, as well as of the latent heat storage unit, which is as a special type of heat exchanger. Scientific research objectives include: numerical and experimental investigation of the influence of the heat exchanger geometry characteristics on the physical process of heat transfer and efficiency, numerical and experimental investigation of the influence of the heat exchanger operating conditions on the physical process of heat transfer and efficiency, numerical and experimental investigation of the influence of the latent heat storage operating conditions, geometry and phase change material characteristics on heat transfer and efficiency, as well as analysis of energy storage in the renewable energy system with the latent heat storage unit. The expected scientific contribution of the research is the increase of existing scientific knowledge related to the energy efficiency of fin and tube heat exchangers, latent heat storage as a component of the system and the overall system of renewable energy sources with the latent heat storage.

NAZIV PROJEKTA | PROJECT TITLE:
PROGRAMSKI SUSTAVI U EVOLUCIJI: ANALIZA I INOVATIVNI PRISTUPI PAMETNOM UPRAVLJANJU - EVOSOFT
EVOLVING SOFTWARE SYSTEMS: ANALYSIS AND INNOVATIVE APPROACHES FOR SMART MANAGEMENT) EVOSOFT

Glavni istraživač
prof. dr. sc. Tihana Galinac Grbac, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Članovi istraživačkog tima
prof. dr. sc. Per Runeson, Sveučilište u Lundu, Švedska
prof. dr. sc. Darko Huljenić, Ericsson Nikola Tesla, Hrvatska
prof. dr. sc. Fabrizio Montesi, Sveučilište južne Danske, Danska
izv. prof. dr. sc. Ivan Štajduhar, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Goran Mauša, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Joao Pita da Costa, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Ana Vranković, student, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Nikola Tanković, student, Odjel za Informacijsko-komunikacijske tehnologije, Sveučilište Juraj Dobrila u Puli, Hrvatska
Sanja Grbac Babić, student, Politehnika u Puli, Hrvatska
Jean Petrić, student, Sveučilište Hertfordshire, UK

Principal investigator
Prof. Tihana Galinac Grbac, D. Sc., Faculty of Engineering, University of Rijeka, Croatia

Team members
Prof. Per Runeson, D. Sc., Lund University, Sweden

Prof. Darko Huljenić, D. Sc., Ericsson Nikola Tesla, Croatia
Prof. Fabrizio Montesi, D. Sc., University of Southern Denmark, Denmark
Assoc. prof. Ivan Štajduhar, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Goran Mauša, D. Sc., Postdoctoral researcher, Faculty of Engineering, University of Rijeka, Croatia
Joao Pita da Costa, D. Sc., Postdoctoral researcher, Faculty of Engineering, University of Rijeka, Croatia
Ana Vranković, student, Faculty of Engineering, University of Rijeka, Croatia
Nikola Tanković, student, Department of Information and Communication Technologies, University Juraj Dobrila Pula, Croatia
Sanja Grbac Babić, student, Polytechnic Pula - College of applied sciences, Croatia
Jean Petrić, student, University of Hertfordshire, UK

Sažetak projekta

Kompleksni programski sustavi koji se evolucijski razvijaju (EVOSOFT) postali su središnji dio sve većeg broja aplikacija, proizvoda i usluga kao potpora svakodnevnim ljudskim aktivnostima iz svih gospodarskih sektora. Često su to distribuirani sustavi, heterogeni, decentralizirani i međusobno zavisni, koji rade u dinamičnim i nepredvidljivim uvjetima, pa su njihova dostupnost i pouzdanost postale ključna svojstva potrebna za njihov rad i budući razvoj. Novo i još neistraženo područje istraživanja, a koje se obrađuje u ovom projektu, jest razumjeti kako apstraktne programske strukture i lokalna obilježja sustava utječu na distribuciju neispravnosti. Time se utječe na kritična svojstva sustava, među kojima su dostupnost i pouzdanost, čime se razvijaju inovativni pristupi za pametno upravljanje njihovim izvođenjem i evolucijom. Potrebno je za naglasiti da se ovdje suočavamo s potpuno novim pojavama, sličnim ljudskoj evoluciji, ali proizvedene ljudskim intelektom. Temelji i teorije iz drugih disciplina, čiji je cilj razumjeti ponašanje kompleksnih sustava, evoluciju te ljudsko razmišljanje, mogle bi ovdje

Project summary

Evolving complex software systems (EVOSOFT) have become a central part of a rapidly growing range of applications, products and services supporting daily human activities from all economic sectors. As they are often distributed, heterogeneous, decentralized and inter-dependent, and operating in dynamic and unpredictable environments, availability and reliability become key properties for its operation and future evolution. The novel and still unexplored area of research addressed in this project is to understand how abstract software structures and local system properties influence fault distributions, thus affecting mission critical system properties, among which availability and reliability and to develop innovative approaches for smart management of their operation and evolution. We are facing with completely new phenomena, similar to human evolution, but produced by human intellect. Foundations and theories from other disciplines aiming to understand complex system behavior, evolution and human reasoning could be applied. New findings would open new opportunities in

biti primjenjive. Novi rezultati otvorit će nove mogućnosti u mnogim znanstvenim područjima, osobito u teoriji kompleksnih sustava i njenih primjena, te tako međudjelovati sa širokim spektrom znanosti: od prirodnih znanosti, kao što je to biomedicina, pa sve do društvenih znanosti. Industrijsko iskustvo prikupljeno iz empirijskog pristupa, programskom inženjerstvu je iznimno važno za daljnji razvoj discipline programskog inženjerstva. Nove teorije ne mogu biti djelotvorne i primjenjive u industriji bez temeljnog razumijevanja EVOSOFT ponašanja. Glavni cilj ovog projekta je ispunjavanje jaza između empirijskih dokaza i teoretskih modela. Kako bismo ga ostvarili, kombiniramo empirijska i teoretska znanja tako što ćemo:

- ponoviti studije i potvrditi empirijske principe i metode na kojima želimo graditi nove teorije,
- definirati strukturalne ovisnosti za primjenu empirijskih principa i metoda,
- definirati formalne modele i inovativne načine pametnog upravljanja

many scientific fields, especially in complex systems theory and its applications, thus interacting with a wide spectrum of sciences, from natural sciences such as biomedicine to social sciences. Industrial experience gathered by systematic Empirical Software Engineering approach is extremely important for further evolution of software engineering discipline. New theories cannot provide effective means for industry without fundamental understanding of EVOSOFT behavior. The main aim of this project is to fulfill this gap between empirical evidence and theoretical models. In that aim we combined empirical and theoretical skills aiming to:

- replicate studies and confirm empirical principles and methods and define a solid base to ground new theories,
- define structural dependencies for applicability of empirical principles, methods,
- define formal models and innovative approaches for smart management

NAZIV PROJEKTA | PROJECT TITLE:
PROCJENA PONAŠANJA KONSTRUKCIJA U GRANIČNIM UVJETIMA RADA - STRUBECON
ASSESSMENT OF STRUCTURAL BEHAVIOUR IN LIMIT STATE OPERATING CONDITIONS STRUBECON

Glavni istraživač
prof. dr. sc. Josip Brnić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Članovi istraživačkog tima
prof. dr. sc. Goran Turkalj, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Marko Čanađija, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Domagoj Lanc, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Marino Brčić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Goran Vukelić, Pomorski fakultet, Sveučilište u Rijeci, Hrvatska
doc.dr. sc. Igor Pešić, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
doc. dr. sc. Sanjin Kršćanski, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Neven Munjas, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Damjan Banić, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Sandra Kvaternik, poslijediplomant, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
Edin Merdanović, poslijediplomant, Euro Façade Tech, Kuala Lumpur, Malezija

Principal investigator
Prof. Josip Brnić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia

Team members
Prof. Goran Turkalj, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Marko Čanađija, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Prof. Domagoj Lanc, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Marino Brčić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Goran Vukelić, D. Sc., Faculty of Maritime Studies, University of Rijeka, Croatia
Assist. Prof. Igor Pešić, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Assist. Prof. Sanjin Kršćanski, D. Sc., Faculty of Engineering, University of Rijeka, Croatia
Neven Munjas, D. Sc., Postdoctoral researcher, Faculty of Engineering, University of Rijeka, Croatia
Damjan Banić, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia
Sandra Kvaternik, D. Sc. student, Faculty of Engineering, University of Rijeka, Croatia
Edin Merdanović, D. Sc. student, Euro Façade Tech, Kuala Lumpur, Malaysia

Sažetak projekta

Cilj je projekta definirati ponašanje konstrukcija u graničnim uvjetima rada. Projekt nastoji pružiti procjenu ponašanja konstrukcija uspoređujući parametre poput naprezanja, deformacije, pojave pukotina itd., a koje su uzrokovane određenim razinama naprezanja i temperaturama na ovakvim graničnim stanjima, s dopuštenim značajkama materijala. Istražuju se sljedeći parametri: ispitivanje značajki materijala za različite okolišne uvjete; udarna energija, sila propagacije pukotine i životnog vijeka elemenata konstrukcija; procjena ponašanja polukrutih konstrukcijskih spojeva; razvoj numeričkih algoritama za optimizacije konstrukcija sa polukrutim spojevima; pravilno konstitutivno modeliranje u uvjetima graničnih uvjeta rada (poput plastičnosti, oštećenja, termomehaničke sprege); primjena novih materijala u graničnim uvjetima rada – nanokompozita.

Ciljane konstrukcije mogu biti čelične građevine, stupovi dalekovoda za prijenos električne energije, brodske strukture, strojevi i slično.

U prve tri godine projekta ostvareni su mnogi rezultati: u području eksperimentalnih istraživanja kratkotrajnog puzanja čelika, istraživački je tim uspješno izveo takve studije na više vrsta čeličnih materijala. Zatim, napravljeni su i vlačni testovi i Charpyjev test istih čelika, kao i ispitivanje zamora. Propagacija pukotina u nekima od materijala također je istraživana. Dodatni je napredak ostvaren u analizama polukrutih veza okvira gdje je nova procedura primijenjena na kompozitne okvire. Termomehanički višerazinski postupci također su razvijeni i to posebice za područje termoplastičnosti u uvjetima velikih deformacija. U području nanomehanike istraživane su interakcije ugljičnih nanocijevi i epoxyja. Nelokalne nanogredne formulacije prikladne za nanosenzoriku su također razvijene.

Objavljeno je puno radova, kako u časopisima tako i na konferencijama, a neki su publicirani u časopisima indeksiranim u Current Contentsu.

Project summary

The project aims to describe the structures operating in limit state conditions. Therefore, the main objective is to provide an assessment of structure behavior by comparing the parameters such as stress, strain, crack occurrence, etc., caused by certain load level and temperature at this unexpected limit state, with those allowed by material properties. The main targets are: testing of material properties for the different environmental conditions; definition of impact energy and determination of the crack driving force and life assessment of structural elements; evaluation of the semi-rigid structural joints/ connections behavior; development of a numerical algorithm for optimization of semi-rigid framed structures; creep buckling simulations of composite beam-type structures; proper constitutive modelling at limit operating conditions (i.e. plasticity, damage, thermomechanical coupling); application of new materials to be used at limit state – nanocomposites.

Targeted structures may be single and multi-storey steel buildings, high-power electrical transmission towers, ship structures, machines, etc.

In the first three years of the project, the main research results can be stated as follows. In the domain of the experimental research of short-time creep of steels, the research team successfully performed studies on the determination of the material properties of different materials (steels). Besides that, tensile testing and Charpy impact behaviour of the same steels were performed, as well as fatigue characterization of them. Crack propagation in some steels was also researched. Additional progress was made in the analysis of semi-rigid frame connections, where the new procedure was applied to composite frames. Theromechanical framework for the multiscale analysis of structures was developed, especially for the large strain thermoplasticity. In the nanomechanics field, carbon nanotube and epoxy interactions were investigated. Nonlocal nanobeam formulation suitable for nanosensorics were developed.

NAZIV PROJEKTA | PROJECT TITLE:

RAZVOJ EVOLUCIJSKIH POSTUPAKA ZA KARAKTERIZACIJU PONAŠANJA BIOLOŠKIH TKIVA - BIOMAT

DEVELOPMENT OF EVOLUTIONARY PROCEDURES FOR CHARACTERIZATION OF BIOLOGICAL TISSUES BEHAVIOR- BIOMAT

Glavni istraživač

Izv. prof. dr. sc. Marina Franulović, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska

Članovi istraživačkog tima

Izv. prof. dr. sc. Robert Basan, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Kristina Marković, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
dr. sc. Tea Marohnić, poslijedoktorand, Tehnički fakultet, Sveučilište u Rijeci, Hrvatska
prof. dr. sc. Ivan Prebil, Fakulteta za strojništvo, Univerza v Ljubljani, Slovenija
dr. sc. Ana Trajkovski, Fakulteta za strojništvo, Univerza v Ljubljani, Slovenija
Senad Omerović, poslijediplomant, Fakulteta za strojništvo, Univerza v Ljubljani, Slovenija
dr. sc. Simon Krašna, Fakulteta za strojništvo, Univerza v Ljubljani, Slovenija

Sažetak projekta

Za proces pravilnog konstruiranja i oblikovanja proizvoda vrlo je značajan optimalan izbor materijala, pri čemu posebnu pažnju treba posvetiti ponašanju materijala u stvarnim uvjetima primjene. U cilju poboljšanja i unaprjeđivanja značajki proizvoda, u inženjerstvu se sve veća pažnja posvećuje poboljšanju značajki konvencionalnih, a posebice razvoju inovativnih materijala te stvaranju pretpostavki za njihovu tehničku primjenu. Iako je područje istraživanja materijala i dalje u značajnoj mjeri usmjereno na metalne, polimerne materijale, staklo, keramiku, kompozite itd., sve veći interes posvećuje se istraživanju bioloških i njima sličnih materijala zbog izvrsnih svojstava i ponašanja pri različitim uvjetima i opterećenjima. Mnogi biološki sustavi imaju mehaničke karakteristike koje uvelike nadvisuju one koje se mogu ostvariti korištenjem konvencionalnih i sintetičkih materijala pa se u tom smislu vrše intenzivna istraživanja mehaničkih svojstava i ponašanja materijala prisutnih u, primjerice, školjkama, mekušcima, kostima, paukovoj svili, mišićima i slično. U okviru projekta, za karakterizaciju i modeliranje ponašanja bioloških materijala koristit će se podaci dobiveni eksperimentalnim testiranjem uzoraka vratnih ligamenata ljudske kralježnice. Kao prikladan, odabran je hiperelastični materijalni model koji se može koristiti i za kompresibilne i nekompresibilne materijale. Kako bi se na što

Principal investigator

Assoc. Prof. Marina Franulović, D. Sc., Faculty of Engineering, University of Rijeka

Team members

Assoc. Prof. Robert Basan, D. Sc., Faculty of Engineering, University of Rijeka
Kristina Marković, D. Sc. , Postdoctoral researcher, Faculty of Engineering, University of Rijeka
Tea Marohnić, D. Sc., Postdoctoral researcher, Faculty of Engineering, University of Rijeka
Prof. Ivan Prebil, D. Sc., Faculty of Mechanical Engineering, University of Ljubljana
Ana Trajkovski, D. Sc., Postdoctoral researcher, Faculty of Mechanical Engineering, University of Ljubljana
Senad Omerović, D. Sc. student, Faculty of Mechanical Engineering, University of Ljubljana
Simon Krašna, D. Sc., Postdoctoral researcher, Faculty of Mechanical Engineering, University of Ljubljana

Project summary

Optimal material selection is very important for the proper product design, whereby special attention should be paid to the behavior of materials under actual conditions of use. In order to enhance and improve product features, increasing attention is paid to enhancing the properties of conventional and especially the development of innovative materials and creating conditions for their technical applications. Although the materials research is still to a large extent focused on metallic, polymeric materials, glass, ceramics, composites, etc., increasing interest is devoted to the study of the biological and the like materials with excellent properties and behavior under different conditions and loads. The motivation for the research lies in the fact that many biological systems have mechanical characteristics which are greatly above those that can be achieved using conventional and synthetic materials. As a consequence, mechanical properties and behavior of materials present in, for example, clams, mussels, bone, spider silk, the muscles and the like are intensely studied. Within the project, for the characterization and modeling of biological materials, the data obtained through experimental testing of samples of cervical ligaments of the human spine has to

efikasniji način dobile što točnije vrijednosti parametara za predloženi nelinearni hiperelastični materijalni model, razvit će se tehnika određivanja parametara ponašanja materijala temeljena na genetskom algoritmu. Radi razvoja što boljeg genetskog algoritma i njegove optimizacije za zadani materijal ili skupinu materijala, odnosno što bržeg ostvarenja traženog rješenja, razvit će se procedura složenog genetskog algoritma te njegovi operatori, uz primjenu adekvatne funkcije cilja optimizacijskog postupka. Sam postupak će se automatizirati primjenom adekvatnih matematičkih i numeričkih postupaka. Ovaj prijedlog projekta predstavlja postavljanje inovativnih temelja u interdisciplinarnom području tehničkih znanosti i biomedicine te omogućava povezivanje članova predložene znanstvene skupine i osigurava njihovu međunarodnu vidljivost te općenito razvoj znanosti u Hrvatskoj u području istraživanja materijala.

Modeliranje ponašanja materijala

Promatranje i razumijevanje utjecaja brzine deformacije i opterećenja na naprezanja i deformacije materijala te oštećenja ligamenata na makro razini ostvareno je na Fakultetu za strojništvo Univerze v Ljubljani, na Katedri za modeliranje v tehniki in medicini. Prikupljeni podaci predstavljaju odziv materijala na zadana opterećenja, odnosno prikupljeni su setovi podataka naprezanje - deformacija od početka opterećivanja do prekida uzoraka na dva dijela. Tijekom procesa kontrolirani su ulazni parametri koji koreliraju s poznavanjem dimenzija mjernih područja uzoraka. Pri korištenju izmjerenih vrijednosti za razvoj procedure genetskoga algoritma za identifikaciju parametara materijala, nadalje će biti potreban razvoj dodatnih aplikacija za korištenje podataka i kontrolu ponašanja materijala.

Prikupljanje i sistematizacija znanja i podataka o konstitutivnim modelima za ponašanje materijala

Dostupne informacije o konvencionalnim konstitutivnim modelima za ponašanje materijala prikupljene su u okviru rada na projektu. Dan je sistematičan pregled koji obuhvaća konstitivno modeliranje i ponašanje materijala, te klasifikaciju različitih ponašanja materijala te pripadnih modela koji su ujedno sažeto opisani.

Nadalje, ponašanje materijala u uvjetima trajnog (plastičnog) deformiranja je detaljnije opisano te je dopunjeno teoretskim postavkama modeliranja elastoplastičnog ponašanja materijala. U

be used. In order to more efficiently obtain the precise values of the material parameters for the proposed nonlinear hyperelastic material model, the techniques for determining the parameters of material behavior based on genetic algorithm have to be developed. In order to develop the best genetic algorithm and to optimize it for the given material or group of materials, and to achieve desired solutions as soon as possible, complex genetic algorithm procedures and its operators have to be developed, by applying the appropriate objective function for the optimization procedure. The procedure can be automated by using the appropriate mathematical and numerical methods. This project proposes setting innovative foundations in the interdisciplinary field of engineering sciences and biomedicine, allows the connection of members of the proposed scientific groups and ensures their international visibility and contributes to the overall development of the field of material research.

Material behavior modelling

The observation and understanding of the influence of strain rate and the load on the stress and stretch of materials and damage to the ligaments on the macro level was performed at the Faculty of Mechanical Engineering, Department for Modeling in Technics and Medicine in Ljubljana. Collected data represent the material response to the specified load, or data set stress - stretch from the start of the loading to the fracture of the sample in two parts. Through the process, the knowledge of the input parameters for embroidered patterns is assured, relating to the definition of their length and cross-section. In order to use data in the process of developing a genetic algorithm procedure for identification of material parameters, it is further necessary to create software application for data manipulation and control of materials behavior.

Acquisition and systematisation of underlying knowledge and data on constitutive models of materials behaviour

Available information on existing more conventional constitutive models of materials behaviour has been acquired. Systematic overview of fundamentals of constitutive modeling and material behavior along with classification of real material behavior is given, and described in brief.

Further on, plastic behavior of materials is described in more detail as well as fundamentals of elastoplastic material behavior modeling. So far, nonlinear materials models dealing with rate-in-

okviru dosadašnjeg rada obrađeni su nelinearni materijalni modeli koji ne uzimaju u obzir utjecaj brzine plastične deformacije. Nastavkom rada u drugoj godini projekta razmatranje će se proširiti na nemetalne materijale. Izvještaj o radu učinjen je dostupnim javnosti na web stranici BIOMAT projekta.

dependent plasticity are covered, with the aim of expanding the content to materials other than metals during the second year of the project. Report is made publicly available on the BIOMAT project webpage.

2.6.7 19. međunarodna regata u mornarskom veslanju
19th international sailor rowing regatta

Na 19. međunarodnoj regati u mornarskom veslanju, u organizaciji Pomorskog fakulteta u Rijeci, Tehnički fakultet je nastupio s tri ekipe. Natjecanje je održano 6. lipnja 2017. godine u akvatoriju riječke luke.

U studentskoj kategoriji (M) Tehnički fakultet je obranio osvojeno treće mjesto s prošlogodišnje regate, a u revijalnom dijelu uspjeh je bio veći: prvi puta Tehnički fakultet je u jednoj od kategorija osvojio prvo mjesto. Uspjeh je tim veći što je prvo mjesto ostvareno u dramatičnoj završnici s domaćinima regate. Zanimljivo je i da je ove godine Tehnički fakultet po prvi put nastupio i sa studentskom ekipom u ženskoj konkurenciji (na slici) i također ostvario zapažen uspjeh. Na regati je sudjelovalo više od 25 ekipa iz 5 zemalja. Veslanje na regati je posebno jer se prakticira u čamcima za spašavanje, kojima je, za razliku od takmičarskih čamaca, teže upravljati, a dodatno se naglašava i pomorska tradicija Kvarnera. Time je i Tehnički fakultet dao svoj doprinos 6. po redu Festivalu mora i pomorske tradicije – Fiumare 2017. (održanom od 31. svibnja do 7. lipnja) u sklopu kojega je regata i organizirana.

The Faculty of Engineering participated with three crews in the 19th International sailor rowing regatta, which was organized by the Faculty of Maritime Studies in Rijeka. The competition was held on June 6, 2017, in the waters of the Rijeka port.

The student crew (M) won the third place as the year before. For the first time the Faculty of Engineering won the competition with its veteran crew. The student crew (F) participated in the regatta for the first time, making the success even larger (Figure). This type of rowing is special because, firstly, it strongly emphasizes the maritime tradition of the Kvarner Bay, and, secondly, it is practiced in the lifeboats, which, unlike the competing boats, are harder to row (i.e. operate and handle). Thus, it was the Faculty of Engineering which contributed to the Festival of the sea and maritime tradition - Fiumara 2017, and by which it was primarily organized (from May 31 to June 7, 2017).

2.6.8 fincantieri cup 2016

Posada Tehničkog fakulteta u sastavu: Dubravko Franković, Luka Jedretić, Tomislav Senčić i Marko Šestan (kormilar) osvojila je treće mjesto u monotipskom jedriličarskom natjecanju „Fincantieri cup 2016“ koje se održalo 07. listopada 2016. godine, u sklopu 48. jedriličarske regate Barcolana 2016.

Regata se održala u tršćanskom akvatoriju u organizaciji Società Velica di Barcola e Grignano i Società Triestina della Vela. Na natjecanju je sudjelovalo ukupno 9 posada sa sveučilišta iz Italije, Slovenije i Hrvatske. Prije svečane dodjele nagrada natjecatelji su imali priliku sudjelovati u međunarodnoj konferenciji Engineering the performance – doseći izvrsnost poboljšanjem vlastitog proizvoda u organizaciji Universita degli studi di Trieste i tvrke Fincantieri.

Faculty of Engineering's crew: Dubravko Franković, Luka Jedretić, Tomislav Senčić and Marko Šestan (helmsman) won the 3rd place in monotype sailing competition "Fincantieri Cup 2016" held on October 7, 2016, within the 48th Sailing Boat regatta Barcolana 2016.

The regatta was held in Trieste aquatorium, organized by Società Velica di Barcola e Grignano and Società Triestina della Vela. A total of 9 crews participated in the competition, coming from universities in Italy, Slovenia and Croatia. Before the prize-giving ceremony the contestants had the opportunity to participate in the International Conference titled „Engineering the performance - achieve excellence by improving your own product“, organized by the University of Trieste and the Fincantieri company.

2.6.9 studentski završni i diplomski radovi
student undergraduate and graduate theses

IME I PREZIME | NAME AND SURNAME:
Hrvoje Kelečić

Diplomski sveučilišni studij strojarstva / Graduate University Study of Mechanical Engineering

NAZIV RADA | TITLE:
Konstrukcija kalupa za injekcijsko prešanje
Mold design for injection molding process

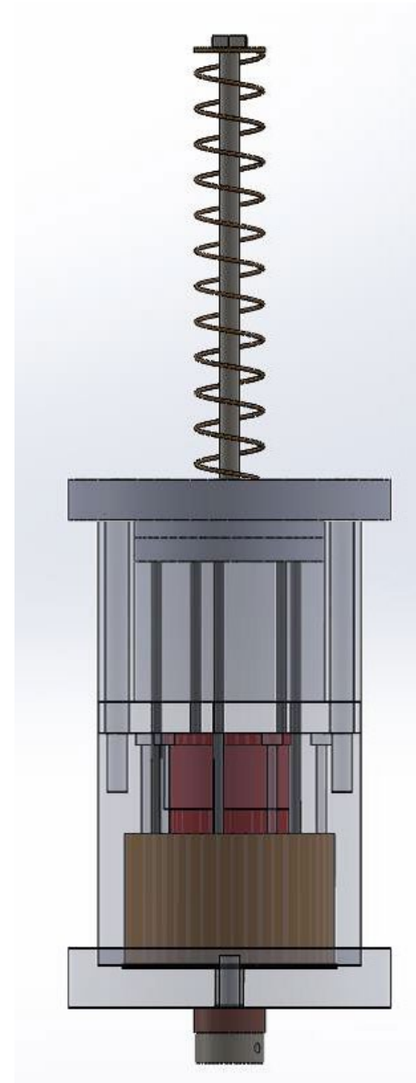
MENTOR(I) | SUPERVISOR(S):
izv. prof. dr. sc./ Assoc. Prof. D. Sc. Zoran Jurković
prof. dr. sc. / Prof. D. Sc. Mladen Perinić

Sažetak:

U teorijskom dijelu rada opisani su polimerni materijali, postupak i parametri injekcijskog prešanja, te greške koje se pritom mogu pojaviti. U eksperimentalnom dijelu opisan je postupak dobivanja traženog proizvoda, od konstrukcije samog proizvoda preko konstrukcije kalupa i na kraju same izrade kalupa za injekcijsko prešanje. Za izradu kalupa korišteno je više različitih tehnologija, od visokobrzinske obrade, konvencionalnih postupaka – glodanje, tokarenje i na kraju nekonvencionalnih postupaka – elektroerozija žigom, elektroerozija bakrenom žicom i polyjet tehnologija. Izrađena je računalna simulacija tečenja polimera koji se koriste za proces brizganja te su rezultati simulacije uspoređeni s realnim uvjetima.

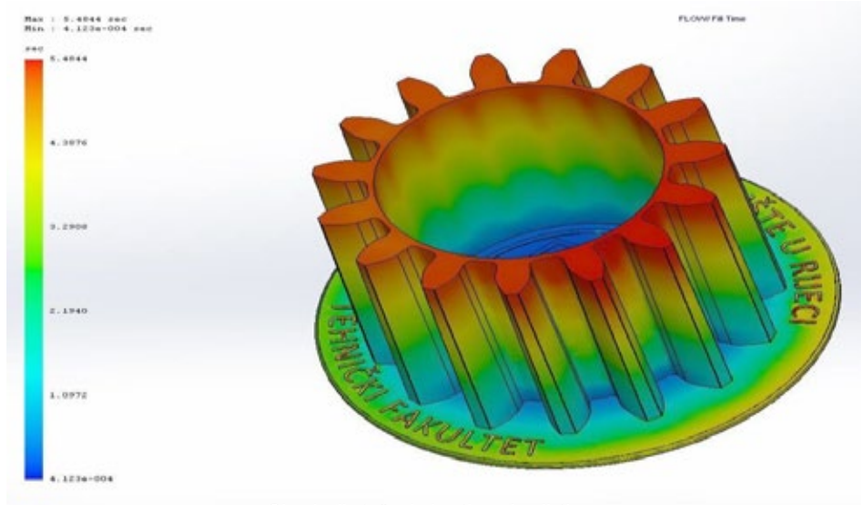
Summary:

In the theoretical part of the thesis the polymer materials have been described, as well as the process and parameters of the injection molding and the defects that may occur. The experimental part of the thesis consists of the description of the process of manufacturing the required product, from the design of the product itself through the design of the mold to the injection molding tool itself. Several technologies have been used for making the tool, from high speed machining to conventional methods (e.g. milling, turning) – as well as several non-conventional machining procedures (e.g. wire electrical discharge machining with copper wire, electrical discharge machining and polyjet technology). Mold flow simulation of the polymers was created which are used for the process of injection molding and the simulation results were compared to realistic conditions.

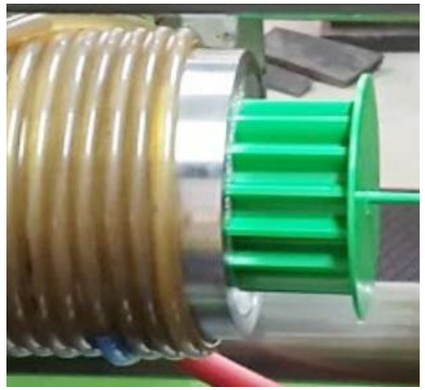


3D model kalupa konstruiran u SolidWorks-u, te izrađen tražen kalup
/ 3D mold model designed in SolidWorks, finished mold

Topli umetak i trn nakon procesa elektroerozije
/ Mold inserts after EDM processes



Simulacija tečenja izratka od polistirena
/ Mold flow simulation of a product made of PS



Otpresak od ABS-a
/ Finished product made of ABS

IME I PREZIME | NAME AND SURNAME:
Ivan Dogan

Diplomski sveučilišni studij strojarstva / Graduate University Study of Mechanical Engineering

NAZIV RADA | TITLE:
Izrada modela kamiona primjenom konvencionalnih i aditivnih tehnologija
Creating track models by using conventional and additive technologies

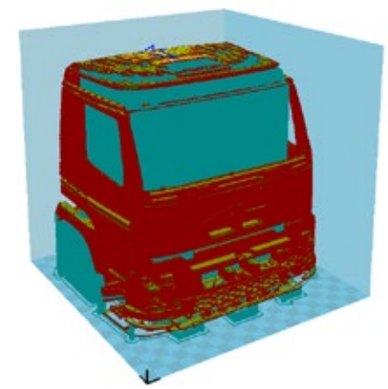
MENTOR(I) | SUPERVISOR(S):
izv. prof. dr. sc./ Assoc. Prof. D. Sc. Zoran Jurković
prof. dr. sc. / Prof. D. Sc. Mladen Perinić

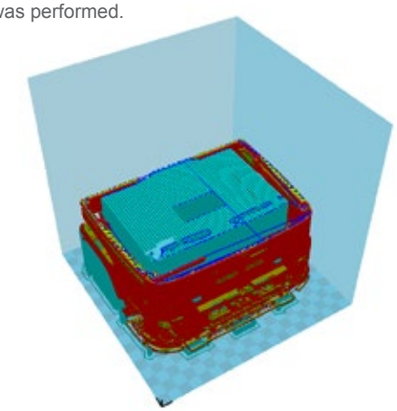
Sažetak:

Modeli kamiona na daljinsko upravljanje su jako popularan hobi među odraslom populacijom u svijetu. Radi se o funkcionalnim, detaljno izrađenim replikama pravih kamiona, što ih čini gotovo jednako kompleksnim proizvodima, četrnaest puta manjim. Prilikom konstruiranja, dva najkompleksnija dijela modela kamiona bili su kabina i pogonska osovina. Za proizvodnju kabine, zbog kompleksnosti i velikog broja detalja, korištena je jedna od aditivnih tehnologija, odabrana nakon analize trenutno dostupnih aditivnih tehnologija. Na primjeru kabine modela kamiona prikazano je kako pripremiti i ispisati 3D model koristeći FDM 3D pisač. Za proizvodnju pogonske osovine korištene su konvencionalne tehnologije obrade. Kako je pogonska osovina kompleksan proizvod, fokus je stavljen na jedan dio kućišta osovine koji zahtijeva najviše obrade. Na primjeru kućišta osovine kamiona napravljena je tehnološka analiza i razrada operacija s odabirom svih alata potrebnih za izradu komada na CNC stroju. Kako bi se provjerilo sve odabrane parametre i alate, prije puštanja komada u proizvodnju, koristeći CAM softver, napravljena je simulacija obrade.

Summary:

Truck remote control models are a very popular hobby among the adult population in the world. It is about functional, highly detailed replicas of real trucks, which makes them almost equally complex products, only 14 times smaller than the real ones. When constructing, the two most complex parts of the truck model were the cabin and the axle casing. For the production of the cabin, due to the complexity and the large number of details, one of the additive technologies was used, selected after analyzing the currently available additive technologies. The example of the truck model cabin shows how to prepare and print a 3D model using the FDM 3D printer. Conventional processing technologies have been used for the production of the truck axle casing. As the truck axle casing is a complex product, the present work focuses on one part of the axle casing that requires the most machining. In the case of the truck axle casing, a technological analysis and elaboration of operations was carried out with the selection of all the tools required for making the pieces on the CNC machine. In order to check all the selected parameters and tools, before the release of the pieces in production, using the CAM software, a simulation of the processing was performed.

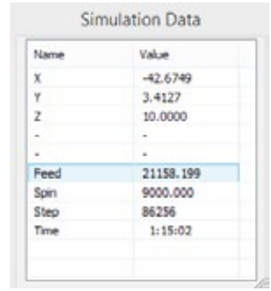


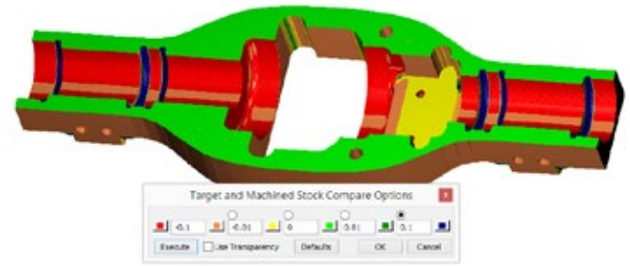


Simulacija ispisa: a) Cijeli model b) Komprimirano na 763. sloju
/ Printing simulation: a) Full model b) Compressed on 763rd layer

Model kabine napravljen na 3D printerom
/ A cabin model compiled on a 3D printer

3D model kućišta osovine
/ 3D model of axle casing





Rezultati simulacije
/ Results of the simulation

IME I PREZIME | NAME AND SURNAME:
Iva Nakić

Diplomski sveučilišni studij strojarstva / Graduate University Study of Mechanical Engineering

NAZIV RADA | TITLE:
Implementacija aditivnih tehnologija u medicini
Additive technologies implementation in medicine

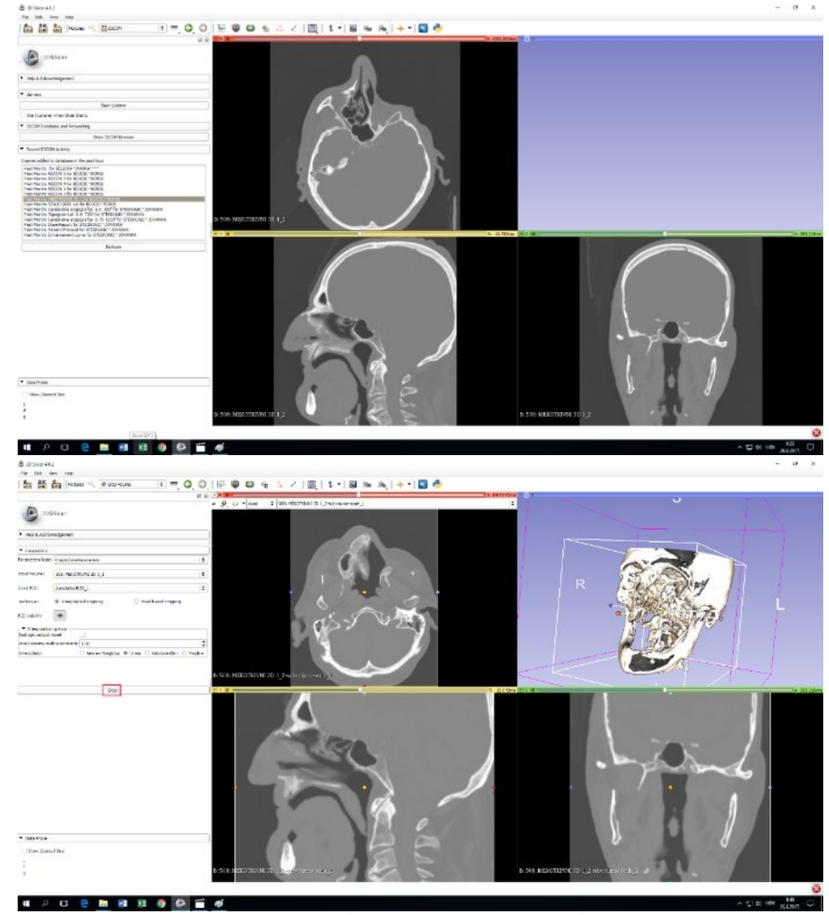
MENTOR(I) | SUPERVISOR(S):
izv. prof. dr. sc./ Assoc. Prof. D. Sc. Zoran Jurković
prof. dr. sc. / Prof. D. Sc. Mladen Perinić

Sažetak:

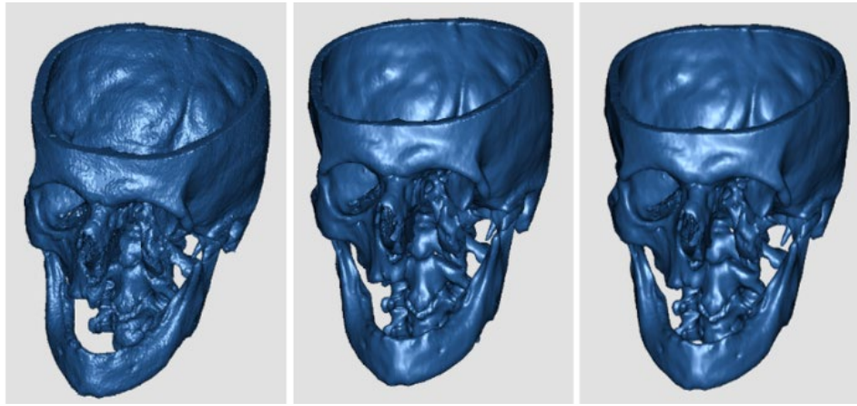
Sve većim napretkom tehnologije dolazi do povezivanja više znanstvenih područja, u ovom slučaju strojarstva i medicine. Kada nisu dostupni crteži, tehnička dokumentacija ili računalni modeli pristupa se reverznom inženjerstvu. Primjer je medicina gdje se uz pomoć aditivnih postupaka izrađuje iskoristivi 3D model. Aditivna proizvodnja izravno gradi objekt iz digitalnog 3D modela dodavanjem materijala, sloj po sloj. Cilj ovog rada je konvertirati podatke iz CT (engl. Computerized Tomography) sustava u CAD/CAM sustav i, služeći se aditivnim postupkom stereolitografije, izraditi fizički objekt. CT snimak oštećene ljudske lubanje spremljen je kao DICOM (engl. Digital Imaging and Communications in Medicine) format, svojstven medicinskoj primjeni. Korištenjem softverskih programa, niz 2D slikovnih podataka transformira se u računalni 3D model koji se pohranjuje kao STL (engl. Standard Triangulation Language) format. S obzirom da je STL format mreža trokuta koja okružuje CAD model, kao takav ne zadovoljava funkciji. Zaglađivanjem površine pomoću interpolacije mreže trokuta u krivulje dolazi se do prihvatljivog izgleda lubanje. Tako dobivenim računalnim 3D modelom lubanje pristupa se rekonstrukciji: od postojećeg, zdravog dijela, izrađuje se implantat koji će nadomjestiti oštećeni dio. Na kraju se vrši postupak izrade lubanje i implantata postupkom stereolitografije. Krajnji rezultat je zadovoljavajući te je implantat uz male dorade spreman za upotrebu.

Summary:

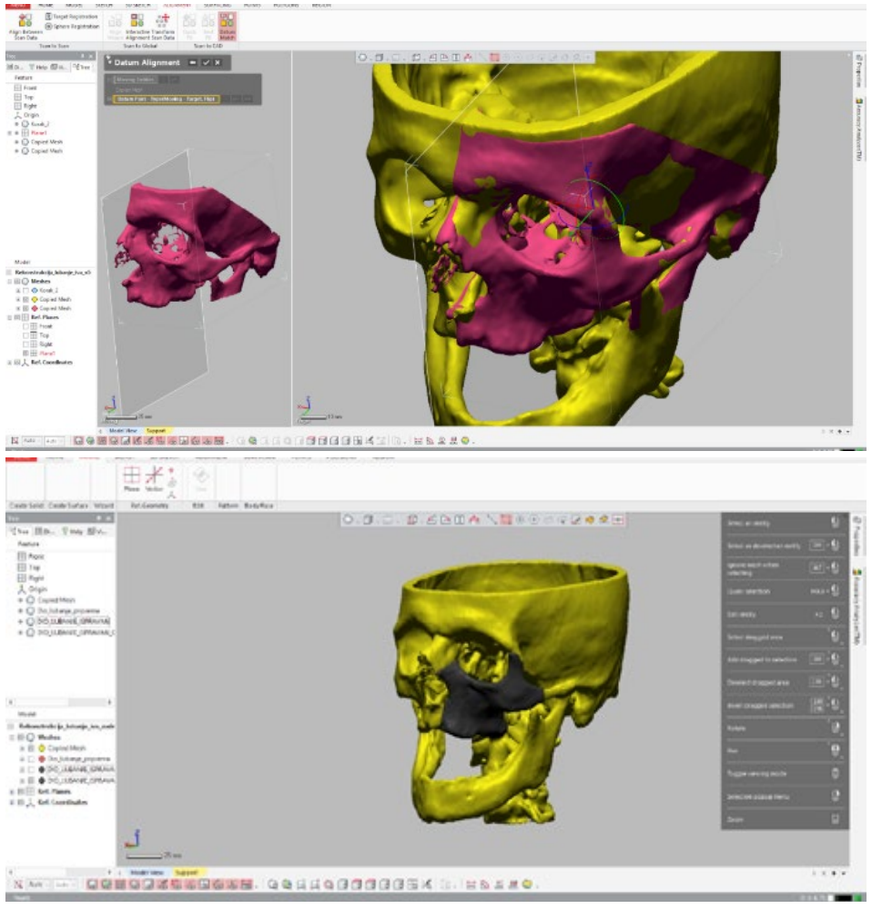
More and more advances in Increasingly more advanced technology technologies connectconnect multiple scientific areas, such as mechanical engineering and medicine. In cases where drawings, technical documentation or computer models are not available, there is an access to reverse engineering. There is An an example is in the field of medicine where where with additive methods made a usable 3D model can be created. Additive productionmanufacturing techniques are employed to directly builds an object directly from a digital 3D model by adding layered material layer by layer. The aim of this work is to convert data from a CT (Computerized Tomography) system into a CAD/CAM system and to use an additive process stereolitography additive manufacturing process to create a physical object. The CT scan of the damaged human skull was saved as a DICOM (Digital Imaging and Communications in Medicine) format, which is a unique to medical technical applications. By Using using software programs, a series of 2D image data are transforms transformed into a digital 3D model that is stored as STL (Standard Triangulation Language) format. Since the STL format is a raw unstructured triangulated irregular



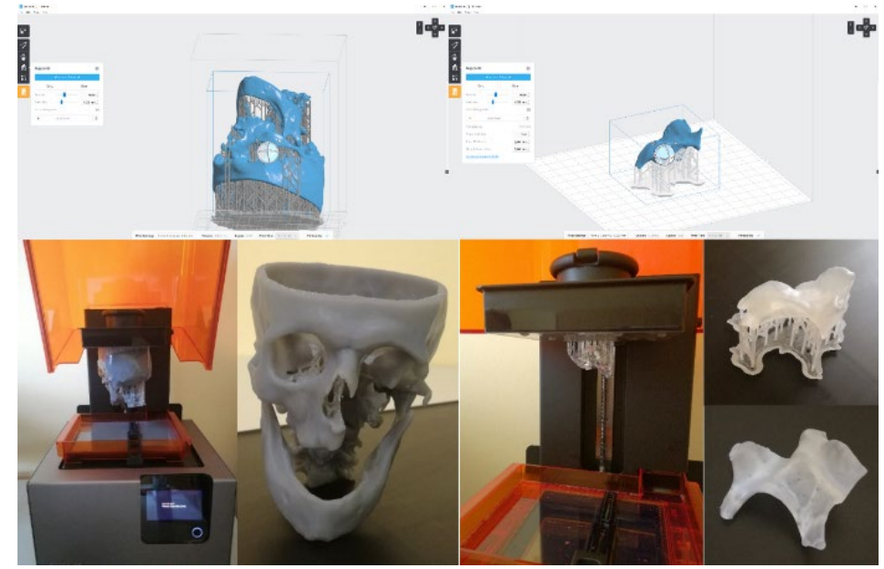
Transformacija niza 2D slikovnih podataka u računalni 3D model korištenjem softverskog programa 3D Slicer
/ Transformation of 2D image dana into a digital 3D model using 3D Slicer software

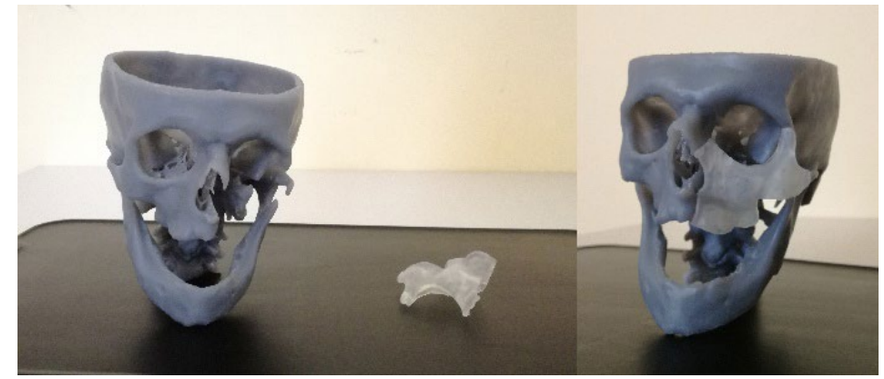


Zaglađivanje površine pomoću interpolacije mreže trokuta u krivulje korištenjem softverskog programa Optical RevEng
/ Smoothing the surface by interpolating a raw unstructured triangulated surface into the curve using Optical RevEng software



Rekonstrukcija lubanje korištenjem softverskog programa Geomagic Design X
/ Reconstruction of the skull using Geomagic Design X software





Izrada lubanje i implantata korištenjem 3D printera Form 2 – konačan model
/ Making skull and implant using 3D printer Form 2 – the ultimate model

IME I PREZIME | NAME AND SURNAME:
Leo Benolić

Preddiplomski sveučilišni studij elektrotehnike / Undergraduate University Study of Electrical Engineering

NAZIV RADA | TITLE:
Inteligentno upravljanje LED rasvjetom
Intelligent LED light Control

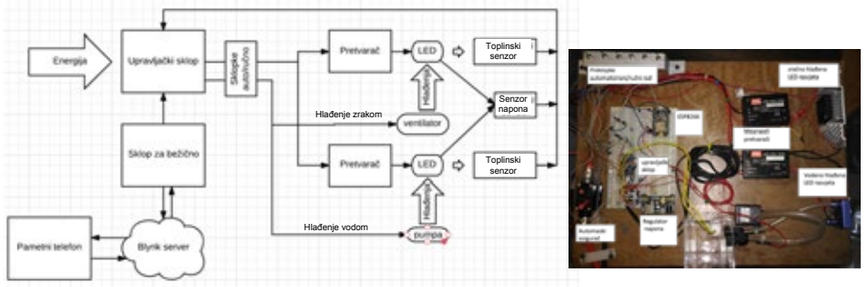
MENTOR(I) | SUPERVISOR(S):
Izv. prof. dr. sc. / Assoc. Prof. D. Sc. Saša Sladić

Sažetak:

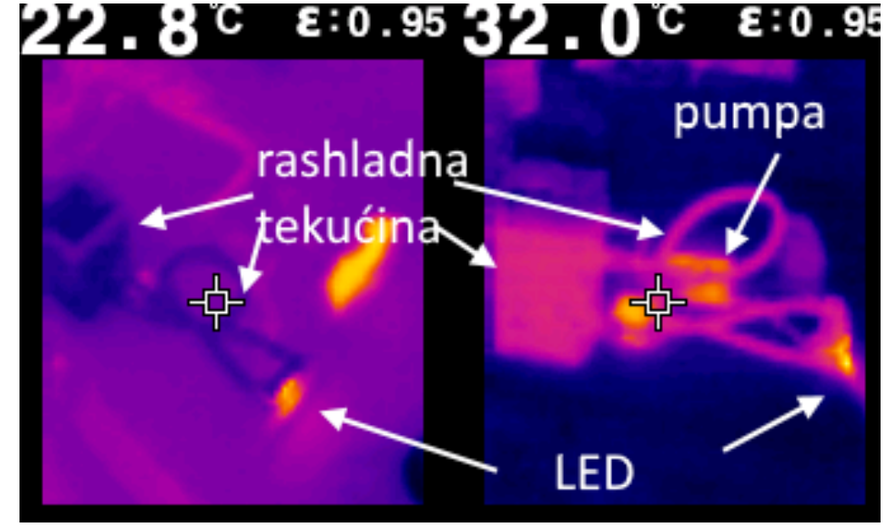
U okviru diplomskog rada projektiran je i izrađen regulirani sustav istosmjernih pretvarača za LED rasvjetu (slika 1), nazivne snage 300W. U cilju postizanja čim veće nazivne snage, LED rasvjetnim tijelima su dodana dva neovisna sustava hlađenja (prvi sa zrakom i drugi s vodom). Također je omogućeno daljinsko upravljanje intenzitetom svjetlosti korištenjem interneta i pametnog telefona (slika 3). Sustav je instaliran u brodu za razgledavanje podmorja.

Summary:

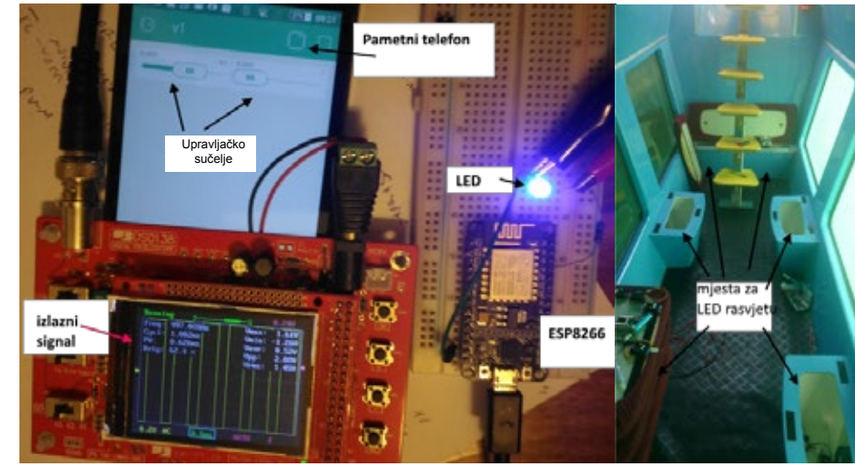
In this paper a LED diode operation principle, materials, technology and applications were analyzed. In order to support theoretical approach a power converter with current feedback and sophisticated temperature regulation was designed (Figure 1). Designed system was installed in glass-bottom boat with large glass sections (Figure 3), targeted for underwater observation and tourist trips.



Shema sustava LED rasvjete sa zračnim i vodenim hlađenjem te izgled realizirane makete
/ System schematic with air and water cooling with experimental board



Termalne slike sustava hlađenja nakon uključenja i nakon 15 min djelovanja
/ Thermal images of experimental system at the beginning of operation and after 15 minutes of operation



Inteligentno upravljanje sustava rasvjete putem mobitela uz prikaz unutrašnosti broda za razgledavanje podmorja
/ Intelligent LED light control with the position for installing the system

IME I PREZIME | NAME AND SURNAME:
Alen Poljak

Diplomski sveučilišni studij elektrotehnike / Graduate University Study of Electrical Engineering

NAZIV RADA | TITLE:
Inačice napajanja u automobilima
Power Supply Systems in Conventional Cars

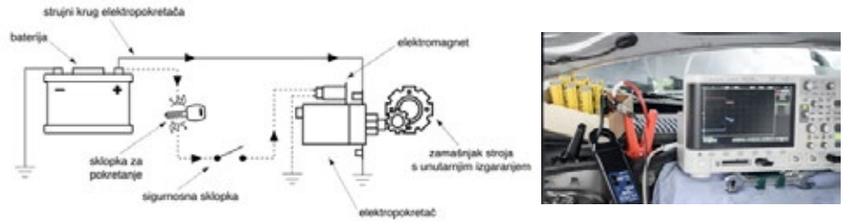
MENTOR(I) | SUPERVISOR(S):
Izv. prof. dr. sc. / Assoc. Prof. D. Sc. Saša Sladić

Sažetak:

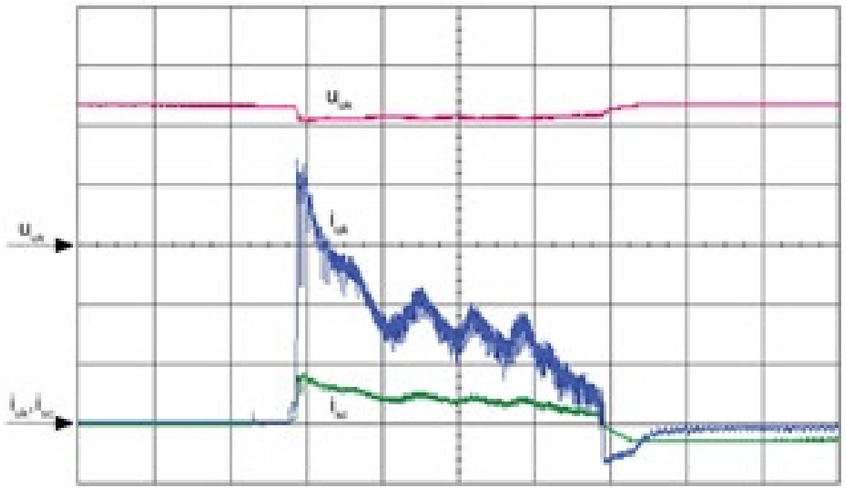
U radu je opisana ispitana mogućnost zamjene olovnih akumulatora superkondenzatorima (slika 1) kao i druge mogućnosti povezivanja suvremenih spremnika energije. Pokusi su izvedeni na konvencionalnom automobilu (slika 2).

Summary:

In this paper a possibility of replacement of Lead-Acid batteries with supercapacitors were investigated (Figure 1). Experiments were conducted on conventional car under different conditions (Figure 2).



Shematski prikaz sustava za pokretanje stroja s unutarnjim izgaranjem s pokusnim postavom
/ ICE engine cranking system with Lead-Acid battery/supercapacitors



Izmjereni valni oblici struje superkondenzatora (iSC) te ukupne struje (iuk) i napona paralelnog spoja baterije i superkondenzatora (uuk) (5 V/d.s., 100 A/d.s, 0.2 s/d.s.)
/ Measured waveforms of supercapacitor current (iSC) and total current (iuk) and voltage (uuk) of parallel connected lead-acid battery and supercapacitor (5 V/div, 100 A/div, 0.2 s/div.)

IME I PREZIME | NAME AND SURNAME:
Matko Burul

Diplomski sveučilišni studij računarstva / Graduate University Study of Computer Science

NAZIV RADA | TITLE:
Prijenos znanja u analizi medicinskih slika
Transfer Learning in Medical Image Analysis

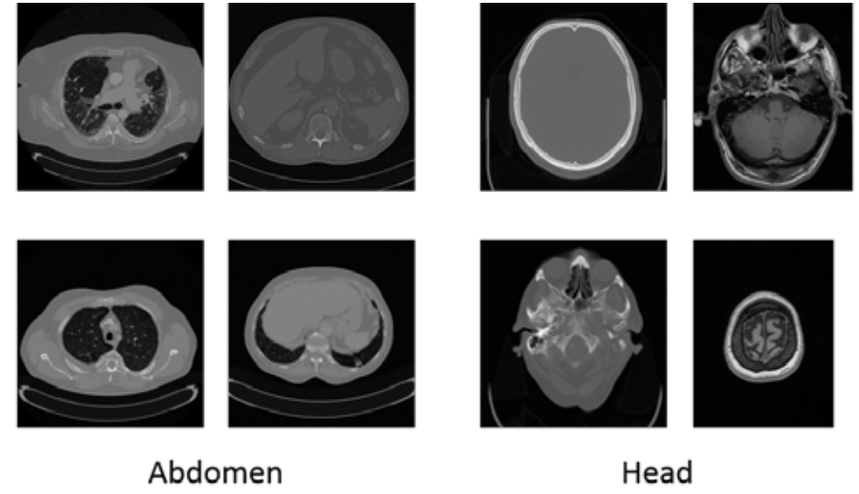
MENTOR(I) | SUPERVISOR(S):
izv. prof. dr. sc./ Assoc. Prof. D. Sc. Ivan Štajduhar

Sažetak:

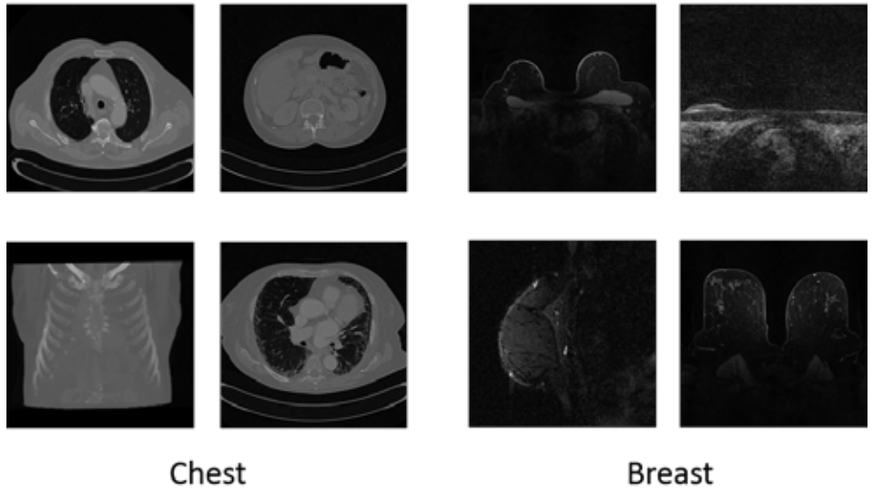
U ovom radu predstavljen je postupak označavanja velikog skupa podataka medicinskih slika u svrhu njihova korištenja za treniranje i evaluaciju klasifikacijskih modela. Trenirani modeli uključuju konvolucijske neuronske mreže inicijalizirane pomoću tehnike prijenosa znanja i mreže inicijalizirane nasumičnim vrijednostima. Prikazani su i analizirani rezultati dobivenih modela, te su, pomoću tehnike prijenosa znanja iz tih modela, istrenirani i modeli za klasifikaciju ozljede koljena iz volumetrijskih podataka čiji su rezultati također obrađeni. U radu su se koristili podaci iz arhivskog sustava Kliničkog bolničkog centra Rijeka.

Summary:

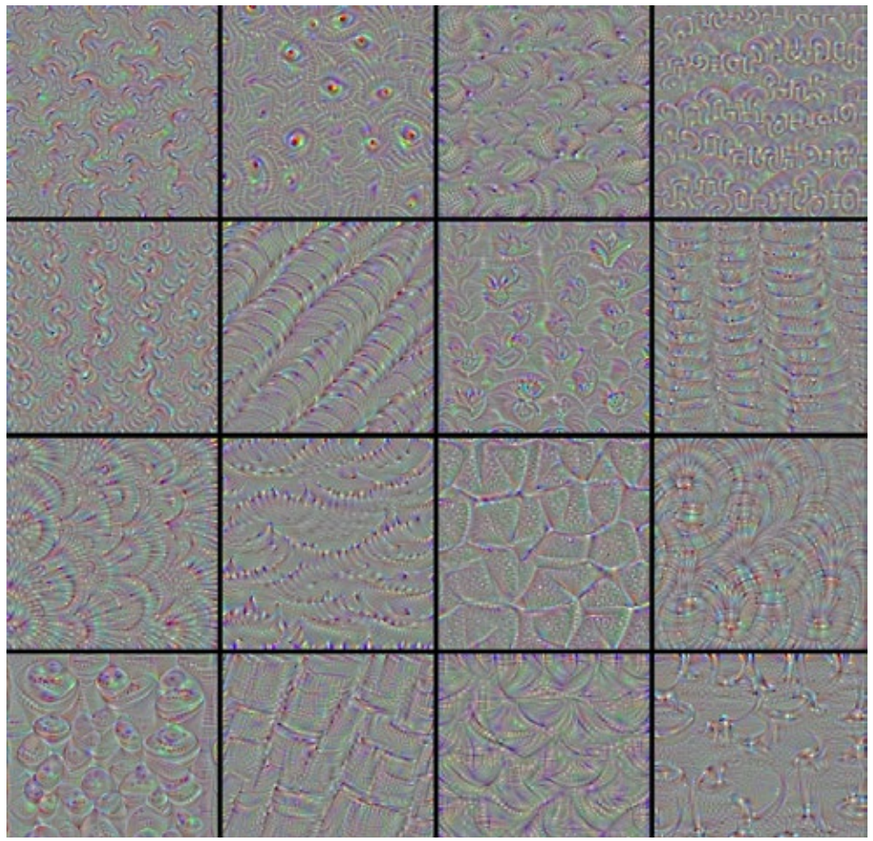
In this work, the annotation process of a large medical images dataset is presented. The dataset was used to train and evaluate several classification models based on convolutional neural networks initialised with random values or through transfer learning. The results are shown and analysed. A second set of models, used to classify knee injury from volumetric data, was trained using transfer learning from the previous models. The results of these models are shown and analysed as well. Data used in this work was gathered retrospectivelly from Clinical Hospital Centre Rijeka archive system.



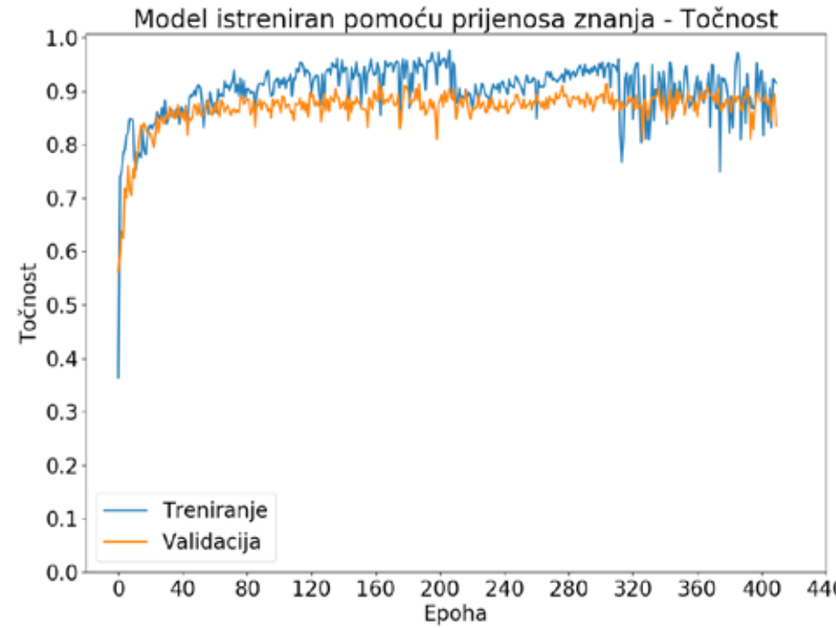
Prikaz uzorka slika iz dominantnih kategorija snimki
/ A depiction of images sampled from dominanant categories



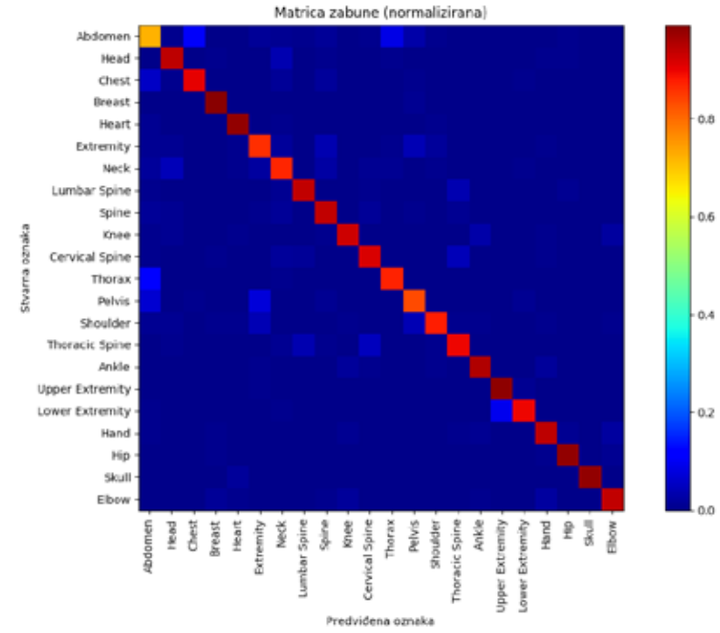
Prikaz uzorka slika iz dominantnih kategorija snimki
/ A depiction of images sampled from dominanant categories



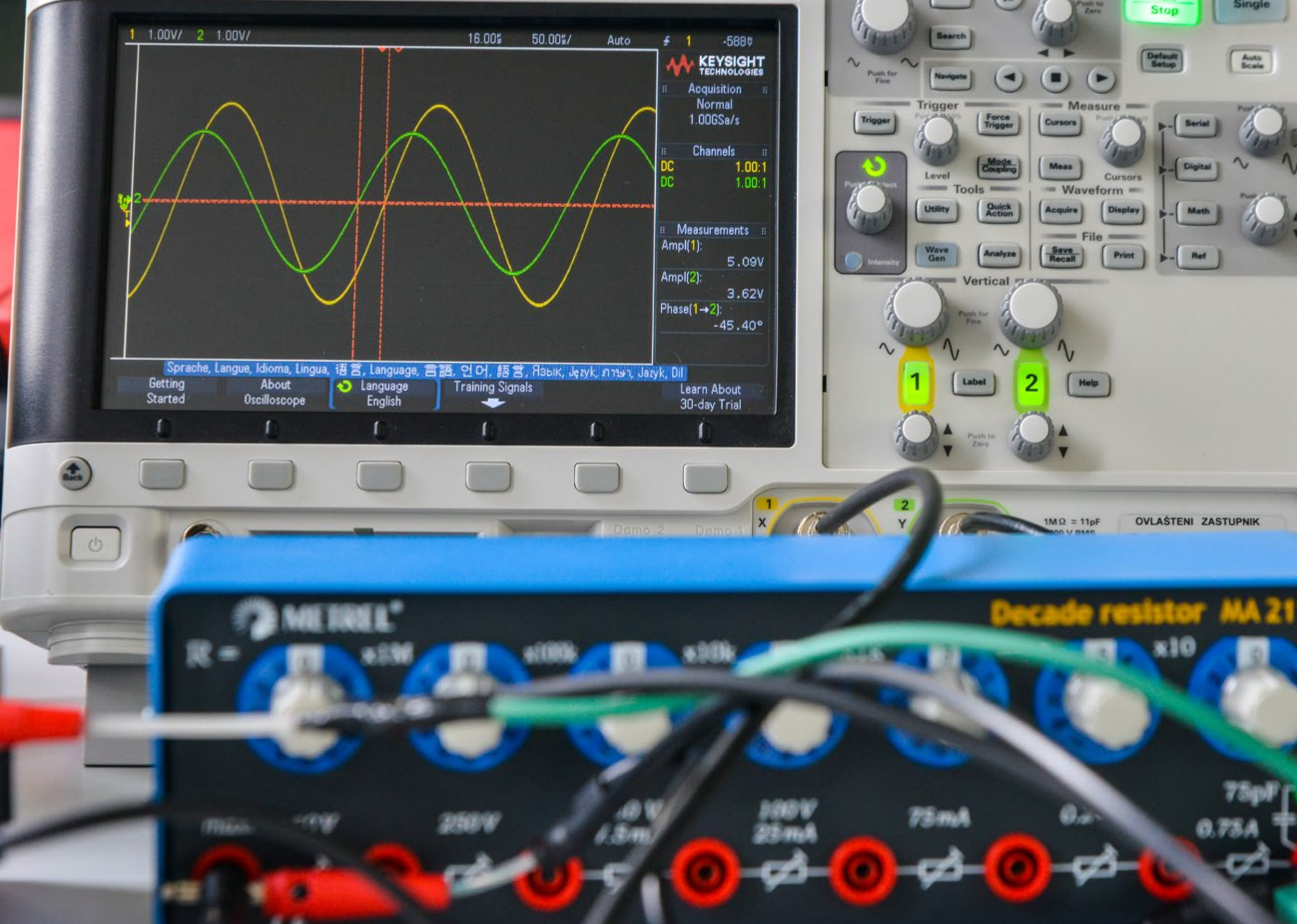
Vizualizacija konvolucijskih filtara jednog od slojeva naučenog modela
/ A visualisation of convolutional filters of a learned model layer



Točnost modela inicijaliziranog prijenosom znanja
/ Model accuracy for a model intialised using knowledge transfer



Normalizirana matrica zabune predikcija modela inicijaliziranog prijenosom znanja
/ Normalised confusion matrix for a model initialised using knowledge transfer


1 1.00V/ 2 1.00V/
16.00s 50.00s/ Auto
KEYSIGHT TECHNOLOGIES
Acquisition
Normal
1.00GSa/s
Channels
DC 1.00:1
DC 1.00:1
Measurements
Ampl(1):
5.09V
Ampl(2):
3.62V
Phase(1→2):
-45.40°
Sprache, Langue, Idioma, Lingua, 语言, Language, 言語, 언어, 語言, Язык, Język, שפה, Jazyk, Dil
Getting Started
About Oscilloscope
Language English
Training Signals
Learn About 30-day Trial
Trigger
Force Trigger
Level
Mode Coupling
Tools
Utility
Quick Action
Wave Gen
Analyze
Measure
Cursors
Meas
Waveform
Acquire
Display
File
Save Recall
Print
Serial
Digital
Math
Ref
Vertical
Label
Help
Stop
Single
Default Setup
Auto Scale
Navigate
Search
OVLAŠTENI ZASTUPNIK
Decade resistor MA 21

3 studijski programi na fakultetu
3 study programs at the faculty

PREDDIPLOMSKI SVEUČILIŠNI STUDIJ 3-godišnji (180 ECTS)		UNDERGRADUATE UNIVERSITY STUDY 3 years (180 ECTS)	
Studij	Naziv	Study	Title
Strojarstvo	Sveučilišni prvostupnik inženjer strojarstva	Mechanical Engineering	University Bachelor of Mechanical Engineering
Brodogradnja	Sveučilišni prvostupnik inženjer brodogradnje	Naval Architecture	University Bachelor of Naval Architecture
Elektrotehnika	Sveučilišni prvostupnik inženjer elektrotehnike	Electrical Engineering	University Bachelor of Electrical Engineering
Računarstvo	Sveučilišni prvostupnik inženjer računarstva	Computer Engineering	University Bachelor of Computer Engineering

DIPLOMSKI SVEUČILIŠNI STUDIJ 2-godišnji (120 ECTS)		GRADUATE UNIVERSITY STUDY 2 years (120 ECTS)	
Studij	Naziv	Study	Title
Strojarstvo	Magistar inženjer strojarstva	Mechanical Engineering	Master of Mechanical Engineering
Brodogradnja	Magistar inženjer brodogradnje	Naval Architecture	Master of Naval Architecture
Elektrotehnika	Magistar inženjer elektrotehnike	Electrical Engineering	Master of Electrical Engineering
Računarstvo	Magistar inženjer računarstva	Computer Engineering	Master of Computer Engineering

POSLIJEDIPLOMSKI SVEUČILIŠNI (DOKTORSKI) STUDIJ 3-godišnji (180 ECTS)		POSTGRADUATE UNIVERSITY (DOCTORAL) STUDY 3 years (180 ECTS)	
Studij	Naziv	Study	Title
Strojarstvo	Doktor znanosti, područje Tehničkih znanosti	Mechanical Engineering	D. Sc. in the area of Engineering Sciences
Temeljne tehničke znanosti		Basic Engineering Sciences	
Brodogradnja		Naval Architecture	
Druge interdisciplinarne tehničke znanosti		Other Interdisciplinary Sciences	
Elektrotehnika		Electrical Engineering	

PREDDIPLOMSKI STRUČNI STUDIJ 3-godišnji (180 ECTS)		UNDERGRADUATE VOCATIONAL STUDY 3 years (180 ECTS)	
Studij	Naziv	Study	Title
Strojarstvo	Stručni prvostupnik inženjer strojarstva	Mechanical Engineering	Bachelor of Mechanical Engineering
Brodogradnja	Stručni prvostupnik inženjer brodogradnje	Naval Architecture	Bachelor of Naval Architecture
Elektrotehnika	Stručni prvostupnik inženjer elektrotehnike	Electrical Engineering	Bachelor of Electrical Engineering

Studiji na Tehničkom fakultetu ustrojeni su prema Bolonjskom modelu 3 + 2 + 3, što znači da se obrazovanje provodi kroz preddiplomski sveučilišni studij u trajanju od tri godine kojim se stječe 180 ECTS bodova, zatim diplomski sveučilišni studij u trajanju od dvije godine kojim se stječe 120 ECTS bodova te poslijediplomski sveučilišni (doktorski) studij u trajanju od tri godine kojim se stječe 180 ECTS bodova.

Osim tih studija, obrazovanje se provodi i kroz preddiplomske stručne studije u trajanju od tri godine kojima se stječe također 180 ECTS bodova. Taj je sustav s vrstama pojedinih studija i stečenim nazivima prikazan u tablici. U nastavku su opisane osnovne značajke pojedinog studija.

PREDDIPLOMSKI SVEUČILIŠNI STUDIJ STROJARSTVA

Preddiplomski sveučilišni studij strojarstva priprema studente za diplomski sveučilišni studij strojarstva, ali im pruža i mogućnost zapošljavanja na odgovarajućim stručnim poslovima. Studij ima za cilj osposobljavanje studenata za primjenu temeljnih i specijalističkih znanja iz strojarstva, prepoznavanje, oblikovanje i rješavanje problema iz prakse, primjenu drugih stečenih znanja iz tehnike, matematike i računarstva, korištenje suvremenih inženjerskih alata, razumijevanje timskog rada i učinkovite komunikacije, razumijevanje etičnosti i etičke odgovornosti i razumijevanje utjecaja inženjerskih rješenja na društvo i okolinu. Student koji završi ovaj studij sposoban je uključiti se u kontinuirano obrazovanje i profesionalni razvoj te posjeduje šire obrazovanje.

Studies at the Faculty of Engineering are set according to the Bologna model 3 + 2 + 3, which means that education continues through a three year long undergraduate university study resulting in 180 ECTS credits obtained, followed by a two year graduate university study resulting in 120 ECTS credits obtained and a postgraduate university (doctoral) study which lasts three years and results in 180 ECTS credits obtained.

Apart from these studies, education is accomplished through a three year undergraduate vocational study that results in 180 ECTS credits. The curricula with the respective types of studies and obtained titles are shown in the following table. The basic characteristics of each study are described below.

UNDERGRADUATE UNIVERSITY STUDY OF MECHANICAL ENGINEERING

The undergraduate university study of mechanical engineering prepares the students for graduate university study and provides an opportunity for placement in appropriate professional employment. The aim of the study is to prepare the students for implementing basic and specialistic knowledge in the field of mechanical engineering, recognizing, defining and solving practical problems, implementing other acquired engineering knowledge, math and computing, using modern engineering tools, understanding teamwork and efficient communication, understanding ethics and responsibility and the influence of engineering solutions on society and the environment. At the end of study, students are able to continue with education and professional development and possess a broader education.

Preddiplomski sveučilišni studiji

S	Strojarstvo	N	B	S	Brodogradnja	N	B	S	Elektrotehnika	N	B	S	Računarstvo	N	B
	Predmet				Predmet				Predmet				Predmet		
I	Matematika I	6	7	I	Matematika I	6	7	I	Matematika I	6	7	I	Matematika I	6	7
	Statika	5	6		Statika	5	6		Fizika I	4	5		Uvod u modernu fiziku	3	4
	Materijali I	4	4		Materijali I	4	4		Osnove elektrotehnike I	6	7		Elektrotehnika R	4	7
	Elektrotehnika	3	5		Elektrotehnika	3	5		Uvod u računarstvo	4	6		Programiranje I	4	6
	Računalne aplikacije u inženjerstvu	3	4		Računalne aplikacije u inženjerstvu	3	4		Inženjerska grafika i dokumentiranje	4	5		Računalne vještine	2	3
	Inženjerska grafika	4	4		Inženjerska grafika	4	4						Engleski jezik I	3	3
II	Matematika II	6	7	II	Matematika II	6	7	II	Matematika II	6	7	II	Matematika II	6	7
	Kinematika	5	6		Kinematika	5	6		Fizika II	4	5		Elektronika	4	7
	Čvrstoća konstrukcija I	6	7		Čvrstoća konstrukcija	6	7		Osnove elektrotehnike II	6	7		Programiranje II	5	7
	Materijali II	3	5		Materijali II	3	5		Programiranje	4	6		Digitalna logika	4	6
	Oblikovanje pomoću računala	4	5		Oblikovanje pomoću računala	4	5		Tehnologija materijala	3	5		Engleski jezik II	3	3
III	Dinamika	4	5	III	Dinamika	4	5	III	Inženjerska matematika ET	5	7	III	Inženjerska matematika R	4	5
	Mehanika fluida	5	5		Mehanika fluida	5	5		Mjerenja u elektrotehnici	5	7		Algoritmi i strukture podataka	5	7
	Nauka o toplini I	6	7		Zavarivanje I	3	4		Elektronika I	4	6		Građa računala	4	6
	Mjerenja i kontrola kvalitete	3	5		Termodinamika BG	4	5		Električne mreže	4	7		Signali i sustavi	4	6
	Računarske metode	4	5		Uvod u plovne objekte	3	4		Strani jezik I	2	3		Uvod u objektno orj. programiranje	4	6
	Strani jezik I	2	3		Osnove konstrukcijskih elemenata	4	4								
					Engleski jezik I	2	3								
IV	Inženjerska statistika	4	5	IV	Inženjerska statistika	4	5	IV	Digitalna logika	4	6	IV	Operacijski sustavi	4	7
	Konstrukcijski elementi I	5	7		Brodske forme	5	6		Elektronika II	4	6		Računalne mreže	4	7
	Hidraulički strojevi	4	5		Osnove gradnje broda	3	5		Osnove regulacijske tehnike	4	6		Računalna grafika	4	7
	Proizvodne tehnologije	4	5		Konstrukcija broda I	4	6		Izborni kolegij	4	4		Izborni kolegij I	3	4
	Strani jezik II	2	3		Engleski jezik II	2	3		Strani jezik II	2	3		Stručna praksa I		5
	Stručna praksa I		5		Stručna praksa I		5		Stručna praksa I		5				
V	Konstrukcijski elementi II	6	7	V	Plovnost i stabilitet broda	6	7	V	Električni strojevi	5	6	V	Ugradbeni računalni sustavi	5	7
	Toplinski strojevi i uređaji	4	5		Oprema broda	4	6		Energetska elektronika	5	6		Baze podataka	4	6
	Proizvodni strojevi, alati i naprave	4	5		Konstrukcija broda II	4	6		Signali i sustavi	4	6		Razvoj web aplikacija	4	7
	Kolegij izborne skupine	4	4		Tehnologija brodogradnje	4	6		Kolegij izborne skupine	4	7		Izborni kolegij II	4	5
	Tehnološki procesi	4	4		Izborni projekt	3	5		Izborni projekt	3	5		Izborni projekt	3	5
	Izborni projekt	3	5												
VI	Energetski sustavi	4	4	VI	Organizacija i ekonomika posl. sust.	3	4	VI	Elektromotorni pogoni	4	5	VI	Programsko inženjerstvo	5	7
	Automatizacija	3	4		Hidrodinamika plovnih objekata I	6	8		Organizacija i ekonomika posl. sust.	3	4		Organizacija i ekonomika posl. sust.	3	4
	Kolegij izborne skupine	4	4		Slobodni kolegij I	3	4		Kolegij izborne skupine	5	7		Osnove znanstvenog računanja	4	5
	Organizacija i ekonomika posl. sust.	3	4		Slobodni kolegij II	3	4		Slobodni kolegij	3	4		Slobodni kolegij	3	4
	Slobodni kolegij	3	4		Završni rad		10		Završni rad		10		Završni rad		10
	Završni rad		10												

(Studijski programi pojedinih studija prikazani su na gornjoj i na tablicama koje slijede: sa S je označen semestar u kojem se predmet predaje, s N su označeni sati nastave tjedno, a s B broj ECTS bodova pripadnog predmeta.)

Undergraduate University Studies

S	Mechanical Engineering	N	B	S	Naval Architecture	N	B	S	Electrical Engineering	N	B	S	Computer Engineering	N	B
	Course				Course				Course				Course		
I	Mathematics I	6	7	I	Mathematics I	6	7	I	Mathematics I	6	7	I	Mathematics I	6	7
	Statics	5	6		Statics	5	6		Physics I	4	5		Introduction to Modern Physics	3	4
	Materials I	4	4		Materials I	4	4		Fundamentals of Electrical Engineering I	6	7		Electrical Engineering CE	4	7
	Electrical Engineering	3	5		Electrical Engineering	3	5		Introduction to Computer Engineering	4	6		Programming I	4	6
	Computer Applications in Engineering	3	4		Computer Applications in Engineering	3	4		Engineering Graphics and Documenting	4	5		Computer Skills	2	3
	Engineering Graphics	4	4		Engineering Graphics	4	4						English Language I	3	3
II	Mathematics II	6	7	II	Mathematics II	6	7	II	Mathematics II	6	7	II	Mathematics II	6	7
	Kinematics	5	6		Kinematics	5	6		Physics II	4	5		Electronics CE	4	7
	Strength of Materials I	6	7		Strength of Materials	6	7		Fundamentals of Electrical Engineering II	6	7		Programming II	5	7
	Materials II	3	5		Materials II	3	5		Programming	4	6		Digital Logic	4	6
	Modelling by Computer	4	5		Modelling by Computer	4	5		Materials Technology	3	5		English Language II	3	3
III	Dynamics	4	5	III	Dynamics	4	5	III	Mathematics for Engineers EE	5	7	III	Mathematics for Engineers CE	4	5
	Fluid Mechanics	5	5		Fluid Mechanics	5	5		Measurements in the Electrical Engineering	5	7		Algorithms and Data Structures	5	7
	Thermodynamics I	6	7		Welding Engineering I	3	4		Electronics I	4	6		Computer Architecture	4	6
	Measurments and Quality Control	3	5		Thermodynamics NA	4	5		Electrical Circuits	4	7		Signals and Systems	4	6
	Computational Methods	4	5		Introduction to Marine Vessels	3	4		Foreign Language I	2	3		Introduction to Object Oriented Programming	4	6
	Foreign Language I	2	3		Basis of Machine Elements Design	4	4								
					English Language I	2	3								
IV	Engineering Statistics	4	5	IV	Engineering Statistics	4	5	IV	Digital Logic	4	6	IV	Operating Systems	4	7
	Machine Elements Design I	5	7		Ship Hull Forms	5	6		Electronics II	4	6		Computer Networks	4	7
	Hydraulic Machines	4	5		Basics of Ship Production	3	5		Fundamentals of Automatic Control	4	6		Computer Graphics	4	7
	Production Technologies	4	5		Ship Structure I	4	6		Elective Course	4	4		Elective course I	3	4
	Foreign Language II	2	3		English Language II	2	3		Foreign Language II	2	3		Professional practice I		5
	Professional practice I		5		Professional Practice I		5		Professional practice I		5				
V	Machine Elements Design II	6	7	V	Seaworthiness and Stability of the Ship	6	7	V	Electrical Machines	5	6	V	Embedded Systems	5	7
	Heat Engines and Devices	4	5		Ship Equipment	4	6		Power Electronics	5	6		Database Systems	4	6
	Production Machines, Tools, Jigs and Fixtures	4	5		Ship Structure II	4	6		Signals and Systems	4	6		Web Application Development	4	7
	Elective group course	4	4		Shipbuilding Technology	4	6		Elective group course	4	7		Elective course II	4	5
	Technological Processes	4	4		Elective project	3	5		Elective project	3	5		Elective project	3	5
	Elective project	3	5												
VI	Energy Systems	4	4	VI	Organization and Economics of Business Systen	3	4	VI	Electrical Drives	4	5	VI	Software Engineering	5	7
	Automation	3	4		Marine Hydrodynamics I	6	8		Organization and Economics of Business Syster	3	4		Organization and Economics of Business Syster	3	4
	Elective group course	4	4		Free course I	3	4		Elective group course	5	7		Scientific Computing Fundamentals	4	5
	Organization and Economics of Business Syste	3	4		Free course II	3	4		Free course	3	4		Free course	3	4
	Free course	3	4		Final Work		10		Final work		10		Final work		10
	Final work		10												

(Curricula of the described studies are presented above and in the tables below: S signifies the semester in which the course is placed, with N lecturing hours per week, and B the number representing ECTS credits.)

PREDDIPLOMSKI SVEUČILIŠNI STUDIJ BRODOGRADNJE

Preddiplomski sveučilišni studij brodogradnje priprema studente za diplomski sveučilišni studij brodogradnje, ali im pruža i mogućnost zapošljavanja na odgovarajućim stručnim poslovima. Na preddiplomskom studiju brodogradnje polaznicima se u razumnoj količini i na dovoljno visokoj razini daje znanje iz temeljnih tehničkih sadržaja s jedne strane, te iz glavnih brodograđevnih sadržaja s druge strane, kako bi u svojoj radnoj praksi, kao i u svojem daljnjem stručnom i znanstvenom usavršavanju, uvijek bili na razini postavljenih zadataka. Svojim opsegom i sadržajem ovaj studij polazniku daje potrebnu širinu stručnih znanja koja ga po završetku studija osposobljava za samostalan rad, odnosno za rad u stručnim timovima u bilo kojem segmentu brodograđevne struke. Završeni student ovog studija sposoban je uključiti se u kontinuirano obrazovanje i profesionalni razvoj te posjeduje i šire obrazovanje.

PREDDIPLOMSKI SVEUČILIŠNI STUDIJ ELEKTROTEHNIKE

Završetkom preddiplomskoga sveučilišnog studija elektrotehnike polaznik posjeduje temeljna znanja iz matematike, fizike, elektrotehnike i primjene računala. Nadalje, zna pripremiti i izvesti eksperiment, odnosno određena mjerenja te ih pravilno obraditi i protumačiti rezultate. Sposoban je identificirati, formulirati i riješiti problem. Pri tome se zna koristiti suvremenim inženjerskim alatima i spreman je za rješavanje šireg spektra inženjerskih zadataka uz mogućnost brze specijalizacije u određenom području. Polaznik je također sposoban raditi u (multidisciplinarnoj) grupi, razumije važnost učinkovite komunikacije u rješavanju određenoga inženjerskog problema, a u svojem radu poštuje profesionalne i etičke norme te zaštitu okoliša. Nakon završetka studija sposoban je uključiti se u kontinuirano obrazovanje i profesionalni razvoj te posjeduje šire obrazovanje.

UNDERGRADUATE UNIVERSITY STUDY OF NAVAL ARCHITECTURE

The undergraduate university study of naval architecture prepares the students for graduate university study and gives them the opportunity for employment in appropriate professional employment positions. The undergraduate study of naval architecture, offers students on the one hand a reasonable quantity and quality of knowledge in basic engineering and, on the other hand, knowledge about the main constructions of shipbuilding so that they can be prepared for professional jobs as well as for further professional education. With its volume and contents, this study gives an adequate width of knowledge so that students can work either in teams or as individuals in any field of the shipbuilding process. At the end of study, students are able to continue with education and professional development and possess broader education.

UNDERGRADUATE UNIVERSITY STUDY OF ELECTRICAL ENGINEERING

Upon completion of the undergraduate university study of electrical engineering, the student obtains a basic knowledge of math, physics, basic electrical engineering and applied computer engineering. Furthemore, he knows how to prepare and conduct experiments and appropriate measurement and correctly process and recognize the obtained results. He is capable of identifying, formulating and solving problems. In such a way, he is able to use modern engineering tools and is prepared for solving a wide spectrum of engineering tasks related to the ability of fast specialization in certain fields. He is able to work in teams, he understands the importance of efficient communication in solving particular engineering problems and he acts in accordance with professional and ethical codes, as well as environmental protection standards. At the end of the study, students are able to continue with their education and professional development and they possess broader education.

PREDDIPLOMSKI SVEUČILIŠNI STUDIJ RAČUNARSTVA

Ovaj preddiplomski sveučilišni studij ima za cilj pružiti razinu znanja koje će osigurati profil stručnjaka osposobljenih za samostalno obavljanje poslova sastavljanja, održavanja i posluživanja računalnih sustava kao i njihova korištenja kao alata. Ova znanja obuhvaćaju područja računalne programske i sklopovske opreme te znanja iz područja računalnih mreža i sustava. Time se osigurava razina izobrazbe nužna za svladavanje niza stručnih poslova. Pri tome je polaznik sposoban raditi u (multidisciplinarnoj) skupini, razumije važnost učinkovite komunikacije na rješavanju određenoga inženjerskog problema, a u svojem radu poštuje profesionalne i etičke norme te zaštitu okoliša. Završeni polaznik ovog studija sposoban je uključiti se u kontinuirano obrazovanje i profesionalni razvoj te posjeduje šire obrazovanje.

DIPLOMSKI SVEUČILIŠNI STUDIJ STROJARSTVA

Na ovom studiju omogućena je specijalizacija u jednome od sljedećih područja:

- Konstruiranje i mehatronika
- Računarska mehanika i inženjerstvo
- Tehnološko-informatičko inženjerstvo
- Industrijsko inženjerstvo i management
- Termotehnika
- Procesno i energetsko strojarstvo
- Brodostrojarstvo
- Inženjerstvo materijala

Diplomskim sveučilišnim studijem strojarstva studenti stječu potrebna uskospecijalistička znanja iz navedenih područja čime su osposobljeni za obavljanje najsloženijih inženjerskih zadaća temeljenih na znanstvenom pristupu rješavanju problema. Stječu se nova specijalistička znanja iz strojarstva i sposobnost njihove primjene, kao i poznavanje i primjena drugih specijalističkih znanja iz tehnike, matematike i računarstva. Studenti razvijaju sposobnost kontinuiranog obrazovanja i samoobrazovanja, sposobnost samostalnog istraživanja, otkrivanja novih znanja, pripreme i izvođenja eksperimenata te tumačenja podataka. Studijem se stječu znanja i kompetencije potrebne za projektiranje novih sustava, komponenata ili procesa te učinkovito djelovanje u ulozi vođe tima. Studijski program sličan je programima studija na inozemnim visokim učilištima uz postizanje specifičnih zahtjeva sredine za koju se prvenstveno školuju

UNDERGRADUATE UNIVERSITY STUDY OF COMPUTER ENGINEERING

This study program aims at providing a level of knowledge that will yield a profile of experts trained to independently perform tasks of assembling, serving and maintaining computer systems and using the same as tools. This category includes knowledge of computer software and hardware as well as knowledge in the field of computer networks and systems, ensuring the level of training required to master a number of related jobs. The student is also able to work in a group and he understands the importance of effective communication when solving specific engineering problems. His work respects professional and ethical standards and environmental protection. Upon completion of the study program, the student will be able to engage in lifelong learning and professional development and will have acquired broad education.

GRADUATE UNIVERSITY STUDY OF MECHANICAL ENGINEERING

In this study, specialization is enabled in one of the following fields:

- Mechanical design and mechatronics
- Computer engineering and mechanics
- Technological information engineering
- Industrial engineering and management
- Thermal Energy Engineering
- Process and energy engineering
- Marine engineering
- Engineering of materials

This study enables students to obtain the necessary specialist knowledge in the mentioned fields and to perform the most complex engineering tasks based on a scientific problem solving approach. Students acquire new specialised knowledge of mechanical engineering and the ability to implement it as well as that of other topics in engineering, maths and computing. Students are able to continue their education and self-education, to autonomously perform research and experimental work, as well as to validate the obtained results. The study extends the knowledge and competencies necessary for designing new systems, components or processes and the efficient management of projects as team leaders. The curriculum is similar to other programs at foreign universities with some specificities tuned to the needs of the surroundings that most of the students will work in.
In the study program, recommendations of the Bologna system are implemented, especially

kadrovi na Tehničkom fakultetu Sveučilišta u Rijeci.

U studijski program uvedene su preporuke iz Bolonjske deklaracije koje se odnose na način osiguranja kvalitete studijskog programa te mobilnost pri studiranju i priznavanju diploma. Za upis na diplomski sveučilišni studij strojarstva, kako bi se omogućila horizontalna mobilnost studenata, upis je omogućen i studentima koji su završili istovrsne preddiplomske sveučilišne studije (brodogradnja, elektrotehnika, računarstvo). Na diplomskom sveučilišnom studiju strojarstva sve je veći broj studenata koji su završili preddiplomske stručne studije iz područja tehničkih znanosti te odgovarajući program razlikovne edukacije.

DIPLOMSKI SVEUČILIŠNI STUDIJ BRODOGRADNJE

Na diplomskom sveučilišnom studiju brodogradnje osposobljavaju se budući stručnjaci koji će raditi na poslovima i zadacima projektiranja i konstruiranja različitih vrsta i tipova plovnih objekata te razvoja i vođenja tehnoloških procesa, poglavito gradnje i održavanja plovnih objekata i objekata morske tehnologije, na poslovima klasifikacijskih i nadzornih institucija i drugim poslovima u širem području brodogradnje i inženjerstva morske tehnologije, odnosno pomorstva. Na ovom studiju moguće je odabrati sljedeće izborne skupine:

- Projektiranje i konstrukcija plovnih objekata
- Tehnologija i organizacija brodogradnje

Studijski je program usklađen s preporukama u Bolonjskoj deklaraciji koje se odnose na način osiguranja kvalitete studijskog programa te mobilnost pri studiranju i priznavanju diploma.

DIPLOMSKI SVEUČILIŠNI STUDIJ ELEKTROTEHNIKE

Na ovom studiju omogućena je specijalizacija u jednom od sljedećih područja:

- Automatika
- Elektroenergetika

Studenti stječu potrebna specijalistička znanja iz navedenih područja čime su osposobljeni za obavljanje stručnih, ali i znanstvenih poslova iz domene elektrotehnike. Student po završetku studija mora znati u potpunosti voditi samostalno istraživanje. Njegovi radni zadaci uključuju ne samo rješavanje problema na postojećim sustavima, nego i projektiranje novih sustava, komponenata procesa uz postavljene uvjete. Pri

concerning quality assurance, mobility during the study, as well as diploma recognition. For admission to graduate university study of mechanical engineering and in order to ensure horizontal mobility of students, enrollment is allowed to students who have completed equivalent undergraduate university studies (naval architecture, electrical engineering, computer engineering). At graduate study the number of students who have completed professional courses in engineering and an appropriate program of supplementary education is also getting larger.

GRADUATE UNIVERSITY STUDY OF NAVAL ARCHITECTURE

In this study, professional qualifications are acquired for tasks pertaining to the design and construction of various types of vessels, the development and leading of technological processes (mainly in shipbuilding and servicing of vessels and other objects of maritime technology), qualifications pertaining to jobs in classification and supervising institutions, as well as other jobs in the wide field of naval architecture and maritime engineering. In this study, it is possible to choose the following elective groups:

- Design and construction of vessels
- Technology and organization of ship building

The study program has been adjusted to recommendations of the Bologna system, especially concerning quality assurance, mobility during the study as well as diploma recognition.

GRADUATE UNIVERSITY STUDY OF ELECTRICAL ENGINEERING

In this study, specialization in one of the following fields is made possible:

- Automatics
- Power engineering

Students acquire the necessary specialistic knowledge in the fields mentioned above so that they are enabled to perform the most complex professional engineering tasks as well as those based on a scientific approach to problem solving in the area of electrical engineering. Students should be able to perform autonomous research. The student's tasks include not only problem solving of existing systems, but also the design of new systems, components and processes based on given specifications. Therefore, he is capable of working as a team or research group member or leader. The study

tome mora biti sposoban djelovati i kao vođa i kao član skupine ili istraživačkog tima. Studijski je program usklađen s preporukama u Bolonjskoj deklaraciji koje se odnose na način osiguranja kvalitete studijskog programa, mobilnost pri studiranju i priznavanju diploma.

DIPLOMSKI SVEUČILIŠNI STUDIJ RAČUNARSTVA

Diplomskim sveučilišnim studijem računarstva studenti stječu potrebna uskospecijalistička znanja iz jednog od navedenih područja:

- Programsko inženjerstvo
- Računalni sustavi

Time su osposobljeni za obavljanje najsloženijih zadataka temeljenih na znanstvenom pristupu rješavanju problema. Studenti usvajaju sposobnost interdisciplinarnog pristupa integraciji sustava, obrade informacija i traženja inovativnih rješenja. Samostalno će projektirati, upravljati, analizirati problem i predlagati rješenja vezana uz razvoj sklopovske i programske podrške i umrežavanja sustava. Znat će učinkovito birati i primjenjivati odgovarajuće suvremene alate i metode iz struke na kompleksne inženjerske aktivnosti. Steći će znanja i vještine za projektiranje sustava, komponenata i procesa koji odgovaraju specifičnim potrebama određenih područja.

program has been adjusted to recommendations of the Bologna system, especially concerning quality assurance, mobility during the study as well as diploma recognition.

GRADUATE UNIVERSITY STUDY OF COMPUTER ENGINEERING

By completing the university graduate programme in computer engineering, students attain the necessary narrowly specialised knowledge in one of the following areas:

- Software engineering
- Computer systems

Students are trained to perform the most complex engineering tasks based on the scientific approach to problem solving. They attain the skills needed for information processing, seeking innovative solutions and performing interdisciplinary approach to systems integration. Students will be able to independently plan, manage, analyse problems and propose solutions related to the development of hardware and software. They will learn how to efficiently select and apply modern tools and procedures from this field on complex engineering activities. They will acquire knowledge and skills for designing systems, components and processes that meet the specific needs of certain domains.

Diplomski sveučilišni studiji

S	Strojarstvo			S	Brodogradnja			S	Elektrotehnika			S	Računarstvo		
	Predmet	N	B		Predmet	N	B		Predmet	N	B		Predmet	N	B
I	Inženjerska matematika	5	7	I	Inženjerska matematika	5	6	I	Numerička i stohastička matematika	4	6	I	Stohastička matematika	4	6
	Čvrstoća konstrukcija II	5	7		Čvrstoća broda	4	5		Upravljanje elektromotornim pogonima	4	6		Teorija informacija i kodiranje	4	6
	Nauka o toplini II	5	7		Brodska elektrotehnika	3	4		Kolegij izborne skupine	4	6		Izborni kolegij Z	8	12
	Kolegij izborne skupine	4	5		Metodologija gradnje plovnih objekata	4	5		Kolegij izborne skupine	4	6		Kolegij izborne skupine	4	6
	Kolegij izborne skupine	4	4		Računarske metode u brodogradnji	4	4		Kolegij izborne skupine	4	6				
					Kolegij izborne skupine	5	6								
II	Projekt I	2	5	II	Brodski sustavi	4	5	II	Projekt I	2	5	II	Upravljanje u programskom inženjerstvu	6	7
	Slobodni kolegij I	4	5		Projekt I	2	5		Slobodni kolegij I	4	5		Projekt I		5
	Stručna praksa II		5		Slobodni kolegij I	4	5		Stručna praksa II		5		Stručna praksa II		5
	Izborni kolegij I	4	5		Stručna praksa II		5		Kolegij izborne skupine	4	5		Izborni kolegij LJ	4	6
	Kolegij izborne skupine	4	5		Izborni kolegij I	4	5		Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	7
	Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	5				
III	Projekt II	2	5	III	Osnivanje plovnih objekata I	4	5	III	Projekt II	2	5	III	Napredni operacijski sustavi	6	8
	Slobodni kolegij II	4	5		Projekt II	2	5		Slobodni kolegij II	4	5		Projekt II		5
	Kolegij izborne skupine	4	5		Slobodni kolegij II	4	5		Izborni kolegij I	4	4		Slobodni kolegij I	3	5
	Kolegij izborne skupine	4	5		Izborni kolegij II	4	5		Kolegij izborne skupine	4	5		Izborni kolegij Z	8	12
	Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	6				
	Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	5		Kolegij izborne skupine	5	5				
IV	Slobodni kolegij III	4	5	IV	Slobodni kolegij III	4	5	IV	Slobodni kolegij III	4	5	IV	Projektni management	2	3
	Kolegij izborne skupine	4	5		Izborni kolegij III	4	5		Kolegij izborne skupine	4	5		Slobodni kolegij II	3	5
	Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	5		Kolegij izborne skupine	4	5		Izborni kolegij LJ	8	12
	Kolegij izborne skupine	3	5		Kolegij izborne skupine	3	5		Kolegij izborne skupine	4	5		Diplomski rad		10
	Diplomski rad		10		Diplomski rad		10		Diplomski rad		10				
Moduli	Konstruiranje i mehatronika			Moduli	Projektiranje i konstrukcija plovnih objekata			Moduli	Automatika			Modul	Programsko inženjerstvo		
	Računarska mehanika i inženjerstvo				Tehnologija i organizacija brodogradnje				Elektroenergetika				Računalni sustavi		
	Tehnološko informatičko inženjerstvo														
	Industrijsko inženjerstvo i menadžment														
	Termotehnika														
	Procesno i energetsko strojarstvo														
	Brodostrojarstvo														
	Inženjerstvo materijala														

Graduate University Studies

S	Mechanical Engineering			S	Naval Architecture			S	Electrical Engineering			S	Computer Engineering		
	Course	N	B		Course	N	B		Course	N	B		Course	N	B
I	Mathematics for Engineers	5	7	I	Mathematics for Engineers	5	6	I	Numerical and Stochastic Mathematics	4	6	I	Stochastic Mathematics	4	6
	Strength of Materials II	5	7		Ship Strength	4	5		Control of Electrical Drives	4	6		Information Theory and Coding	4	6
	Thermodynamics II	5	7		Marine Electrical Engineering	3	4		Elective group course	4	6		Elective Course W	8	12
	Elective group course	4	5		Methodology of Ship Production	4	5		Elective group course	4	6		Elective group course	4	6
	Elective group course	4	4		Computational Methods in Naval Architecture	4	4		Elective group course	4	6				
					Elective group course	5	6								
II	Project I	2	5	II	Ship Systems	4	5	II	Project I	2	5	II	Software Engineering Management	6	7
	Free Elective Course I	4	5		Project I	2	5		Free Elective Course I	4	5		Project I		5
	Professional Practice II		5		Free Elective Course I	4	5		Professional practice II		5		Professional practice II		5
	Elective Course I	4	5		Professional practice II		5		Elective group course	4	5		Elective CourseS	4	6
	Elective group course	4	5		Elective Course I	4	5		Elective group course	4	5		Elective group course	4	7
	Elective group course	4	5		Elective group course	4	5		Elective group course	4	5				
III	Project II	2	5	III	Ship Design I	4	5	III	Project II	2	5	III	Advanced Operating Systems	6	8
	Free Elective Course II	4	5		Project II	2	5		Free Elective Course II	4	5		Project II		5
	Elective group course	4	5		Free Elective Course II	4	5		Elective Course I	4	4		Free Elective Course I	3	5
	Elective group course	4	5		Elective Course II	4	5		Elective group course	4	5		Elective Course W	8	12
	Elective group course	4	5		Elective group course	4	5		Elective group course	4	6				
	Elective group course	4	5		Elective group course	4	5		Elective group course	5	5				
IV	Free Elective Course III	4	5	IV	Free Elective Course III	4	5	IV	Free Elective Course III	4	5	IV	Project Management	2	3
	Elective group course	4	5		Elective Course III	4	5		Elective group course	4	5		Free Elective Course II	3	5
	Elective group course	4	5		Elective group course	4	5		Elective group course	4	5		Elective Course S	8	12
	Elective group course	3	5		Elective group course	3	5		Elective group course	4	5		Graduate Work		10
	Graduate Work		10		Graduate Work		10		Graduate Work		10				
Modules	Mechanical Engineering Design and Mechatronics			Modules	Design and Construction of Floating Objects			Modules	Automation			Modules	Software Engineering		
	Computational Mechanics and Engineering				Technology and Organization of Naval Architecture				Power Engineering				Computer Systems		
	Technology Computational Engineering														
	Industrial Engineering and Management														
	Thermal Engineering														
	Process and Energy Engineering														
	Marine Engineering														
	Materials Engineering														

POSLIJEDIPLOMSKI SVEUČILIŠNI (DOKTORSKI) STUDIJI IZ PODRUČJA TEHNIČKIH ZNANOSTI, POLJA STROJARSTVA, BRODOGRADNJE, TEMELJNIH TEHNIČKIH ZNANOSTI I INTERDISCIPLINARNIH TEHNIČKIH ZNANOSTI I IZ POLJA ELEKTROTEHNIKE

Na Tehničkom fakultetu izvode se dva poslijediplomska sveučilišna (doktorska) studija iz tehničkih znanosti - polja strojarstva, brodogradnje, temeljnih tehničkih znanosti i interdisciplinarnih tehničkih znanosti te polja elektrotehnike.

Završetkom ovih studija student stječe stupanj doktora znanosti što podrazumijeva superiorno poznavanje određenog znanstvenog područja unutar tehničkih znanosti i dokazanu sposobnost originalnog znanstvenog istraživanja. Njegove kompetencije obuhvaćaju vrsno poznavanje literature i nerazjašnjenih problema iz određenog područja te sposobnost osmišljavanja i provođenja znanstvenoistraživačkog projekta do kraja, objavljivanja rezultata istraživanja te prezentiranja tih rezultata drugim znanstvenicima, izražavanja svojih stavova u prisutnosti eksperta u području (na kongresima, seminarima, gostovanjima na drugim institucijama itd.). Njegove osobine obuhvaćaju i želju za dijeljenjem svojega znanja i iskustva mlađim generacijama studenata, kritičnost, u prvom redu prema vlastitom istraživanju, ali i radu drugih te sposobnost prilagođavanja dolazećim promjenama.

Nakon završetka doktorskog studija otvaraju se brojne mogućnosti nastavka znanstveno-istraživačkog rada na matičnoj instituciji ili srodnim institucijama u Hrvatskoj ili inozemstvu, kao i postdoktorskog usavršavanja. Otvaraju se i mogućnosti zapošljavanja u javnom i privatnom sektoru, posebno u onim gospodarskim subjektima s kojima Fakultet ima razvijenu suradnju, ali i drugdje u Hrvatskoj i inozemstvu.

Doktorski studij sastoji se od:

- provedbe znanstvenoistraživačkog rada pod nadzorom i uz pomoć mentora, odnosno sumentora koja rezultira izradom doktorskog rada (90 ECTS bodova),
- polaganja obveznih i izbornih predmeta propisanih studijskim programom doktorskog studija (42 ECTS bodova),
- boravka na drugim domaćim ili inozemnim sveučilišnim ili znanstvenim institucijama u trajanju od najmanje 3 mjeseca (20 ECTS bodova),
- drugih aktivnosti koje obuhvaćaju prezentaciju znanstvenih rezultata na domaćim i međunarodnim znanstvenim skupovima, objavljivanje znanstvenih radova (28 ECTS bodova).

POSTGRADUATE UNIVERSITY (DOCTORAL) STUDIES IN THE AREA OF ENGINEERING SCIENCES, IN THE FIELDS OF MECHANICAL ENGINEERING, NAVAL ARCHITECTURE, FUNDAMENTAL ENGINEERING SCIENCES AND INTERDISCIPLINARY ENGINEERING SCIENCES AND IN THE FIELD OF ELECTRICAL ENGINEERING

At the Faculty of Engineering there are two postgraduate university (doctoral) studies in the area of Engineering Sciences, first one in the fields of Mechanical Engineering, Naval Architecture, Basic Engineering Sciences and Engineering Sciences and Interdisciplinary Engineering Sciences; and in the field of Electrical Engineering.

With the completion of the studies, the student gains the academic degree of Doctor of Science, has a superior knowledge of a particular scientific field within the engineering sciences and he will have proven to have the capability to and has proven to have original scientific research. His competences cover comprehension of literature and unsolved problems of a particular area and the ability to conduct a scientific project up to its completion, to publish the research results and to present these results to other scientists, the ability to express his opinion in the presence of experts in the research area (at conferences and similar gatherings). His characteristics include the desire to transfer his knowledge to the younger generations, criticism, in the first place towards his own work, but also towards the work of others and the ability to adapt to imminent changes.

Upon completion of the doctoral study, numerous possibilities for the continuation scientific work are present at the Faculty Engineering or other institutions in Croatia and abroad, as well as the possibility to continue education in postdoctoral study. Also, the possibility of finding an occupation in the public as well as in the private business sector becomes available (e.g., entities with whom the Faculty of Engineering has developed collaboration) as well as in other enterprises in Croatia and abroad.

The doctoral study consists of:

- scientific research work under the guidance and help of a mentor and possibly a co-mentor, which results in the completion of a doctoral thesis (90 ECTS credits),
- sitting examinations for all obligatory and elective courses prescribed by the curriculum of the doctoral study (42 ECTS credits),
- visiting other Croatian or foreign universities or scientific institutions in the duration of at least three months (20 ECTS credits),
- other activities that include the presentation of scientific research results at national or international scientific gatherings or the writing of scientific papers (28 ECTS credits).

Nastava doktorskog programa iz područja tehničkih znanosti, polja strojarstva, brodogradnje, temeljnih tehničkih znanosti i interdisciplinarnih tehničkih znanosti organizirana je u sedam modula:

1. Proizvodno strojarstvo
2. Termoenergetika
3. Računarska mehanika
4. Projektiranje i gradnja plovnih objekata
5. Konstruiranje u strojarstvu
6. Osiguranje kvalitete i vođenje tehničkih sustava
7. Ekološko inženjerstvo i zaštita okoliša

Nastava doktorskog programa iz područja tehničkih znanosti, polja elektrotehnike organizirana je u dva modula:

1. Elektroničko-informacijski sustavi
2. Elektroenergetika i nove tehnologije

The curriculum of the doctoral study the area of Engineering Sciences, in the fields of Mechanical Engineering, Naval Architecture, fundamental Engineering Sciences and Interdisciplinary Sciences comprises seven modules:

1. Production Technologies in Mechanical Engineering
2. Thermal Energy Engineering
3. Computational Mechanics
4. Design and Building of Naval Vessels
5. Mechanical Engineering Design
6. Quality Assurance and Technical System Management
7. Ecological Engineering and Environmental Protection

The curriculum of the doctoral study in the area of Engineering Sciences, in the field of Electrical Engineering comprises two modules:

1. Electronic and information systems
2. Power Engineering and New Technologies

Poslijediplomski sveučilišni (doktorski) studij							
Područje tehničke znanosti, polje strojarstvo, brodogradnja, temeljne tehničke znanosti i interdisciplinarne tehničke znanosti							
Zajednički predmeti	Metodologija znanstvenoistraživačkog rada						
	Matematičko modeliranje i numeričke metode						
	Metode optimizacije						
	Statističke metode i stohastički procesi						
Moduli	Proizvodno strojarstvo	Termoenergetika	Računarska mehanika	Projektiranje i gradnja plovnih objekata	Konstruiranje u strojarstvu	Osiguranje kvalitete i vođenje tehničkih sustava	Ekološko inženjerstvo i zaštita okoliša
Predmeti po modulima	Planiranje i vođenje proizvodnje	IP iz toplinskih znanosti	Elastomehanika i plastomehanika	Metodologija projektiranja plovnih objekata	IP iz hidrostatskih i pneumatskih prijenosnika	Upravljanje kvalitetom	IP iz zaštite okoliša
	IP iz konvencionalne obrade odvajanjem čestica	Numeričko modeliranje prijelaza topline	MKE i optimizacija konstrukcija	Pomorstvenost i upravljivost plovnih objekata	Modeliranje inženjerskih konstrukcija	Planiranje i vođenje proizvodnje	Opća ekologija
	Deformabilnost i suvremeno oblikovanje deformiranjem	Optimizacija energetskih procesa	Viskoelastičnost i viskoplastičnost	IP iz osnivanja plovnih objekata	Nauka o konstruiranju	Statistička kontrola procesa	Zaštita mora i priobalja
	IP iz nekonvencionalnih postupaka obrade	IP iz brodskih strojnih kompleksa	Stabilnost konstrukcija	Integralna tehnologija gradnje broda	IP iz konstrukcijskih elemenata	Projektiranje baze podataka	Kemija okoliša
	Razvojni i proizvodni menadžment	Termodinamička analiza procesa	Nelinearna analiza konstrukcija	IP iz metodologije gradnje plovnih objekata	Specijalni mehanički prijenosnici	Poslovno odlučivanje	Upravljanje održivim razvojem i zaštita okoliša
	CAM, CAP, CAD/NC-CIM	Eksperimentalne metode u toplinskoj tehnici i termoenergetici	Kontaktna mehanika	IP iz otpora plovnih objekata	Konstrukcija i optimizacija zupčastih prijenosnika	Modeli stohastičkih procesa informacija	Zaštita okoliša u energetici i procesnoj industriji
	Roboti i manipulatori	Termodinamika smjesa i toplinski uređaji	IP iz termomehanike	IP iz propulzije plovnih objekata	IP iz prijenosnika snage	Pouzdanost tehničkih sustava	Instrumentacija i analitičke tehnike u zaštiti okoliša
	IP iz fleksibilnih proizvodnih sustava	IP iz tehnike hlađenja i tehnike niskih temperatura	Vibracije i trajnost strojeva i kostrukcija	IP iz dinamike plovnih objekata	IP iz transportnih sredstava u industriji	Inteligentni sustavi	Okoliš i gospodarstvo
	Inteligentni proizvodni sustavi	IP iz izmjenjivača topline	Kinematika i dinamika robota	Projektiranje strukture plovnih objekata	Metoda rubnih elemenata	Mikorekonomija i konkurentnost	Zaštita okoliša u tehnici hlađenja
	Metode simulacije u proizvodnji	IP iz grijanja i klimatizacije	Zaštita od buke i vibracija strojeva i konstrukcija		Kontaktni problemi u analizi konstrukcijskih elemenata	Inženjerstvo kvalitete	Fizika atmosfere
	Optimizacija tehnoloških procesa	Obnovljivi izvori energije	Dinamika fluida		Principi konstrukcija visokih i ultravisokih preciznosti	Sigurnost tehničkih sustava	
	IP iz ispitivanja materijala	Racionalna potrošnja energije	Računarska mehanika fluida		Podatljivi elementi i mehanizmi		
	Toplinska obrada i inženjerstvo površina	Numeričko modeliranje procesa izgaranja	Hidrodinamika turbostrojeva				
	Kemija materijala	IP iz motora s unutarnjim izgaranjem	Turbulentno strujanje				
	Korozija i zaštita metala	Suvremene konstrukcije motora	Modeliranje nestacionarnog strujanja u cjevovodima				
	Mehanika prijeloma i umorljivost materijala	Trajnost i pouzdanost termoenergetskih sustava					
	Procesi oštećivanja materijala	IP iz toplinskih turbostrojeva					
		IP iz brodskih energetskih postrojenja					

Postgraduate University (Doctoral) Study							
Area of Engineering Sciences, fields of Mechanical Engineering, Naval Architecture, Fundamental Engineering Sciences and Interdisciplinary Sciences							
Common courses	Methodology of Scientific Work and Research						
	Mathematical Modelling and Numerical Methods						
	Optimization Methods						
	Statistical Methods and Stochastic Processes						
Modules	Production Technologies in Mechanical Engineering	Thermal Energy Engineering	Computational Mechanics	Design and Building of Naval Vessels	Mechanical Engineering Design	Quality Assurance and Technical Systems Management	Ecological Engineering and Environmental Protection
Module courses	Planning and Processing of Manufacture	Selected Topics on Thermal Sciences	Elastomechanics and Plastomechanics	Methodology of Ship Design	Selected Chapters on Hydrostatic and Pneumatic Transmissions	Quality Management	Selected Topics on Environment Protection
	Selected Chapters on Conventional Machining Processes	Numerical Modeling of Heat Transfer	FEM and Optimization of Structures	Seakeeping and Manouvreability	Modelling of Engineering Structures	Production Planning and Control	General Ecology
	Formability and Modern Forming Technology	Optimization of Energy Processes	Viscoelasticity and Viscoplasticity	Selected Topics in Ship Design	Design Science	Statistical Process Control	Protection of Sea and Coastal Zone
	Selected Chapters on Nonconventional Machining Processes	Selected Topics of Marine Machinery Systems	Structural Stability	Integrated ship Production Technology	Selected Chapters on Machine Elements	Design of Data Base	Environmental Chemistry
	Development and Operational Management	Thermodynamic Analysis of Processes	Nonlinear Structural Analysis	Selected Topics on Floating Objects Production Methodology	Special Mechanical Transmissions	Business Decision-making	Management of Sustainable Development and Environmental Protection
	CAM, CAP, CAD/NC-CIM	Experimental Methods in Thermal and Power Engineering	Contact Mechanics	Selected Topics in Ship Resistance	Design and Optimization of Gear Transmissions	Models of Stochastic Information Processes	Environment Protection in Energetics and Process Industry
	Robots and Manipulators	Thermodynamics of Mixtures and Thermal Devices	Advanced Thermomechanics	Selected Topics in Ship Propulsion	Selected Chapters on Power Transmission	Reliability of Technical Systems	Instrumentation and Analytical Techniques in Environment Protection
	Selected Chapters on Flexible Production Systems	Selected Chapters on Refrigeration and Low-Temperature Refrigeration	Vibrations and Durability of Machines and Structures	Selected Topics in Marine Dynamics	Selected Chapters on Industrial Transport Equipment and Devices	Intelligent Systems	Environment and Economics
	Intelligent Manufacturing Systems	Selected Chapters on Heat Exchangers	Kinematics and Dynamics of Robots	Ship Structural Design	Boundary Element Method	Microeconomics and Competitiveness	Enviromental Refrigeration
	Simulation Methods in Production	Selected Chapters on Heating and Air-Conditioning	Protection Against Noise and Vibrations of Machines and Structures		Contact Problems in Machine Elements Analyses	Quality Engineering	Physics of the atmosphere
	Processes Plans Optimization	Renewable Energy Sources	Fluid Dynamics		Principles of High and Ultra-high Precision Devices	Safety of Technical Systems	
	Selected Chapters on Material testing	Rational Energy Consumption	Computational Fluid Mechanics		Compliant Elements and Mechanisms		
	Heat Treatment and Surface Engineering	Numerical Modeling of Combustion Process	Hydrodynamics of Turbomachines				
	Material chemistry	Selected Chapters on Internal Combustion Engines	Turbulent Flow				
	Corrosion and Metals Protection	Modern Engine Design	Unsteady Pipe Flow Modeling				
	Fracture Mechanics and Fatigue of Materials	Durability and Reliability of Thermal Energy Systems					
	Processes of Damaging of Materials	Selected Chapters on Thermal Turbomachines					
		Selected Chapters on Marine Energy Systems					

Poslijediplomski sveučilišni (doktorski) studij		
Područje tehničke znanosti, polje elektrotehnika		
Zajednički predmeti	Metodologija znanstvenoistraživačkog rada	
	Matematičko modeliranje i numeričke metode	
	Metode optimizacije	
	Statističke metode i stohastički procesi	
Moduli	Elektroničko-informacijski sustavi	Elektroenergetika i nove tehnologije
Predmeti po modulima	Analiza i obrada nestacionarnih signala	Modeli stohastičkih procesa informacija
	Elektromagnetsko modeliranje	Modeliranje sustava za distribuciju i potrošnju električne energije
	Fotoničke komponente	Pouzdanost tehničkih sustava
	Mjerenje i analiza kvalitete električne energije	Sustavi upravljanja sinkronim generatorima
	Mješovita obrada signala	Teorija informacija s primjenama
	Nelinearni sustavi automatskog upravljanja	Aktivne distribucijske mreže
	Ambijentalna inteligencija	Inteligentni elektroenergetski sustavi – Smart Grids
	Inteligentni sustavi	Izabrana poglavlja iz energetskih komponenti i sustava obnovljivih izvora energije
	Projektiranje digitalnih sustava	Nova energetska paradigma
	Uslužna robotika	
	Uvod u meko računarstvo i primjene	

Postgraduate University (Doctoral) Study		
Area of Engineering Sciences, Field of Electrical Engineering		
Common courses	Methodology of Scientific Work and Research	
	Mathematical Modelling and Numerical Methods	
	Optimization Methods	
	Statistical Methods and Stochastic Processes	
Modules	Electronic-Information Systems	Electric Power Systems and New Technologies
Module courses	Nonstationary Signal Analysis and Processing	Stochastic Information's Process Models
	Electromagnetic Modelling	Modelling of Electrical Power Distribution Systems
	Photonic Devices	Reliability of Technical Systems
	Measurement and Analysis of Electric Power Quality	Control of Synchronous Generators
	Mixed Signal Processing	Information Theory with Applications
	Nonlinear Control Systems	Active Distribution Networks
	Ambient Intelligence	Intelligent Power Systems - Smart Grids
	Intelligent Systems	Selected Chapters on Energy Components and Systems of Renewable Energy Sources
	Digital System Design	New Energy Paradigm
	Service Robotics	
	Introduction to Soft Computing and Applications	

PREDDIPLOMSKI STRUČNI STUDIJ STROJARSTVA

Preddiplomski stručni studij strojarstva ima za cilj osposobljavanje stručnjaka strojarstva za rad na izvršavanju složenih operativnih poslova kod razrade projekata strojarskih konstrukcija, odnosno složenih operativnih poslova planiranja, pripreme, unapređenja i kontrole tehnoloških i proizvodnih procesa i planiranja, organiziranja i vođenja proizvodnih odnosno energetskih postrojenja.

PREDDIPLOMSKI STRUČNI STUDIJ BRODOGRADNJE

Preddiplomski stručni studij brodogradnje ima za cilj osposobljavanje stručnjaka brodogradnje za rad na izvršavanju složenih operativnih poslova pri razradi projekata plovnih objekata i objekata morske tehnologije i njihovih elemenata, odnosno složenih operativnih poslova planiranja, pripreme, unapređenja i kontrole procesa gradnje plovnih objekata.

PREDDIPLOMSKI STRUČNI STUDIJ ELEKTROTEHNIKE

Preddiplomski stručni studij elektrotehnike ima za cilj osposobljavanje stručnjaka elektrotehnike za sudjelovanje u projektiranju i konstruiranju elemenata elektroenergetskih prostrojenja, odnosno telekomunikacijskih uređaja, sustava i mreža, ovisno o odabranoj izbornoj skupini predmeta.

UNDERGRADUATE VOCATIONAL STUDY OF MECHANICAL ENGINEERING

The undergraduate vocational study of mechanical engineering has the aim to prepare the students for their profession as mechanical engineers, performing jobs that include complex operating tasks in mechanical design, planning, preparing, improvement and controlling of technological and production processes as well as planning, organizing and conducting of production or energy processes and plants.

UNDREGRADUATE VOCATIONAL STUDY OF NAVAL ARCHITECTURE

The undergraduate vocational study of naval architecture has the aim to prepare the students for their profession as naval architect engineers, performing jobs that include complex operating tasks in designing vessels and other maritime objects and their elements as well as planning, improvement and controlling vessel building processes.

UNDERGRADUATE VOCATIONAL STUDY OF ELECTRICAL ENGINEERING

The undergraduate vocational study of electrical engineering has the aim, depending upon the chosen elective course group, to prepare the students for their profession as electrical engineers in jobs which include designing and constructing elements of power plants, as well as telecommunication equipment, systems and networks.

Preddiplomski stručni studiji

S	Strojarstvo			S	Brodogradnja			S	Elektrotehnika		
	Predmet	N	B		Predmet	N	B		Predmet	N	B
I	Matematika I	5	7	I	Matematika I	5	7	I	Matematika I	5	7
	Mehanika I	5	7		Mehanika I	5	7		Fizika	4	6
	Materijali	4	6		Materijali	4	6		Osnove elektrotehnike ST I	5	8
	Osnove elektrotehnike	3	5		Osnove elektrotehnike	3	5		Materijali i tehnološki postupci	3	4
	Primjena računala ST	3	5		Primjena računala ST	3	5		Primjena računala ST	3	5
II	Matematika II	5	7	II	Matematika II	5	7	II	Matematika II	5	7
	Mehanika II	4	6		Mehanika II	4	6		Osnove elektrotehnike ST II	5	7
	Čvrstoća	4	6		Čvrstoća	4	6		Digitalna logika ST	4	6
	Tehničko crtanje	4	6		Tehničko crtanje	4	6		Mehanika i elementi konstrukcija ST	3	5
	Tehnologija obrade I	3	5		Plovni objekti	3	5		Tehničko dokumentiranje	3	5
III	Organizacija i ekonomika	3	4	III	Organizacija i ekonomika	3	4	III	Mjerenja u elektrotehnici ST	5	7
	Mehanika fluida ST	3	5		Mehanika fluida ST	3	5		Elekt. komp. i osnovni sklopovi	5	7
	Toplina	4	6		Toplina	4	6		Linearne električne mreže	4	7
	Tehnologija obrade II	4	6		Brodske forme ST	4	7		Mehatronika	4	6
	Elementi strojeva I	4	6		Zavarivanje	3	5		Strani jezik I	2	3
	Strani jezik I	2	3		Strani jezik I	2	3				
IV	Elementi strojeva II	4	6	IV	Hidrostatika broda	4	6	IV	Osnove energetske elektronike	5	7
	Obradni strojevi	3	5		Strukturni elementi broda	4	6		Osnove automatske regulacije	4	7
	Toplinski strojevi i uređaji I	3	5		Tehnologija brodogradnje I	3	5		Kolegij izborne skupine	5	8
	Strani jezik II	2	3		Elementi strojeva I BG	3	5		Strani jezik II	2	3
	Stručna praksa I		5		Strani jezik II	2	3		Stručna praksa I		5
	Kolegij izborne skupine	4	6		Stručna praksa I		5				
V	Mjerna tehnika ST	3	5	V	Mjerna tehnika ST	3	5	V	Organizacija i ekonomika	3	4
	Toplinski strojevi i uređaji II	3	5		Tehnologija brodogradnje II	5	6		Kolegij izborne skupine	5	7
	Hidraulički strojevi	3	5		Tehn. procesi gradnje i remonta broda	5	6		Kolegij izborne skupine	4	7
	Zavarivanje	3	5		Konstrukcija broda	4	6		Kolegij izborne skupine	4	6
	Kolegij izborne skupine	4	5		Oprema broda ST	4	7		Kolegij izborne skupine	4	6
	Kolegij izborne skupine	4	5								
VI	Slobodni kolegij	4	5	VI	Gradnja i održavanje malih plovnih objekata	4	5	VI	Slobodni kolegij	4	5
	Stručna praksa II		10		Slobodni kolegij	4	5		Stručna praksa II		10
	Kolegij izborne skupine	4	5		Stručna praksa II		10		Kolegij izborne skupine	4	5
	Završni rad		10		Završni rad		10		Završni rad		10

Undergraduate Vocational Studies

S	Mechanical Engineering			S	Naval Architecture			S	Electrical Engineering		
	Course	N	B		Course	N	B		Course	N	B
I	Mathematics I	5	7	I	Mathematics I	5	7	I	Mathematics I	5	7
	Mechanics I	5	7		Mechanics I	5	7		Physics	4	6
	Materials	4	6		Materials	4	6		Fundamentals of Electrical Engineering VO I	5	8
	Fundamentals of Electrical Engineering	3	5		Fundamentals of Electrical Engineering	3	5		Materials and Production Processes	3	4
	Applied Computing VO	3	5		Applied Computing VO	3	5		Applied Computing VO	3	5
II	Mathematics II	5	7	II	Mathematics II	5	7	II	Mathematics II	5	7
	Mechanics II	4	6		Mechanics II	4	6		Fundamentals of Electrical Engineering VO II	5	7
	Strength of Materials	4	6		Strength of Materials	4	6		Digital Logic VO	4	6
	Technical Drawing	4	6		Technical Drawing	4	6		Mechanics and Structural Elements VO	3	5
	Manufacturing Technology I	3	5		Marine Vessels	3	5		Technical Documenting	3	5
III	Organization and Economics	3	4	III	Organization and Economics	3	4	III	Measurements in Electrical Engineering VO	5	7
	Fluid Mechanics VO	3	5		Fluid Mechanics VO	3	5		Semiconductor Devices and Basic Microel. Circ	5	7
	Thermodynamics	4	6		Thermodynamics	4	6		Linear Electrical Circuits	4	7
	Manufacturing Technology II	4	6		Ship Hull Forms VO	4	7		Mechatronics	4	6
	Machine Elements I	4	6		Welding Engineering	3	5		Foreign Language I	2	3
	Foreign Language I	2	3		Foreign Language II	2	3				
IV	Machine Elements II	4	6	IV	Ship Hydrostatics	4	6	IV	Fundamentals of Power Electronics	5	7
	Machine Tools	3	5		Ship Structure	4	6		Fundamentals of Automatic Regulation	4	7
	Heat Engines and Devices I	3	5		Shipbuilding Technology I	3	5		Elective group course	5	8
	Foreign Language II	2	3		Machine Elements I NA	3	5		Foreign Language II	2	3
	Professional Practice I		5		Foreign Language II	2	3		Professional Practice I		5
	Elective group course	4	6		Professional Practice I		5				
V	Measuring Technology VO	3	5	V	Measuring Technology VO	3	5	V	Organization and Economics	3	4
	Heat Engines and Devices II	3	5		Shipbuilding Technology II	5	6		Elective group course	5	7
	Hydraulic Machines VO	3	5		Technological Processes of Ship Production and Rep	5	6		Elective group course	4	7
	Welding Engineering	3	5		Ship Construction	4	6		Elective group course	4	6
	Elective group course	4	5		Ship Equipment VO	4	7		Elective group course	4	6
	Elective group course	4	5								
VI	Free Elective Course	4	5	VI	Small Craft Building and Maintenance	4	5	VI	Free Elective Course	4	5
	Professional Practice II		10		Free Elective Course	4	5		Professional Practice II		10
	Elective group course	4	5		Professional Practice II		10		Elective group course	4	5
	Final Work		10		Final Work		10		Final Work		10

4 dekanat dean's office

DEKANICA | DEAN:
prof. dr. sc. / Prof. D. Sc.
Jasna Prpić-Oršić

PRODEKANI | VICE-DEANS:

prof. dr. sc. / Prof. D. Sc. **Anica Trp**
nastava | academics

prof. dr. sc. / Prof. D. Sc. **Marko Čanađija**
znanstvena djelatnost | research activities

prof. dr. sc. / Prof. D. Sc. **Duško Pavletić**
poslovni odnosi | buisness affairs

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izv. prof. dr. sc. / Assoc. Prof. D. Sc. **Marina Franulović**

izv. prof. dr. sc. / Assoc. Prof. D. Sc. **Ivan Štajduhar**

izv. prof. dr. sc. / Assoc. Prof. D. Sc. **Neven Bulić**

URED DEKANICE | DEAN'S OFFICE:

Sanja Prpić, dipl. oec. / grad. economist
voditeljica | head

Tomo Vergić, dipl. iur. / grad. in law.
glavni tajnik | secretary general

Marijana Burić Redžović
tajnica prodekana | vice dean secretary

Tehnički fakultet Sveučilišta u Rijeci
Faculty of Engineering, University of Rijeka

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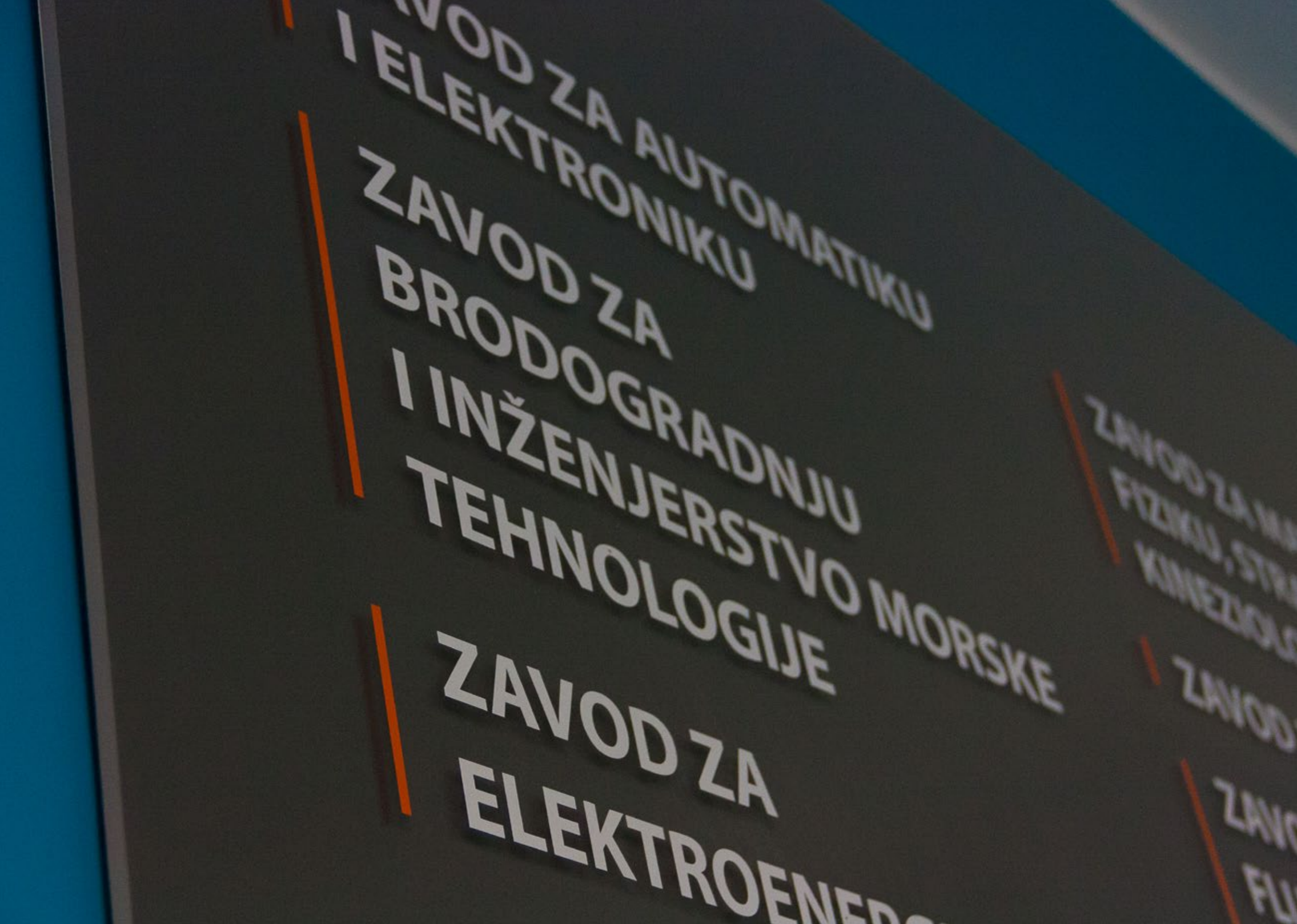
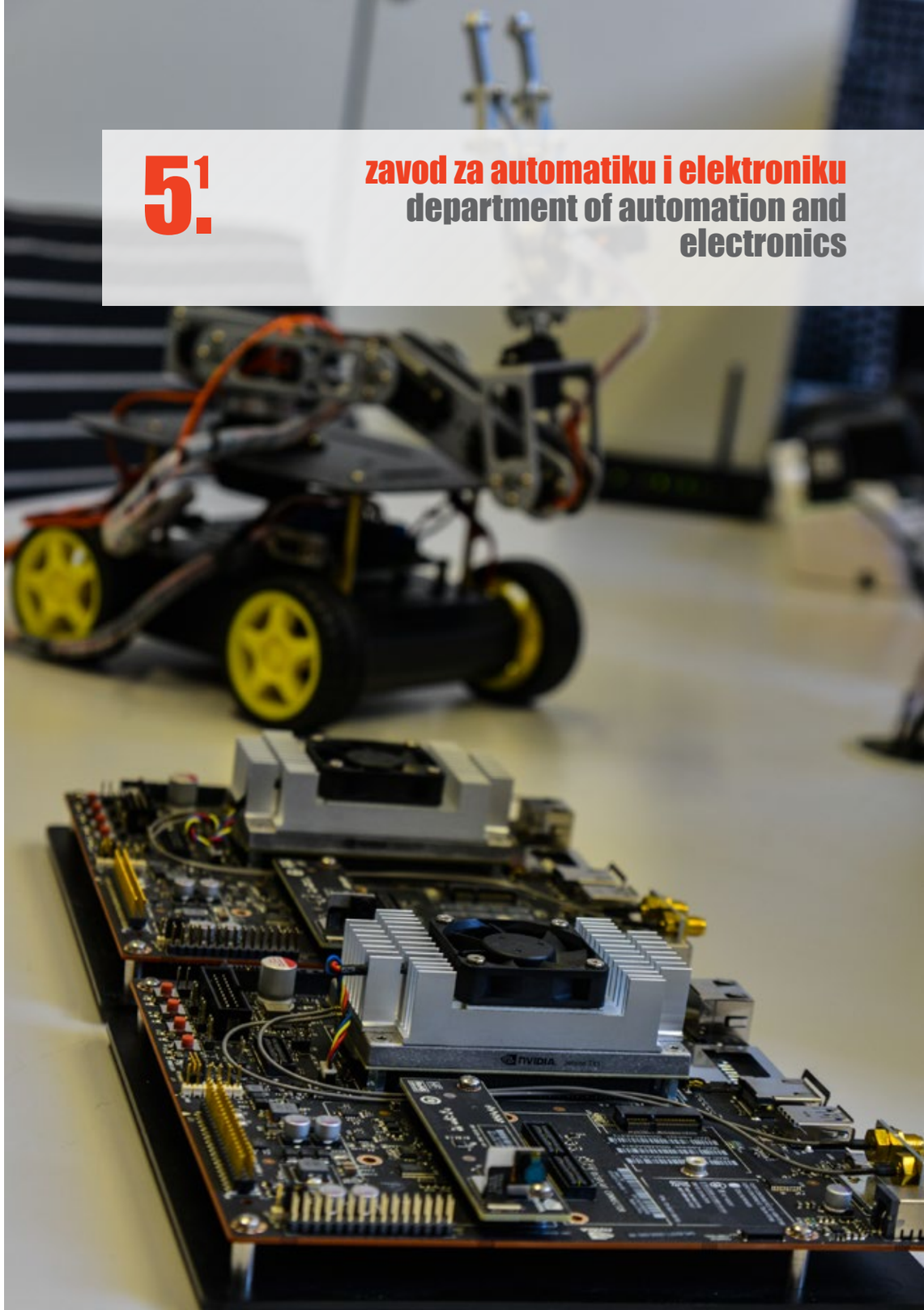
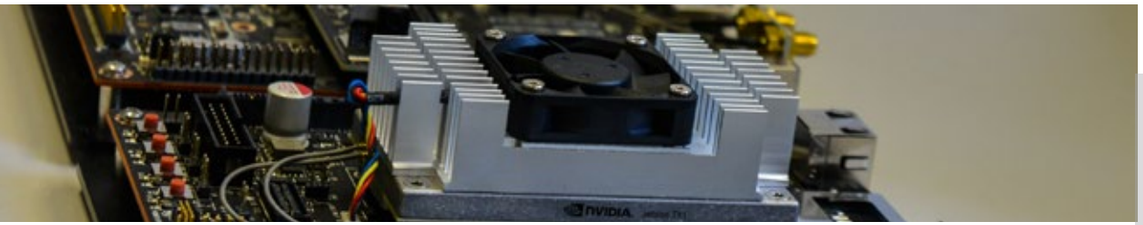

ZAVOD ZA AUTOMATIKU
I ELEKTRONIKU
ZAVOD ZA
BRODOGRADNJU
I INŽENJERSTVO MORSKE
TEHNOLOGIJE
ZAVOD ZA
ELEKTROENER

5 zavodi departments



5.1 zavod za automatiku i elektroniku department of automation and electronics



PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. **Saša Vlahinić**

http://www.riteh.uniri.hr/ustroj/zavodi/zae/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Zlatan Car

umjetne inteligencije; inteligentni sustavi; robotika; CNC/NC obradni strojevi i robotika; kostrukcija i optimizacija alata i naprava; simulacija i optimizacija rada sustava i strojeva
artificial intelligence; intelligent systems; CNC/NC machines & robotics; design of tools & fixtures; modeling, simulation and optimization of systems and machines

Nino Stojković

analogna obrada signala; analogni filtri
analog signal processing; analog filters

Viktor Sučić

analiza i obrada signala
signal analysis and processing

Saša Vlahinić

mjerenja u elektrotehnici; mjerenja kvalitete električne energije; elektronička i virtualna instrumentacija
electrical measurements; power quality measurements; electronic and virtual instrumentation

IZVANREDNI PROFESORI | ASSOCIATE PROFESSORS

Vera Gradišnik

poluvodička elektronika; optoelektronika; poluvodički elementi; fotosenzori iz amorfnog silicija; tankoslojni fotosenzori u biotehnologiji; digitalna logika
semiconductor electronics; optoelectronics; semiconductor devices; amorphous silicon photosensors; thin film photosensors in biotechnology; digital logic

Miroslav Vrankić

digitalna obrada signala i slike; teorija valića; filtarski slogovi, asistivna tehnologija
digital signal and image processing; wavelets and filter banks; assistive technology

Neven Bulić

automatizacija
automation

VIŠI ASISTENTI | SENIOR ASSISTANTS

Nicoletta Saulig

vremensko-frekvencijska obrada signala
time-frequency signal processing

ASISTENTI | ASSISTANTS

Gordan Šegon

automatika
automation

Nikola Turk

automatika
automation

Goran Tovilović

analogna obrada signala; analogni filtri
analog signal processing; analog filters

Sebastijan Blažević

automatika
automation

Nikola Anđelić

analogna obrada signala; analogni filtri
analog signal processing; analog filters

Ivan Jurković

automatika
automation

Dominik Cikač

automatika
automation

Ivan Markovinović

asistivna tehnologija; sučelja čovjek-stroj, ICA
assistive technology; brain computer interfaces, ICA

ZNANSTVENI NOVACI | JUNIOR RESEARCHERS

Ivan Volarić

vremensko-frekvencijska obrada signala
time-frequency signal processing

VANJSKI SURADNICI | ASSOCIATES

Dario Matika

automatika
automation

nastava i znanost
education and science

Nastava se izvodi iz područja automatike, robotike, elektronike, mjerenja u elektrotehnici, mjerne instrumentacije te obrade signala.

CO: Program razlikovne edukacije za upis na diplomski sveučilišni studij elektrotehnike

Lectures in the field of automatic control, robotics, electronics, electrical measurements, instrumentation and signal processing.

Program of lifelong learning for admission to the graduate university study of electrical engineering.

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA | UNDERGRADUATE UNIVERSITY COURSES

- *Automatizacija* — *Automation*
- *Automatsko upravljanje* — *Automatic Control*
- *Digitalna logika* — *Digital Logic*
- *Električne mreže* — *Electrical Circuits*
- *Elektronika* — *Electronics*
- *Elektronika I* — *Electronics I*
- *Elektronika II* — *Electronics II*
- *Elementi automatizacije postrojenja* — *Elements of Plant Automation*
- *Mjerenja u elektrotehnici* — *Electrical Measurements*
- *Modeliranje i simuliranje sustava* — *System Modelling and Simulation*
- *Osnove regulacijske tehnike* — *Basic of Automatic Control*
- *Računalom podržana mjerenja* — *Computer Aided Measurement*
- *Signali i sustavi* — *Signals and Systems*
- *Stručna praksa I* — *Industrial Practice I*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA | GRADUATE UNIVERSITY COURSES

- *Analogna obrada signala* — *Analog Signal Processing*
- *Asistivna tehnologija* — *Assistive Technology*
- *Automatizacija postrojenja i procesa* — *Automation of Plants and Processes*
- *Automatizirana instrumentacija* — *Automatic Instrumentation*
- *Digitalna obrada signala* — *Digital Signal Processing*
- *Digitalna obrada slike* — *Digital Image Processing*
- *Industrijska robotika* — *Industrial robotics*
- *Mehatronički sustavi* — *Mechatronic Systems*
- *Optoelektronika* — *Optoelectronics*
- *Osnove robotike* — *Fundamentals of Robotics*
- *Osnove statističke obrade signala* — *Fundamentals of Statistical Signal Processing*
- *Primjena umjetne inteligencije* — *AI Implementation*
- *Sustavi digitalnog upravljanja* — *Digital Control Systems*
- *Sustavi kontrole* — *Control Systems*
- *Stručna praksa II* — *Industrial Practice II*
- *Evolucijska robotika* — *Evolutionary Robotics*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

• *Automatizacija ST*	• *Automation ST*
• *Digitalna logika ST*	• *Digital Logic ST*
• *Elektroničke komponente i osnovni sklopovi*	• *Semiconductors Devices and Basic Electronic Circuits*
• *Linearne električne mreže*	• *Linear Electrical Circuits*
• *Mehatronika*	• *Mechatronics*
• *Mjerenja u elektrotehnici ST*	• *Electrical Measurements ST*
• *Osnove automatske regulacije*	• *Fundamentals of Automatic Regulation*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

• *Analiza i obrada nestacionarnih signala*	• *Nonstationary Signal Analysis and Processing*
• *Fotoničke komponente*	• *Photonic Devices*
• *Mjerenje i analiza kvalitete električne energije*	• *Measurement and Analysis of Electric Power Quality*
• *Mješovita obrada signala*	• *Mixed Signal Processing*
• *Nelinearni sustavi automatskog upravljanja*	• *Nonlinear Control Systems*
• *Ambijentalna inteligencija*	• *Ambient Intelligence*
• *Projektiranje digitalnih sustava*	• *Digital System Design*
• *Pouzdanost tehničkih sustava*	• *Reliability of Technical Systems*
• *Inteligentni proizvodni sustavi*	• *Intelligent Manufacturing Systems*
• *Roboti i manipulatori*	• *Robots and Manipulators*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Obrada signala*
  Signal Processing
- *Elektronika*
  Electronics
- *Mjerenje kvalitete električne energije*
  Power quality measurements
- *Robotika*
  Robotics
- *Umjetna inteligencija*
  Artificial intelligence
- *Automatizacija*
  Automation

PROJEKTI | PROJECTS

- *Numeričko modeliranje, simulacija i optimizacija u oblikovanju lima, MZOŠ, Branimir Barišić, 2007 - 2011, Zlatan Car 2011-2014, znanstvenoistraživački.*
  Numerical modelling, simulation and optimization in sheet metal forming, Ministry of Science, Education and Sport of the Republic Croatia, Branimir Barišić, 2007.-2011., Zlatan Car 2011-2014, research and scientific project.
- *"CEEPUS; CIII-HR-0108-06-1112 - Concurrent Product and Technology Development - Teaching, Research and Implementation of Joint Programs Oriented in Production and Industrial Engineering ; (EU projekt mobilnosti/voditelj projekta);"*

CEEPUS; CIII-HR-0108-06-1112 - Concurrent Product and Technology Development - Teaching, Research and Implementation of Joint Programs Oriented in Production and Industrial Engineering ; (EU mobility project; project manager);

- *CEEPUS; CIII-RO-0202-05-1112 - Implementation and utilization of e-learning systems in study area of production engineering in Central European Region; (EU projekt mobilnosti/suradnik na projektu)*
  CEEPUS; CIII-RO-0202-05-1112 - Implementation and utilization of e-learning systems in study area of production engineering in Central European Region; (EU mobility project; associate member)
- *CEEPUS; CIII-CZ-0201-04-1112 - Knowledge Bridge for Students and Teachers in Manufacturing Technologies; (EU projekt mobilnosti/suradnik na projektu)*
  CEEPUS; CIII-CZ-0201-04-1112 - Knowledge Bridge for Students and Teachers in Manufacturing Technologies; (EU mobility project; associate member)
- *CEEPUS; CIII-PL-0007-07-1112 - Modern Methods of the Constitution and Measurement of Geometrical Surface Structure; (EU projekt mobilnosti/suradnik na projektu)*
  CEEPUS; CIII-PL-0007-07-1112 - Modern Methods of the Constitution and Measurement of Geometrical Surface Structure; (EU mobility project; associate member)
- *C140.106, Razvoj posebnih konstrukcija motora sa magnetskim ležajevima, upravljačke i energetske elektronike te njihove aplikacije u industriji, Područje4 - Pogoni i aktuatori, Neven Bulić, Karlo Radman 2014- (projekt Linz Center of Mechatronics, LCM GmbH), znanstvenoistraživački.*
  C140.106, Bearingless Reluctance Slice Motors, Area4 - Drives and Actuators, Neven Bulić, Karlo Radman, 2014- (Linz Center of Mechatronics, LCM GmbH project) Research and scientific project.
- *Q-grid, znanstveno-istraživački projekt financiran od strane industrije Danieli-Systec, Neven Bulić, 2014-2015.*
  Q-grid, R&D project financed by industry Danieli-Systec, Neven Bulić, 2014-2015.
- *HAMAG-BICRO, Program provjere inovativnog koncepta, Komunikacija mislima z osobe s invaliditetom*
  HAMAG-BICRO, Proof of Concept Programme, Mind control for persons with disabilities

PUBLIKACIJE | PUBLICATIONS

KNJIGE | BOOKS

- *Sucic, V.; Lerga, J.; Rankine, L.; Boashash, B.; Time-Frequency Signal Analysis and Processing: A Comprehensive Review (ch. 10.6, "Components Extraction from TFDs for Multicomponent Signals IF Estimation", pp. 566-573), Academic Press, In press., 2015, 2nd ed.*

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Blažević, S.; Braut, S.; Skoblar, A.; Žigulić, R.; Electromechanical Vibrations of the Vertical Lathe Machining Centre Caused by the Fault of the Working Table Rolling Bearing,FME Transaction, ISSN: 1451-2092, 45 (3), 374-381, 2017*
- *Skoblar A.; Žigulić R.; Braut S.; Blažević S.; Dynamic Response to Harmonic Transverse Excitation of Cantilever Euler-Bernoulli Beam Carrying a Point Mass, FME Transaction, ISSN: 1451-2092, 45 (3), 367-373, 2017*
- *Volaric, I.; Sucic, V.; Lerga, J.; A Fast Signal Denoising Algorithm Based on the LPA-ICI Method*

for Real- Time Applications, Circuits systems and signal processing, ISSN: 0278-081X, Online First, 1-17, 2017

- *Volaric, I.; Sucic, V.; Stankovic, S.; A Data Driven Compressive Sensing Approach for Time-Frequency Signal Enhancement, Signal Processing, ISSN: 0165-1684, 141, 229-239, 2017*
- *Bulić, N.; Šušnjić, L.; Eddy Current Sensor Simulation, COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering, ISSN: 0332-1649, 36(3), 619-632, 2017*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

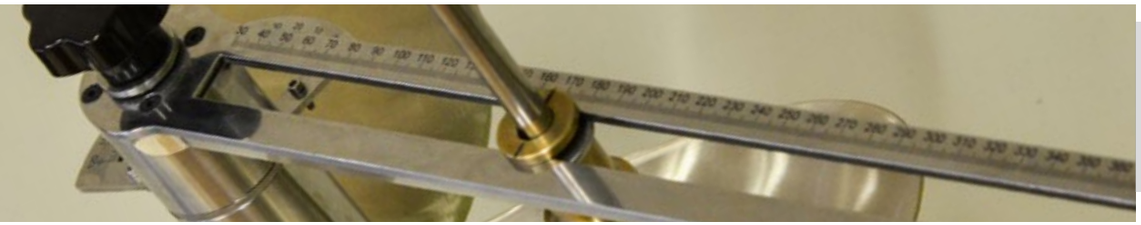
- *Volarić, I.; Stojković, N.; Vlahinić, S.; Noise Improvement using SC Filters, Proceedings of MEET - Microelectronics, Electronics and Electronic Technology 2015, ISSN:1847-3946, 1, 127-132, 2015, Opatija*
- *Mrzljak, V.; Poljak, I.; Blažević, S.; Monitoring of Change in Volumes for Diesel Engine In-Cylinder Process with Žquasi-Dimensional Numerical Model, XXV International Scientific Conference Trans & Motauto '17 proceedings, ISSN: 1313-5031, 1, 87-90, 2017, Sofija, Bugarska*
- *Poljak, I.; Mrzljak, V.; Blažević, S.; Change of Exergy Motion in the Marine Steam Plant with Main Shaft Speed Variation, XXV International Scientific Conference Trans & Motauto '17 proceedings, ISSN: 1313-5031, 1, 91-94, 2017, Sofija, Bugarska*
- *Anđelić, N.; Čanađija, M.; Car, Z.; Determination of Natural Vibrations of Simply Supported Single Layer Graphene Sheet using Non-Local Kirchhoff Plate Theory, Proceedings of International Conference on Innovative Technologies In-Tech 2017, ISSN: 0184-9069, 1, 33-36, 2017, Ljubljana, Slovenija*
- *Blažević, S.; Anđelić, N.; Car, Z.; Research of Unstable Behaviour of Iterative Path Planning Algorithm for Robot Manipulator, Proceedings of International Conference on Innovative Technologies In-Tech 2017, ISSN: 0184-9069, 1, 57-60, 2017, Ljubljana, Slovenija*
- *Janeš, G.; Car, Z.; Puskarić, M.; Modified Genetic Algotithm in Chaboche Model Parameters Identification, Proceedings of International Conference on Innovative Technologies In-Tech 2017 ISSN: 0184-9069, 1, 85-88, 2017, Ljubljana, Slovenija*
- *Tomić, D.; Puškarić, M.; Car, Z.; In silico testing of the toxicity for some anticancer herbal compounds, Proceedings of International Conference on Innovative Technologies In-Tech 2017 ISSN: 0184-9069, 1, 217-220, 2017, Ljubljana, Slovenija*
- *Šokac, M.; Santoši, Ž.; Budak, I.; Car, Z.; Vukelić, Đ.; Combination of Contact and Optical 3D digitalization Methods for Their Application in Reverse Engineering, Proceedings of International Conference on Innovative Technologies In-Tech 2017, ISSN: 0184-9069, 1, 65-71, 2017, Ljubljana, Slovenija*
- *Zoubek, M.; Kudlacek, J.; Kreibich, V.; Matas, F.; Car, Z.; Antistatic Water-Soluble Paints Proceedings of International Conference on Innovative Technologies In-Tech 2017, ISSN: 0184-9069, 1, 271-274, 2017, Ljubljana, Slovenija*
- *Tomić, D.; Car, Z.; Ogrizović, D.; Running HPC applications on many million cores Cloud MIPRO 2017 40th International Convention Proceedings, ISBN: 978-953-233-069-4, 1, 226-231, 2017, Opatija, Hrvatska*
- *Tomić, D.; Puškarić, M.; Car, Z.; Computer driven bioavailability analysis of some important compounds found in anticancer herbs, Proceedings of the SEECCM 2017 4th South-East*

European Conference on Computational Mechanics - 2017, ISBN: 978-86-921243-0-3, 1, 2017 Kragujevac, Srbija

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *RMIT University, Melbourne, Australija, Australia*
- *University of Queensland, Brisbane, Australija, Australia*
- *Elektrotehnički fakultet, Univerzitet Crne Gore, Podgorica, Crna Gora, Montenegro*
- *University in Prague Faculty Mechanical Engineering University, Republika Češka, Czech Republic*
- *Tomas Bata University in Zlin, Republika Češka, Czech Republic*
- *Techical University in Ostrava, Republika Češka, Czech Republic*
- *Vienna University of Technology, Austrija, Austria*
- *University in Miskolc, Mađarska, Hungary*
- *Budapest University of Technology and Economics, Mađarska, Hungary*
- *University of Žilina, Slovačka, Slovakia*
- *Poznan University of Technology, Poljska, Poland*
- *Kielce University of Technology, Poljska, Poland*
- *University of Ljubljana, Slovenija, Slovenia*
- *University of Novi Sad, Srbija, Serbia*
- *North University of Baia Mare, Rumunjska, Romania*
- *University of Kragujevac, Srbija, Serbia*
- *Danieli Automation, Italia, Italy*
- *Texas Instruments, USA, USA*
- *Linz Center of Mechatronics GmbH, Austrija, Austria*
- *Johannes Kepler Universität Linz, Austrija, Austria*

5.2 zavod za brodogradnju i inženjerstvo morske tehnologije
department of naval architecture and ocean engineering



PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. **Roko Dejhalla**

http://www.riteh.uniri.hr/ustroj/zavodi/zbimt/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Bruno Čalić

brodske forme; plovnost i stabilitet broda; stabilitet broda u eksploataciji; osnivanje plovnih objekata; objekti morske tehnologije; projektiranje malih plovnih objekata
ship hull forms; buoyancy and stability of ships; ship stability in exploitation; ship design; ocean mobile and fixed structures; small craft design

Roko Dejhalla

otpor i propulzija plovnih objekata; brodski propulzori; gradnja i održavanje malih plovnih objekata; projektiranje malih plovnih objekata
ship resistance and propulsion; ship propulsion devices; small craft building and maintenance; small craft design

Nikša Fafandjel

metodologija gradnje i opremanja plovnih objekata; tehnologija i organizacija brodogradnje; osnivanje brodogradilišta i proizvodnih procesa; simulacijsko modeliranje brodograđevnih procesa; analiza tržišta; ugovaranje i tehnološko prognoziranje
ship production methodology and outfitting; shipbuilding technology and organisation; shipyard and production process design; shipyards' production processes simulation modelling; market analysis; contracting and technological forecasting

Jasna Prpić-Oršić

pomorstvenost; njihanje i opterećenje plovnih objekata na morskim valovima; modeliranje okoliša i okolišnih opterećenja; dinamika pomorskih objekata; vibracije broda
seakeeping; motions and sea loads of ships and off-shore structures; modeling of environment and environmental loads; marine structures dynamics; ship vibrations

Albert Zamarin

konstrukcija broda; čvrstoća broda; strukturna analiza broda; opterećenje plovnih objekata na morskim valovima; projektiranje strukture plovnih objekata; konstrukcija malih plovnih objekata
ship structure; ship strength; ship structural analysis; ship structural design; sea loads of ships and off-shore structures; small craft construction

IZVANREDNI PROFESORI | ASSOCIATE PROFESSORS

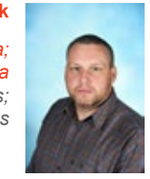
Marko Hadjina

metodologija gradnje i opremanja plovnih objekata; tehnologija i organizacija brodogradnje; osnivanje brodogradilišta i proizvodnih procesa; simulacijsko modeliranje brodograđevnih procesa; analiza tržišta; ugovaranje i tehnološko prognoziranje
ship production methodology and outfitting; shipbuilding technology and organisation; shipyard and production process design; shipyards' production processes simulation modelling; market analysis; contracting and technological forecasting

Tin Matulja

gradnja i opremanje plovnih objekata; tehnologija i organizacija brodogradnje; osnivanje brodogradilišta i proizvodnih procesa; oprema plovnih objekata
ship production and outfitting; shipbuilding technology and organisation; shipyard and production process design; floating objects equipment and outfitting

DOCENTI | ASSISTANT PROFESSORS



Anton Turk

plovnost i stabilitet broda; brodske forme; hidrostatika broda; stabilitet broda u eksploataciji; vibracije broda
seaworthiness and stability; ship hull forms; ship hydrostatics; ship stability in exploitation; ship vibrations

Dunja Legović

otpor i propulzija plovnih objekata; dinamika broda; brodski propulzori; pomorstvenost plovnih objekata; brodske forme; osnivanje plovnih objekata; objekti morske tehnologije; zaštita okoliša
ship resistance and propulsion; ship dynamics; ship propulsion devices; seakeeping; ship hull forms; ship design; ocean mobile and fixed structures; environment protection

VIŠI ASISTENTI | SENIOR ASSISTANTS

Damir Kolić

tehnologija i organizacija brodogradnje; vitka proizvodnja; tehnološki procesi brodogradnje; ugovaranje; rudarenje podacima; upravljanje projektima
shipbuilding technology and organisation; lean manufacturing; technological processes of shipbuilding; contracts; data mining; project management

STRUČNI SURADNIK | ASSOCIATE

Natalija Vitali

na znanstvenom projektu Hrvatske zaklade za znanost (HRZZ)

VANJSKI SURADNICI | ASSOCIATES

Robert Grubiša
Brodograđevna industrija 3. MAJ | Shipbuilding industry 3. MAJ

osnivanje plovnih objekata
ship design

Željko Monjac
Brodograđevna industrija 3. MAJ | Shipbuilding industry 3. MAJ

tehnologija brodogradnje
shipbuilding technology

Davor Sablić
Brodograđevna industrija 3. MAJ | Shipbuilding industry 3. MAJ

ugovaranje plovnih objekata
ship negotiation process

Alan Klanac
Jadrolinija

strukturna analiza broda
ship structural analysis

Mirela Marin
M-Inženjering

osnivanje plovnih objekata
ship design

Romano Pičuljan
Pičuljan Marine

gradnja i održavanje malih plovnih objekata
small craft building and maintenance

Ranka Vukasović Botica
Mardesign

konstrukcija broda
ship structures

nastava i znanost
education and science

Nastava iz područja: projektiranje plovnih objekata, tehnologija i organizacija brodogradnje, konstrukcija plovnih objekata, hidromehanika plovnih objekata.

CO: Program razlikovne edukacije za upis na diplomski sveučilišni studij brodogradnje

Lectures in the field of: marine vessel design, technology and organization of shipbuilding, marine vessel construction, marine hydromechanics.

Program of lifelong learning for admission to the graduate university study of naval architecture.

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

Brodske forme	*Ship Hull Forms*
Gradnja i održavanje malih plovnih objekata SV	*Small Craft Building and Maintenance UN*
Hidrodinamika plovnih objekata I	*Marine Hydrodynamics I*
Konstrukcija broda I	*Ship Structure I*
Konstrukcija broda II	*Ship Structure II*
Oprema broda	*Ship Equipment*
Osnove dinamike broda	*Basic Ship Dynamics*
Osnove gradnje broda	*Basics of Ship Production*
Plovnost i stabilitet broda	*Seaworthiness and Stability of the Ship*
Stručna praksa I	*Industrial practice I*
Tehnologija brodogradnje	*Shipbuilding Technology*
Tehnološki procesi brodogradnje	*Technology Processes of Shipbuilding*
Uvod u plovne objekte	*Introduction to Marine Vessels*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

Brodski propulzori	*Ship Propulsion Devices*
Osnivanje brodogradilišta	*Shipyard Design*
Čvrstoća broda	*Ship Strength*
Dinamika pomorskih konstrukcija	*Dynamics of Off Shore Structures*
Hidrodinamika plovnih objekata II	*Marine Hydrodynamics II*
Konstrukcija malih plovnih objekata	*Small Craft Construction*
Metodologija gradnje plovnih objekata	*Methodology of Ship Production*
Objekti morske tehnologije	*Ocean Mobile and Fixed Structures*
Oprema malih plovnih objekata	*Small Crafts Equipment*
Opremanje i remont broda	*Ship Outfitting and Repair*
Organizacija i poslovanje brodogradilišta	*Shipyards Organisation and Management*
Osnivanje plovnih objekata I	*Ship Design I*
Osnivanje plovnih objekata II	*Ship Design II*
Pomorstvenost plovnih objekata	*Seakeeping*
Projektiranje malih plovnih objekata	*Small Craft Design*
Stabilitet broda u eksploataciji	*Ship Stability in Exploitation*
Stručna praksa II	*Industrial practice II*
Strukturna analiza broda	*Ship Structural Analysis*
Tehnološki proces gradnje broda	*Technological Process of Shipbuilding*
Ugovaranje plovnih objekata	*Ship Negotiation Process*
Upravljanje projektima u brodogradnji	*Project Management in Shipbuilding*
Vibracije broda	*Ship Vibrations*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

Brodske forme ST	*Ship Hull Forms VO*
Gradnja i održavanje malih plovnih objekata	*Small Craft Building and Maintenance*
Hidrostatika broda	*Ship Hydrostatics*
Konstrukcija broda	*Ship Construction*
Oprema broda ST	*Ship Equipment ST*
Osnivanje plovnih objekata	*Ship Design*
Plovni objekti	*Marine Vessels*
Stručna praksa I	*Professional practice I*
Stručna praksa II	*Professional practice II*
Strukturni elementi broda	*Ship Structure*
Tehnologija brodogradnje I	*Shipbuilding Technology I*
Tehnologija brodogradnje II	*Shipbuilding Technology II*
Tehnološki procesi gradnje i remonta broda	*Technological Processes of Shipbuilding and Repair*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

Integralna tehnologija gradnje broda	*Integrated Ship Production Technology*
Izabrana poglavlja iz metodologije gradnje plovnih objekata	*Selected Topics in Floating Objects Production Methodology*
Metodologija projektiranja plovnih objekata	*Methodology of Ship Design*
Izabrana poglavlja iz osnivanja plovnih objekata	*Selected Topics in Ship Design*
Pomorstvenost i upravljivost plovnih objekata	*Seakeeping and Manoeuvrability*
Izabrana poglavlja iz dinamike plovnih objekata	*Selected Topics in Marine Dynamics*
Izabrana poglavlja iz otpora plovnih objekata	*Selected Topics in Ship Resistance*
Izabrana poglavlja iz propulzije plovnih objekata	*Selected Topics in Ship Propulsion*
Projektiranje strukture plovnih objekata	*Ship Structural Design*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Hidrodinamičko opterećenje i odziv pomorskih objekata na morskim valovima*
  Hydrodynamic loads and response of marine objects
- *Projektiranje strukture broda, nove tehnologije kod projektiranja i preinaka brodskih konstrukcija, tehnologičnost kod projektiranja i izrade brodskih konstrukcija*
  Ship structural design, new technologies in ship structural design and conversions, techologicality in ship structure design and construction
- *Otpor i propulzija plovnih objekata, hidrodinamičke optimizacije*
  Ship resistance and propulsion, hydrodynamic optimizations
- *Primjena naprednih tehnologija i metoda gradnje i opremanja plovnih objekata; organizacija brodograđevnog poslovnog i proizvodnog procesa; osnivanje i unapređenje brodogradilišta i proizvodnih procesa, primjena simulacijskog modeliranja, višekriterijskog odlučivanja i LEAN metodologije za unapređenje brodograđevnog procesa, analiza tržišta; ugovaranje i tehnološko prognoziranje*
  Application of advanced technology and methods in ship construction and outfitting; organization of shipbuilding business and production process, the establishment and improvement of the shipyards and manufacturing processes, the application of simulation modeling, multicriteria decision making and LEAN methodologies to improve the shipbuilding process, market analysis, contracting and technological forecasting

PROJEKTI | PROJECTS

- *Numeričko modeliranje hidrodinamičkog opterećenja i odziva pomorskih objekata, 13.09.1.1.05, Sveučilište u Rijeci, Jasna Prpić-Oršić, 2013-2017., znanstvenoistraživački*
  Numerical modeling of hydrodynamic loads and response of marine objects, 13.09.1.1.05, University of Rijeka, Jasna Prpić-Oršić, 2013.-2017., research and scientific project
- *Energetski učinkovita i sigurna eksploatacija broda (SHOPERA), FP7 projekt, Apostolos Papanikolaou (Jasna Prpić-Oršić), 2013.-, znanstvenoistraživački*
  Energy Efficient Safe SHip OPERAtion (SHOPERA), FP7 project Grant Agreement number 605221, Apostolos Papanikolaou (Jasna Prpić-Oršić), 2013.-, research and scientific project
- *Ekološki pristup projektiranju broda i planiranju optimalne rute (GASDORP) O-1673-2014, Hrvatska zaklada za znanost, Jasna Prpić-Oršić, 2014-2018, znanstvenoistraživački*
  Greener Approach to Ship Design and Optimal Route Planning (GASDORP) O-1673-2014, Croatian Science Foundation, Jasna Prpić-Oršić, 2014-2018, research and scientific project
- *Unapređenje metodologije projektiranja procesa gradnje broda, Potpora znanstvenim istraživanjima za 2013. g. Sveučilišta u Rijeci, broj potpore: 13.09.1.1.06. Voditelj istraživačkog tima: prof. dr. sc. Nikša Fafandjel, dipl. ing., 2013.-2017.*
  Improving the methodology of ship construction process design, Support for scientific research in 2013., University of Rijeka, No.: 13.09.1.1.06. Head of the research team: prof. dr. sc. Niksa Fafandjel, 2013.-2017.

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Bašić, J.; Degiuli, N.; Dejhalla, R.; Total resistance Prediction of an Intact and Damaged Tanker with Flooded Tanks in Calm Water, Ocean Engineering, ISSN 0029-8018, 130, 83-91, 2016, London*

- *Bujan, L.; Zamarin, A.; Helideck Structure Design and Strength Analysis, Journal of Maritime & Trasportation Sciences, ISSN 0554-6397, Special, 261-272, 2016, Rijeka*
- *Stanić, V.; Fafandjel, N.; Matulja, T.; A Methodology For Improving Productivity Of The Existing Shipbuilding Process Using Modern Production Concepts And The Ahp Method, Brodogradnja, ISSN 0007-215X, 68(3), 37-56, 2017, Zagreb*
- *Kolić, D.; Storch, R.L.; Fafandjel, N.; Lean, Methodology to Transform Shipbuilding Panel and Assembly, Journal of Ship Production and Design, ISSN 2158-2874, 33(1), 1-10, 2017, Alexandria*
- *Kolić, D.; Storch, R.L.; Fafandjel, N.; Lean Built-Up Panel Assembly in a Newbuilding Shipyard Journal of Ship Production and Design, ISSN 2158-2874 , 33(3), 1-9, 2017, Alexandria*
- *Valčić, M.; Prpić-Oršić, J.; Vučinić, D.; Application of pattern recognition method for estimating wind loads on ships and marine objects, Materialwissenschaft und Werkstofftechnik - Material Science and Engineering Technology, ISSN: 0933-5137, 48, 153-162, 2017, London*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Kolić, D.; Bećirevic, A.; Storch, R.L. Methdology for Efficient Application of 3D Ship Modelling Software, International Conference on Computer Applications in Shipbuilding - ICCAS 2017, 2017. Singapore*
- *Kolić, D.; Storch, R.L.; Fafandjel, N.; Lean Transformation of Built-Up Panel Assembly in Shipbuilding Using a Value Stream Mapping Methodology, SNAME Maritime Conference - SMC 2016, 1-10, 2016., Bellevue, Washington, USA*
- *Legović, D.; Dejhalla, R.; An Overview of Measures for Ship's Energy Efficiency Improvement Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 61-72, 2016., Trogir - Seget Donji, Hrvatska*
- *Mimica, D.; Kolić, D.; Fafandjel, N.; Value Stream Mapping to Improve Loading of Cement onto a Bulk Carrier, Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 457-464, 2016., Trogir - Seget Donji, Hrvatska*
- *Vukman, M.; Kolić, D.; Fafandjel, N.; DFP Analysis of Panel Assembly in Shipbuilding Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 637-646, 2016., Trogir - Seget Donji, Hrvatska*
- *Prpić-Oršić, J.; Mandić, D.; Benić, N.; Radić, Ž.; Involuntary Speed Loss of a Tanker in Sea Waves, Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 73-80, 2016., Trogir - Seget Donji, Hrvatska*
- *Vitali, N.; Prpić-Oršić, J.; Guedes Soares, C.; Muthods for Added Resistance Estimation in Head and Olique Waves, Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 81-90, 2016., Trogir - Seget Donji, Hrvatska*
- *Valčić, M.; Prpić-Oršić, J.; The Effect of Forbidden Zone Handling on Optimal Thrust Allocation, Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 163-173, 2016., Trogir - Seget Donji, Hrvatska*
- *Mrakovčić, T.; Bukovac, O.; Prpić-Oršić, J.; Numerical Simulation of Two-stroke Low Speed Turbocharged Engine in Heavy Sea Proceedings of the 22nd Symposium on Theory and Practice of Shipbuilding, In Memoriam prof. Leopold Sorta, ISSN 2459-6566, 467-475, 2016., Trogir - Seget Donji, Hrvatska*

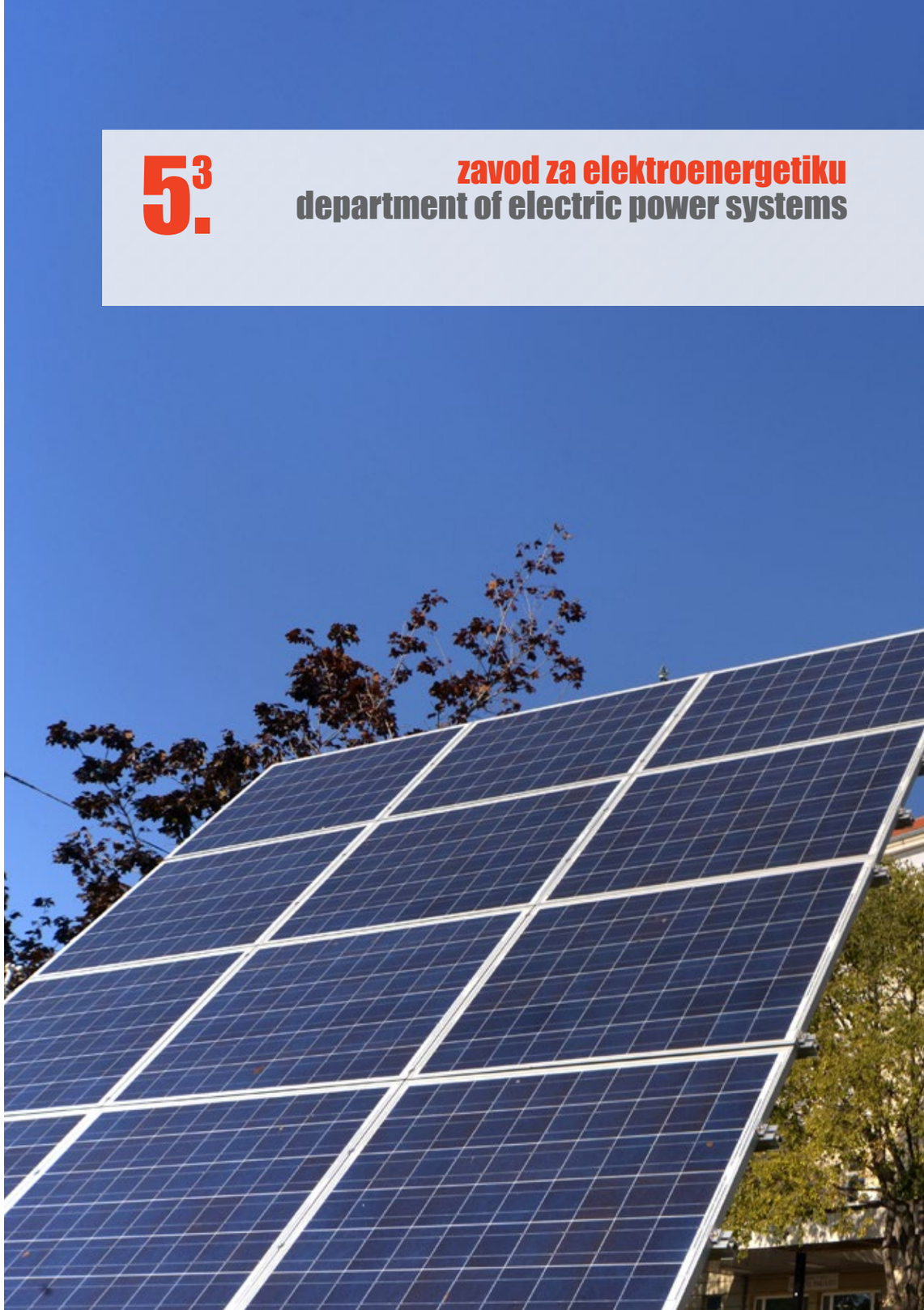
POZVANA PREDAVANJA | INVITED LECTURES

- *Prpić-Oršić, J.; Valčić, M.; Vučinić, D.; Sensitivity of pattern recognition method for wind load estimation on ships and marine objects, 11th International Conference on Advanced Computational Engineering and Experimenting ACE-X 2017, 2017, Beč, Austrija*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *AALTO University School of Engineering, Helsinki, Finska, Finland*
- *Norwegian University of Science and Technology, Center of Ships and Ocean Structures, Norwegian Center of Excelence, Trondheim, Norveška, Norway*
- *Technical University of Lisbon, Instituto Superior Tecnico, Lisabon, Portugal, Portugal*
- *University of Technology, Krakow/Krakov, Poljska, Poland*
- *University of Trieste, Department of Naval Architecture and Ocean Engineering, Trieste, Italija, Italy*
- *University of Washington, Department of Industrial and Systems Engineering, Seattle, SAD, USA*
- *University of Naples, Naples, Italija, Italy*
- *Columbia University, Department of Mechanical Engineering, New York City, SAD, USA*
- *University of Kobe, Japan, Japan*

5.3 zavod za elektroenergetiku
department of electric power systems



PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Izv. prof. dr. sc. / Assoc. Prof. D. Sc.. **Dubravko Franković**

http://www.riteh.uniri.hr/ustroj/zavodi/zee/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

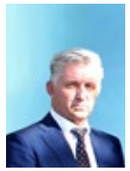
Livio Šušnjić

električni strojevi; primjena MKE u području elektromagnetizma
electrical machines; FEM application in the electromagnetics

IZVANREDNI PROFESORI | ASSOCIATE PROFESSORS

Srđan Skok

nadzor, zaštita i vođenje elektroenergetskog sustava; napredne mreže; električna postrojenja
power system monitoring, protection and control; smart grids; electric facilities

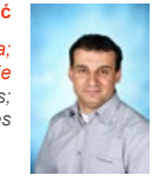


Alfredo Višković

elektroenergetski sustavi; tržište električne energije; razvoj energetskih projekata
electric power systems; electricity markets; power generation project development

Dubravko Franković

elektroenergetski sustavi; elektrane; projektiranje; obnovljivi izvori energije; fotonaponske elektrane
electric power systems; power plants; electrical design; renewable energy sources; photovoltaic systems



Saša Sladić

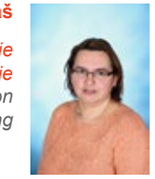
energetska elektronika; elektromotorni pogoni; mehatronika; nove tehnologije i obnovljivi izvori energije
power electronic; electric drives; mechatronics; new technologies and renewable energy sources

DOCENTI | ASSISTANT PROFESSORS

Vedran Kirinčić

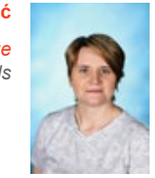
nadzor, zaštita i vođenje elektroenergetskog sustava; napredne mreže; električna postrojenja
power system monitoring; protection and control; smart grids; electric facilities

VIŠI PREDAVAČI | SENIOR LECTURERS



Branka Dobraš

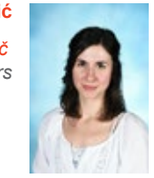
nadzor i vođenje elektroenergetskog sustava; modeliranje procesnih informacija; objektno orijentirano modeliranje
electric power system control; process information modelling; object oriented modelling



Marijana Živić-Đurović

kvaliteta električne energije; pouzdanost; mikromreže
quality of electricity supply; reliability; microgrids

POSLIJEDOKTORAND | POSTDOCTORAL RESEARCH ASSISTANT



Andrea Andrijašević

digitalna obrada signala govora; akustika prostora; elektroakustički pretvarač
digital processing of speech signals; room acoustics; electroacoustic transducers

ASISTENTI | ASSISTANTS

Neven Crnković

elektroenergetski sustav; vođenje sustava; napredne mreže
electric power system; power system control; smart-grid

Vladimir Franki

elektroenergetski sustavi; tržište električne energije; razvoj energetskih projekata
electric power systems; electrical engineering fundamentals

Ingrid Sterpin

elektroenergetski sustav; vođenje sustava; napredne mreže
electric power system; power system control; smart-grid

Tomislav Šivalec

elektroenergetski sustav; vođenje sustava; napredne mreže
electric power system; power system control; smart-grid

VANJSKI SURADNICI | ASSOCIATES

Marin Antunović HOPS | HEP TSO
Dino Mađar HOPS | HEP TSO
Igor Majkić
Goran Klobučar
Vitomir Komen HEP ODS | HEP DSO
Ranko Lončarić
Neven Pavlović T-HT grupa | T-HT group
Vladimir Valentić HEP OPS | HEP TSO
Zoran Zbunjak HEP OPS | HEP TSO

nastava i znanost
education and science

Nastava se izvodi iz područja osnova elektrotehnike, elektroenergetike i elektrostrojarstva.

CO: Elektroenergetika

Lectures in the field of electrical engineering fundamentals, power engineering and electrical machines and drives.

LLL: Power Systems

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

- *Električna postrojenja* — *Electric Facilities*
- *Električni strojevi* — *Electrical Machines*
- *Elektroenergetske mreže* — *Electric Power Networks*
- *Elektromotorni pogoni* — *Electrical Drives*
- *Elektrotehnika R* — *Electrical Engineering R*
- *Energetska elektronika* — *Power Electronics*
- *Modeliranje procesnih informacijskih sustava* — *Modeling of process information systems*
- *Osnove elektrotehnike I* — *Fundamentals of Electrical Engineering I*
- *Osnove elektrotehnike II* — *Fundamentals of Electrical Engineering II*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Električne energetske mreže* — *Electrical Power Networks*
- *Elektroenergetska postrojenja* — *Electric Power Plants*
- *Elementi elektroenergetskih postrojenja* — *Electrical Power Facilities Equipment*
- *Izgradnja i održavanje elektroenergetskih postrojenja* — *Construction and Maintenance of Power Plants*
- *Osnove električnih strojeva* — *Fundamentals of Electrical Machines*
- *Osnove elektrotehnike* — *Fundamentals of Electrical Engineering*
- *Osnove elektrotehnike ST I* — *Fundamentals of Electrical Engineering ST I*
- *Osnove elektrotehnike ST II* — *Fundamentals of Electrical Engineering ST II*
- *Osnove energetske elektronike* — *Fundamentals of Power Electronics*
- *Osnove projektiranja elektroenergetskih postrojenja* — *Fundamentals of Electric Power Facilities Design*
- *Stručna praksa I* — *Professional practice I*
- *Stručna praksa II* — *Professional practice II*
- *Zaštita električnih postrojenja* — *Power System Protection*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

- *Električna postrojenja* — *Electric Facilities*
- *Električni strojevi* — *Electrical Machines*
- *Elektroenergetske mreže* — *Electric Power Networks*
- *Elektromotorni pogoni* — *Electrical Drives*
- *Elektrotehnika R* — *Electrical Engineering R*
- *Energetska elektronika* — *Power Electronics*
- *Modeliranje procesnih informacijskih sustava* — *Modeling of Process Informatics in Power System*
- *Osnove elektrotehnike I* — *Fundamentals of Electrical Engineering I*
- *Osnove elektrotehnike II* — *Fundamentals of Electrical Engineering II*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Modeli stohastičkih procesa informacija* — *Models of Stochastic Information Processes*
- *Modeliranje sustava za distribuciju i potrošnju električne energije* — *Modeling of Electrical Power Distribution Systems*
- *Aktivne distribucijske mreže* — *Active Distribution Networks*
- *Inteligentni elektroenergetski sustavi – Smart Grids* — *Intelligent Power Systems - Smart Grids*
- *Izabrana poglavlja iz energetskih komponenti i sustava obnovljivih izvora energije* — *Selected Chapters on Energy Components and Systems of Renewable Energy Sources*
- *Nova energetska paradigma* — *New Energy Paradigm*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Automatsko vođenje elektroenergetskog sustava; Napredne mreže; Mikromreže; Modeliranje elektroenergetskog sustava u stvarnom vremenu; Nadzor, zaštita i upravljanje elektroenergetskog sustava u stvarnom vremenu; Sinkronizirana mjerenja*
  System Integrity protection Scheme; Smart Transmission Grid; Microgrids; Power System Modelling in Real Time; Wide Area Monitoring, Protection and Control of the Power System in Real Time; Synchronized Measurement

- *Estimacija stanja elektroenergetskog sustava; Nadzor, zaštita i upravljanje elektroenergetskog sustava u realnom vremenu; Tehnologija sinkroniziranih mjerenja fazora*
  Power System State Estimation; Wide Area Monitoring, Protection and Control of the Power System in Real Time; Synchronized Measurement Technology

- *Razvoj suvremenih učinskih DC/DC i DC/AC pretvarača*
  Design of modern power DC/DC and DC/AC converters

- *Obnovljivi izvori energije, Fotonaponski sustavi, Napredne mreže*
  Renewable energy systems, Photovoltaic systems, Smart grid

PROJEKTI | PROJECTS

- *Numeričko modeliranje složenih elektromagnetskih pojava u transformatorima, Hrvatska zaklada za znanost, kolovoz 2014 - srpanj 2018., voditelj: Željko Štih, znanstveno-istraživački projekt*
  Numerical modelling of complex electromagnetics phenomena in transformers, Croatian Science Foundation, August 2014 - July 2018, project leader: Željko Štih, research and scientific project

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Frankovic, D.; Kirincic, V.; Valentic, V.; A Dual-axis Tracking Photovoltaic Power Plant as an Educational Tool, The International Journal of Electrical Engineering Education MIJEEE, 0020-7209, 0, 1-19, 2016, UK*
- *Kirincic, V.; Skok, S.; Frankovic, D.; A Noninvasive Inclusion of Synchrophasors in the Power System State Estimation, Technical Gazette, 1330-3651, 23, 1457-1462, 2016, HR*
- *Vrkic, N.; Skok, S.; Kirincic, V.; Real Time Power Swing Monitoring In a Hydro Power Plant Supported By Synchronized Measurements, Technical Gazette, 1330-3651, 23, 1517-1522, 2016, HR*
- *Kirincic, V.; Skok, S.; Frankovic, D.; A State Estimator Using SCADA and Synchronized Phasor Measurements, International Journal of Electrical and Computer Engineering System, IJECES ETFOS, 1847-6996, 7, 61-69, 2016, HR*

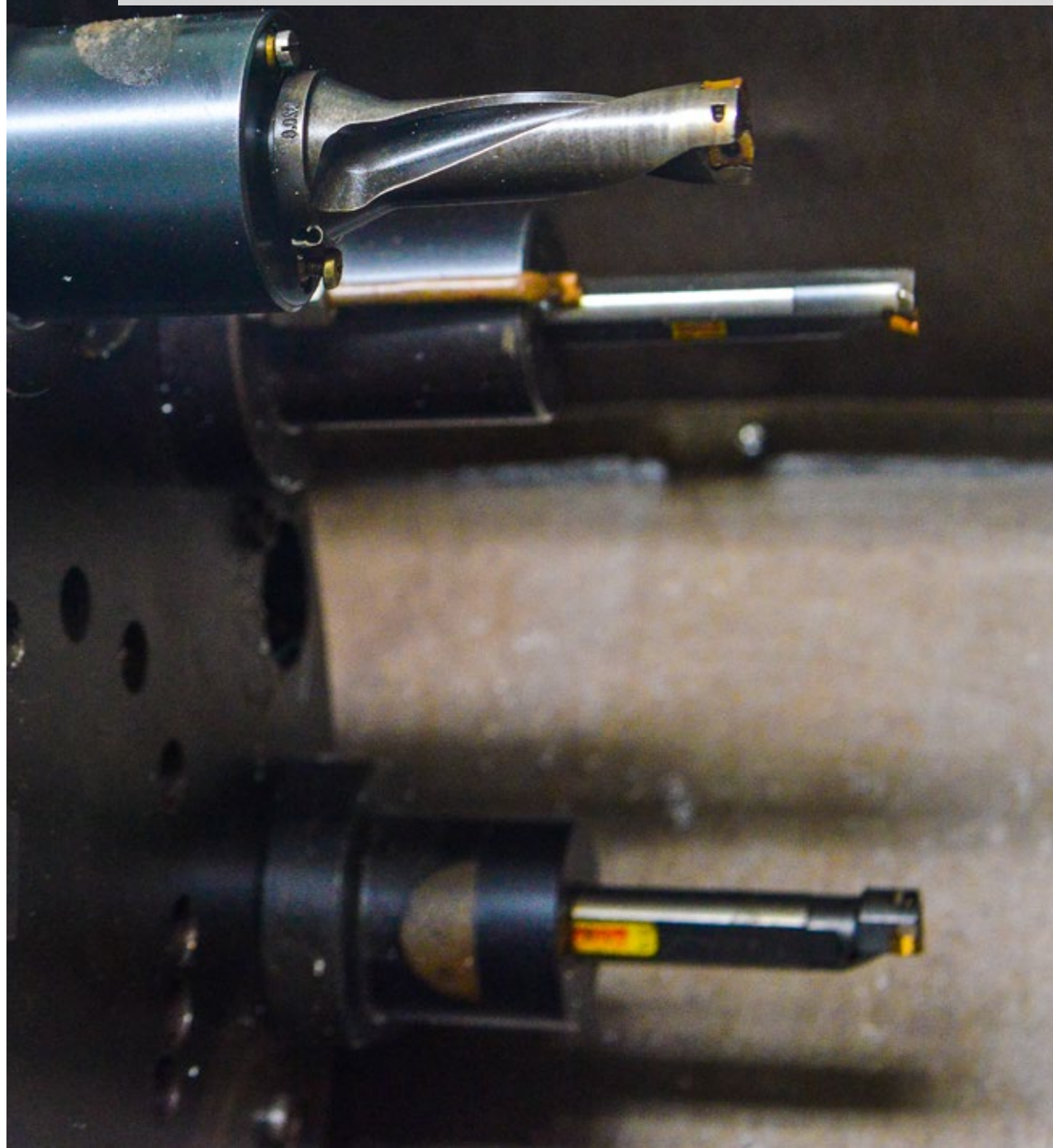
MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

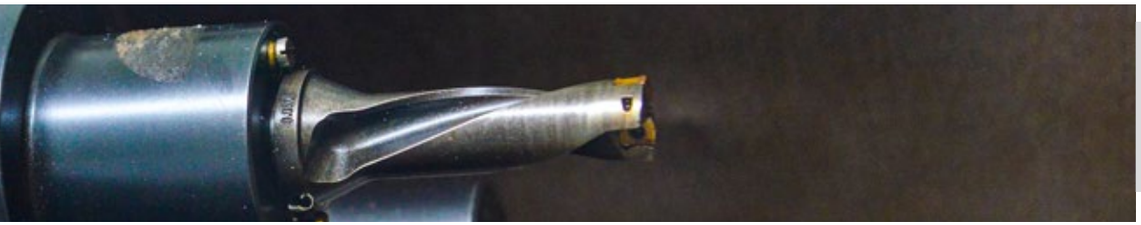
- *Frankovic, D.; Kirincic, V.; Kazalac, D.; PV system RITEH-1 – gained experience, The international Congress Energy and the Environment, 2016, HR*
- *Frankovic, D.; Maracic, M.; Kirincic, V.; Innovative approach to economic evaluation of artificial lighting systems in the design or redesign stage, International Conference on Innovative Technologies (IN-TECH), 328-331, 2016, Prague, Czech Republic*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *KIOS Research Center for Intelligent Systems and Networks, Cipar, Cyprus*
- *University of Cyprus, Electrical and Computer Engineering Department, Cipar, Cyprus*
- *The University of Manchester, The School of Electrical and Electronic Engineering, Velika Britanija, United Kingdom*
- *Quanta Technology, Sjedinjene Američke Države, United States of America*

5.4 zavod za industrijsko inženjerstvo i management
department of industrial engineering and management





PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. **Tonči Mikac**

http://www.riteh.uniri.hr/ustroj/zavodi/ziim/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Goran Cukor

napredni obradni sustavi i tehnologije; modeliranje i optimiranje obradnih procesa
advanced manufacturing systems and technology; modelling and optimisation of machining processes

Milan Ikonić

proizvodno strojarstvo; projektiranje proizvodnih sustava; CIM; planiranje i upravljanje proizvodnjom; proizvodni management; projektni management; organizacija i ekonomika poslovnih sustava
production engineering; designing of manufacturing systems; CIM; production planning and control; production management; project management; organization of manufacturing and business systems

Tonči Mikac

proizvodno strojarstvo; projektiranje proizvodnih sustava; CIM; planiranje i upravljanje proizvodnjom; proizvodni management; projektni management; organizacija i ekonomika poslovnih sustava
production engineering; designing of manufacturing systems; CIM; production planning and control; production management; project management; organization of manufacturing and business systems

Duško Pavletić

upravljanje kvalitetom; osiguranje i nadzor kvalitete; sustavi kvalitete; zavarivačko inženjerstvo; spajanje materijala; mjeriteljstvo; mjerenje i kontrola kvalitete
quality management; quality assurance and control; quality systems; welding engineering; joining of materials; metrology; measurements and quality control

Mladen Perinić

projektiranje tehnoloških procesa; CAM, CAP, CAD/NC-CIM; modeliranje, simulacija i optimizacija tehnoloških procesa
process planning; CAM, CAP, CAD/NC-CIM; modeling, simulation and processes plans optimization

IZVANREDNI PROFESOR | ASSOCIATE PROFESSOR

Zoran Jurković

alatni strojevi i oprema; CAD/CAM/CAE; dizajn alata i naprava; modeliranje, simulacija i optimizacija procesa obrade; planiranje eksperimenta
machine tools & equipment; CAD/CAM/ CAE; design of tools and fixtures; modeling, simulation and optimization of machining processes; design of experiments

VIŠI ASISTENTI | SENIOR ASSISTANTS

Samir Žic

proizvodno strojarstvo; planiranje i upravljanje proizvodnjom; organizacija i ekonomika poslovnih sustava; management i organizacijski razvoj
production engineering; production planning and control; organization and economics of business systems; management and organizational development

Sandro Doboviček

proizvodno strojarstvo; projektiranje proizvodnih sustava; fleksibilni i inteligentni sustavi; organizacija proizvodnje; proizvodni management; projektni management; CIM
production engineering; manufacturing system design; flexible and intelligent systems; organization of production; project management; production management; CIM

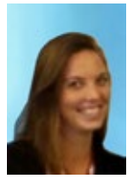
ASISTENTI | ASSISTANTS

Maja Forempoher Škuver

upravljanje kvalitetom; osiguranje i nadzor kvalitete; mjerenje i kontrola kvalitete
quality management; quality assurance and control; measurements and quality control

Graciela Šterpin Valić

upravljanje kvalitetom; osiguranje i nadzor kvalitete; mjerenje i kontrola kvalitete
quality management; quality assurance and control; measurements and quality control



Maja Marković

upravljanje kvalitetom; osiguranje i nadzor kvalitete; mjerenje i kontrola kvalitete
quality management; quality assurance and control; measurements and quality control

David Ištoković

projektiranje tehnoloških procesa; CAM, CAP, CAD/NC-CIM; modeliranje, simulacija i optimizacija tehnoloških procesa
process planning; CAM, CAP, CAD/NC-CIM; modeling, simulation and processes plans optimization

VANJSKI SURADNICI | ASSOCIATES

Marko Fabić
3. MAJ Brodogradilište d.d., Rijeka
| 3. MAJ Shipyard JSC, Rijeka

održavanje
maintenance

Elso Kuljanić
HAZU

obrada skidanjem čestica
machining processes

Jasmina Žic

organizacija i ekonomika; projektiranje proizvodnih sustava
organization and economics; manufacturing system design

Dorjan Jermaniš
Istarski vodovod d.o.o. Buzet

održavanje
maintenance

Mauro Štefančić
Alpron, Jurdani

mjeriteljstvo
metrology

Toni Vidolin
3. MAJ Brodogradilište d.d., Rijeka | 3. MAJ Shipyard JSC, Rijeka

tehnologija zavarivanja
welding technology

Aleksandar Vuković
NAVIS CONSULT d.o.o, Rijeka

proizvodno strojarstvo; proizvodni sustavi; CIM; planiranje i upravljanje proizvodnjom; proizvodni management; organizacija i ekonomika poslovnih sustava
production engineering; manufacturing systems; CIM; production planning and control; production management; organization of manufacturing and business systems

nastava i znanost
education and science

Nastava iz područja: mjerne tehnike i sustava kvalitete, organizacije i operacijskog menadžment, proizvodne tehnologije, proizvodne opreme i robotike, projektiranja procesa.

Lectures in the field of: measuring technique and quality systems, organization and operational management, manufacturing technologies, manufacturing equipments and robotics, process planning.

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

• *Proizvodne tehnologije*	• *Manufacturing Technologies*
• *Mjerenja i kontrola kvalitete*	• *Measurements and Quality Control*
• *Osiguranje kvalitete*	• *Quality Assurance*
• *Inženjerstvo kvalitete*	• *Quality Engineering*
• *Zavarivanje I*	• *Welding Engineering I*
• *Proizvodni strojevi, alati i naprave*	• *Production Machines, Tools, Jigs and Fixtures*
• *Organizacija i ekonomika poslovnih sustava*	• *Organization and Economics of Business Entity*
• *Planiranje i upravljanje proizvodnjom*	• *Production Planning and Management*
• *Tehnološki procesi*	• *Technological Processes*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

• *Ljevarstvo*	• *Foundry*
• *Napredni proizvodni postupci*	• *Advanced Manufacturing Processes*
• *Obrada odvajanjem čestica*	• *Metal Cutting Processes*
• *Tehnologija oblikovanja*	• *Metal Forming Technology*
• *Mjerenje u proizvodnji*	• *Measurement in industry*
• *Upravljanje kvalitetom*	• *Quality Management*
• *Zavarivanje II*	• *Welding Engineering II*
• *Spajanje materijala*	• *Joining of materials*
• *CNC/NC obradni strojevi*	• *CNC/NC Machine Tools*
• *Organizacija proizvodnje*	• *Production Organization*
• *Projektiranje proizvodnih sustava*	• *Designing of Production Systems*
• *Računalom integrirana proizvodnja*	• *Computer Integrated Manufacturing*
• *Proizvodni management*	• *Production Management*
• *Tehnička logistika*	• *Technical Logistics*
• *Management i organizacijski razvoj*	• *Management and Organizational Development*
• *Projektni management*	• *Project Management*
• *CAD/CAPP/CAM*	• *CAD/CAPP/CAM*
• *Projektiranje tehnoloških procesa*	• *Process Planning*
• *Računalna simulacija proizvodnih procesa*	• *Computer Simulation of Production Processes*
• *Održavanje*	• *Maintenance*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

• *Tehnologija obrade I*	• *Manufacturing Technology I*
• *Tehnologija obrade II*	• *Manufacturing Technology II*
• *Mjerna tehnika ST*	• *Measuring Technique ST*
• *Osiguranje kvalitete ST*	• *Quality Assurance ST*
• *Zavarivanje*	• *Welding Engineering*
• *Alati i naprave*	• *Tools, Jigs and Fixtures*
• *Obradni strojevi*	• *Machine Tools*
• *Organizacija i upravljanje proizvodnjom*	• *Production Organization and Management*
• *Proizvodni sustavi*	• *Production systems*
• *Organizacija i ekonomika*	• *Organization and Economics*
• *Tehnološki procesi ST*	• *Technological Processes ST*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Deformabilnost i suvremeno oblikovanje deformiranjem*
- *Izabrana poglavlja iz nekonvencionalnih postupaka obrade*
- *Izabrana poglavlja iz konvencionalne obrade odvajanjem čestica*
- *Upravljanje kvalitetom*
- *Metode simulacije u proizvodnji*
- *Planiranje i vođenje proizvodnje*
- *IP iz fleksibilnih proizvodnih sustava*
- *Razvojni i proizvodni management*
- *CAM, CAP, CAD/NC-CIM*
- *Optimizacija tehnoloških procesa*

- *Formability and Modern Forming Technology*
- *Selected Chapters on Nonconventional Manufacturing Processes*
- *Selected Chapters on Conventional Metal Cutting Processes*
- *Quality Management*
- *Simulation Methods in Production*
- *Planning and Processing of Manufacture*
- *Selected Chapters from flexible production system*
- *Development and Operational Management*
- *CAM, CAP, CAD/NC-CIM*
- *Processes Plans Optimization*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Napredni obradni sustavi i tehnologije, tehnologija oblikovanja deformiranjem, modeliranje i optimiranje obradnih procesa, računalna simulacija proizvodnih procesa*
  Advanced manufacturing systems and technology, forming technology, modelling and optimisation of machining processes, computational simulation of production processes
- *Modeliranje, simulacija i optimizacija procesa obrade. Primjena umjetne inteligencije u upravljanju procesima obrade*
  Modeling, simulation and optimization of manufacturing processes. Application of artificial intelligence in control of manufacturing processes
- *Industrijsko inženjerstvo, upravljanje i osiguranje kvalitete, mjerenja i kontrola kvalitete, mjerenja u proizvodnji, spajanje materijala, zavarivanje*
  Industrial engineering, quality management, quality assurance, measurements and quality control, industrial measurements, joining of meterials, welding
- *Proizvodno strojarstvo; proizvodni sustavi; CIM, planiranje i upravljanje proizvodnjom, proizvodni management, organizacija poslovnih sustava*
  Production engineering, manufacturing systems, CIM, production planning and control, production management, organization of manufacturing and business systems

PROJEKTI | PROJECTS

- *Eksperimentalno istraživanje profilnog oblikovanja lima u cilju modeliranja i optimizacije tehnološkog procesa i modernizacije proizvodnog sustava, Federalno ministarstvo obrazovanja i nauke Bosne i Hercegovine, Zoran Jurković, 2016-2017, znanstvenoistraživački projekt.*
  Experimental research of sheet metal profiling with aim to modeling and optimization of technological process and modernize the production system, Federal Ministry of Education and Science of Bosnia and Herzegovina, Zoran Jurkovic, 2016-2017, research and scientific project.

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Kostadin, T.; Cukor, G.; Jakovljevic, S.; Analysis of corrosion resistance when turning martensitic stainless steel X20Cr13 under chilled air-cooling, Advances in Production Engineering & Management, ISSN 1854-6250, 12, 105-114, 2017, Maribor*
- *Sekulić, M.; Pejić, V.; Gostimirović, M.; Jurković, Z.; Multi-Response Optimization of Ball-End Milling Parameters using the Taguchi-Baseg Grey Relational Analysis, Journal of Trends in the Development of Machinery and Associated Technology, ISSN 2303-4009 (online), 20(1), 33-36, 2016, Zenica-Barcelona-Istanbul*
- *Savićević, S.; Avdušinović, H.; Gigović-Gekić, A.; Jurković, Z.; Vukčević, M.; Janjić, M.; Influence of the Austempering Temperature on the Tensile Strength of the Austempered ductile iron (ADI) Samples, Metalurgija/Metallurgy, ISSN 0543-5846, 56(1-2), 149-152, 2017, Zagreb*
- *Janeš, G.; Perinić, M.; Jurković, Z.; Applying Improved Genetic Algorithm For Solving Job Shop Scheduling Problems, Tehnički vjesnik/Technical Gazette, ISSN 1330-3651, Vol. 24, No. 4, 1242-1247, 2017, Slavonski Brod*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Randić, M.; Pavletić, D.; Sedmak, F.; Utvrđivanje utjecajnih parametara na kvalitetu zavarenog spoja primjenom potpunog plana pokusa, XXII. simpozij Teorija i praksa brodogradnje in memoriam prof. Leopold Sorta, 2016., Trogir*
- *Pavletić, D.; Vidolin, T.; Šuper, M.; Vučković, Ž.; Ishodi učenja i potrebe tržišta rada-primjer iz područja zavarivanja, XXII. simpozij Teorija i praksa brodogradnje in memoriam prof. Leopold Sorta, 2016., Trogir*
- *Pavletić, D.; Soković, M.; Vidolin, T.; Learning outcomes an laboru market needs, Welding engineering case study, The 9th International working conference Total Quality Management Advanced and Intelligent Approaches, 2017., Beograd*
- *Borić, A.; Cukor, G.; Pavletić, D.; The Model of Stress Distribution in the Cutting Tool During Turning Process Obtained by SolidWorks, Proceedings of 6th International Conference "Mechanical Technologies and Structural Materials" MTSM 2016, ISSN 1847-7917, 11-16, 2016., Split*
- *Kostadin, T.; Cukor, G.; Jurković, Z.; Multi-Response Optimization of X20Cr13 Steel Turning Under Vortex Tube Cooling Using Grey Relational Analysis, CIM 2017: Computer Integrated Manufacturing and High Speed Machining / 16th International Scientific Conference on Production Engineering, ISSN 2584-3214, 165-170, 2017., Zagreb*
- *Sekulić, M.; Pejić, V.; Gostimirović, M.; Jurković, Z.; Multi-Response Optimization of Ball-End Milling Parameters using the Taguchi-Baseg Grey Relational Analysis, 20th International Research/Expert Conference - TMT 2016, ISSN 1840-4944, 49-52, 2016, Zenica-Barcelona-Istanbul*
- *Hozdić, E.; Jurković, Z.; Performance Layer of Virtual Autonomous Work Systems, 20th International Research/Expert Conference - TMT, 2016, ISSN 1840-4944, 133-136, 2016, Zenica-Barcelona-Istanbul*
- *Grozdek, M.; Fabić, M.; Jurković, Z.; Utjecaj učinkovite klasifikacije rizika na održavanje, 23th International Maintenance & Reliability Conference – HDO 2017, ISSN 1848-4867, 107-114, 2017, Zagreb*
- *Bazina, T.; Jurković, Z.; Sekulić, M.; Optimizacija procesa tokarenja, 1st, Conference with International Participation Application of new technologies and ideas in engineering education 2017, ISBN 978-86-915487-1-1, 113-120, 2017, Požega-Srbija*
- *Tadić, B.; Perinić, M.; Jurković, Z.; Računalna analiza procesa injekcijskog prešanja, 6th International Conference Mechanical Technology and Structural Materials - MTSM, ISSN 1847-7917, 153-158, 2016., Split*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *Università degli Studi di Udine, Facoltà di Ingegneria, Dipartimento di Ingegneria Elettrica, Gestionale e Meccanica (DIEGM), Italija, Italy*
- *University of Maribor, Faculty of Mechanical Engineering, Production Engineering Institute, Slovenija, Slovenia*
- *University of Kragujevac, Faculty of Engineering, Department for Production Engineering, Srbija, Serbia*
- *University of Novi Sad, Faculty of Technical Sciences, Department of Production Engineering, Srbija, Serbia*
- *University of Montenegro, Faculty of Mechanical Engineering, Podgorica, Crna Gora, Montenegro*
- *University of Banja Luka, Faculty of Mechanical Engineering, Bosna i Hercegovina, Bosnia & Herzegovina*
- *Ss. Cyril and Methodius University in Skopje, Faculty of Mechanical Engineering, Institute of Production Engineering and Management, Republika Makedonija, Republic of Macedonia*
- *Faculty of Mechanical Engineering, University of Zilina, Slovačka, Slovakia*
- *Poznan Politechnic, Technical University of Poznan, Poljska, Poland*
- *Technical University of Ostrava, Faculty of Mechanical Engineering, Department of Machining and Assembly, Češka, Czech republic*
- *University of Ljubljana, Faculty of Mechanical Engineering, Slovenija, Slovenia*

5.5 zavod za konstruiranje u strojarstvu department of mechanical engineering design

PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. **Neven Lovrin**

http://www.riteh.uniri.hr/ustroj/zavodi/zks/

djelatnici
faculty and staff

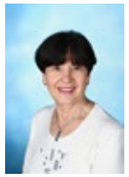
REDOVITI PROFESORI | PROFESSORS

Božidar Križan

konstrukcijski elementi; konstruiranje i oblikovanje proizvoda
machine elements; systematic product design

Neven Lovrin

konstrukcijski elementi; mehanički prijenosnici snage; transportna sredstva u industriji; brodski palubni strojevi; tehnička logistika; inženjerska etika
machine elements; mechanical power transmissions; industrial transport equipment and devices; ship's deck machinery; technical logistics; engineering ethics



Gordana Marunić

inženjerska grafika; dokumentiranje; tehničko crtanje; oblikovanje pomoću računala; inženjerska vizualizacija
engineering graphics; documenting; technical drawing; modelling by computer; engineering visualization

Boris Obsieger

konstrukcijski elementi; konstrukcijski elementi robota; prijenosnici snage; tribologija; metoda rubnih elemenata; numeričke metode u konstruiranju
machine elements; design elements of robots; power transmission; tribology; boundary elements method; numerical methods in mechanical engineering design

Saša Zelenika

precizno inženjerstvo; tehnologija mikrosustava; MEMS i NEMS; sustavi žetve energije; mjerni sustavi; konstrukcijski elementi; mehatronika
precision engineering; microsystems technologies; MEMS and NEMS; energy harvesting devices; measurement systems; machine elements; mechatronics

IZVANREDNI PROFESORI | ASSOCIATE PROFESSORS

Robert Basan

CAE; konstruiranje proizvoda; ponašanje i zamor materijala; odabir materijala; mehatronika
CAE; systematic product design; behaviour and fatigue of materials; material selection; mechatronics

Marina Franulović

konstrukcijski elementi; konstruiranje
machine elements; design in mechanical engineering

DOCENTI | ASSISTANT PROFESSORS

Goran Gregov

prijenosnici snage; hidraulika i pneumatika; mehatronika
power transmissions; hydraulics and pneumatics; mechatronics

Sanjin Troha

inženjerska grafika; dokumentiranje; tehničko crtanje; oblikovanje pomoću računala; konstrukcijski elementi
engineering graphics; documenting; technical drawing; modelling by computer; machine elements

VIŠI ASISTENTI | SENIOR ASSISTANTS

Branimir Rončević

konstrukcijski elementi; konstrukcijski elementi robota; numeričke metode u konstruiranju
machine elements; design elements of robots; numerical methods in mechanical engineering design

5.5 zavod za konstruiranje u strojarstvu department of mechanical engineering design

POSLIJEDOKTORANDI | POSTDOCTORAL RESEARCH ASSISTANTS

Željko Vrcan

konstrukcijski elementi; mehanički prijenosnici snage; transportna sredstva u industriji
machine elements; mechanical power transmissions; industrial transport equipment and devices

Ervin Kamenar

precizno inženjerstvo; tehnologija mikrosustava; mehatronika; sustavi regulacije i upravljanja; sustavi žetve energije; mjerni sustavi; inženjerska grafika i dokumentiranje; oblikovanje pomoću računala
precision engineering; microsystems technologies; mechatronics; control systems; energy scavenging devices; measurement systems; engineering graphics and documenting; computer aided design

Kristina Marković

konstrukcijski elementi; precizno inženjerstvo
machine elements; precision engineering

Tea Marohnić

inženjerska grafika; dokumentiranje; tehničko crtanje; oblikovanje pomoću računala; tehničko dokumentiranje; konstrukcijski elementi
engineering graphics; documenting; technical drawing; modelling by computer; machine elements

ASISTENTI | ASSISTANTS

Marko Perčić

inženjerska grafika; dokumentiranje; tehničko crtanje; oblikovanje pomoću računala; tehničko dokumentiranje; tehnologija nanosustava; tribologija
engineering graphics; documenting; technical drawing; modelling by computer; technical documenting; nanosystems technology; tribology

Petar Gljuščić

precizno inženjerstvo; sustavi žetve energije; konstrukcijski elementi; mjerni sustavi
precision engineering; energy harvesting devices; machine elements; measurement systems

Stjepan Piličić

primjena numeričkih metoda u konstuiranju
application of numerical methods in engineering

nastava i znanost
education and science

Nastava se izvodi iz područja: konstruiranje u strojarstvu, numeričke metode u konstruiranju, konstrukcijski elementi, mehanički prijenosnici snage, hidrostatski i pneumatski sustavi prijenosa snage i upravljanja, zupčani prijenosnici, tribologija, transportna sredstva u industriji, brodski palubni strojevi, tehnička logistika, mehatronika, precizno inženjerstvo, tehnologija mikrosustava, MEMS i NEMS, mjerni sustavi, inženjerska grafika i dokumentiranje, oblikovanje pomoću računala, inženjerska vizualizacija, metoda rubnih elemenata.

Cjeloživotno obrazovanje: Oblikovanje 3D modela.

Lectures in the field of: design in mechanical engineering, numerical methods in design, machine elements, mechanical power transmissions, fluid power systems and control, gear transmissions, tribology, industrial transport equipment and devices, ship's deck machinery, technical logistics, mechatronics, precision engineering, microsystems technologies, MEMS and NEMS, measurement systems, engineering graphics and documenting, modelling by computer, engineering visualization, boundary element method..

LLL: 3D modelling

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA | UNDERGRADUATE UNIVERSITY COURSES

- *Inženjerska grafika* — *Engineering Graphics*
- *Inženjerska grafika i dokumentiranje* — *Engineering Graphics and Documenting*
- *Izborni projekt - Konstrukcijski elementi I* — *Elective project - Machine Elements Design I*
- *Izborni projekt - Konstrukcijski elementi II* — *Elective project - Machine Elements Design II*
- *Konstruiranje i oblikovanje* — *Designing and Product Shaping*
- *Konstrukcijski elementi I* — *Machine Elements Design I*
- *Konstrukcijski elementi II* — *Machine Elements Design II*
- *Oblikovanje pomoću računala* — *Modelling by Computer*
- *Osnove konstruiranja* — *Fundamentals of Engineering Design*
- *Osnove konstrukcijskih elemenata* — *Fundamentals of Machine Elements Design*
- *Računalne vještine* — *Computer Skills*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA | GRADUATE UNIVERSITY COURSES

- *Brodski palubni strojevi* — *Ship's Deck Machinery*
- *CAE u razvoju proizvoda* — *CAE in Product Development*
- *Elektroničke komponente mehatroničkih sustava* — *Electronic components of mechatronic systems*
- *Elementi transportne tehnike* — *Elements of the Transport Technic*
- *Modeliranje hidraulike i pneumatike* — *Modelling of hydraulics and pneumatics*
- *Inženjerska vizualizacija* — *Engineering Visualization*
- *Komponente mehatroničkih sustava* — *Components of mechatronic systems*
- *Konstrukcijski elementi III* — *Machine Elements Design III*
- *Konstrukcijski elementi robota* — *Robot Elements Design*
- *Laboratorijske vježbe A* — *Laboratory exercises A*
- *Laboratorijske vježbe B* — *Laboratory exercises B*
- *Prijenosnici snage* — *Power Transmissions*
- *Mehatronički sustavi* — *Mechatronics Systems*

- *Metodičko konstruiranje*
- *Mikro i nano elektromehanički sustavi*
- *Modeliranje mehatroničkih sustava*
- *Numeričke metode u konstruiranju*
- *Precizne konstrukcije i tehnologija mikro sustava*
- *Projekt I - Inženjerska vizualizacija*
- *Projekt I - Konstrukcijski elementi III*
- *Projekt I - Konstrukcijski elementi robota*
- *Projekt I - Prijenosnici snage*
- *Projekt I - Numeričke metode u konstruiranju*
- *Projekt II - Elektroničke komponente mehatroničkih sustava*
- *Projekt II – Elementi transportne tehnike*
- *Projekt II - Modeliranje hidraulike i pneumatike*
- *Projekt II - Precizne konstrukcije i tehnologija mikro sustava*
- *Tehnička logistika*
- *Trajnost strojeva i konstrukcija*
- *Transportni sustavi*
- *Upravljanje mehatroničkim sustavima*

- *Systematic Engineering Design*
- *Micro and Nano Electromechanical Systems*
- *Modelling of mechatronic systems*
- *Numerical Methods in Mechanical Engineering Design*
- *Precision Engineering and Microsystems Technologies*
- *Project I - Engineering Visualization*
- *Project I - Machine Elements Design III*
- *Project I - Robot Elements Design*
- *Project I - Mechanical Power Transmissions*
- *Project I - Numerical Methods in Mechanical Engineering Design*
- *Project II - Electronic components of mechatronic systems*
- *Project II – Elements of the Transport Technic*
- *Project II - Modelling of hydraulics and pneumatics*
- *Project II - Precision Engineering and Microsystems Technologies*
- *Technical Logistics*
- *Durability of Machines and Structures*
- *Transport Systems*
- *Control of Mechatronics Systems*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Elementi strojeva I*
- *Elementi strojeva I BG*
- *Elementi strojeva II*
- *Hidraulika i pneumatika*
- *Konstruiranje*
- *Mehatronika*
- *Osnove mehatronike*
- *Tehničko crtanje*
- *Tehničko dokumentiranje*

- *Machine Elements I*
- *Machine Elements I NA*
- *Machine Elements II*
- *Hydraulics and pneumatics*
- *Mechanical Engineering Design*
- *Mechatronics*
- *Fundamentals of Mechatronics*
- *Technical Drawing*
- *Technical Documenting*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Izabrana poglavlja iz hidrostatskih i pneumatskih prijenosa*
- *Izabrana poglavlja iz konstrukcijskih elemenata*
- *Izabrana poglavlja iz prijenosnika snage*
- *Izabrana poglavlja iz transportnih sredstava u industriji*
- *Kontaktni problemi u analizi konstrukcijskih elemenata*
- *Modeliranje inženjerskih konstrukcija*
- *Nauka o konstruiranju*
- *Podatljivi elementi i mehanizmi*
- *Principi konstrukcija visokih i ultravisokih preciznosti*
- *Specijalni mehanički prijenosnici*

- *Selected Chapters on Hydrostatic and Pneumatic Transmissions*
- *Selected Chapters on Machine Elements*
- *Selected Chapters on Power Transmission*
- *Selected Chapters on Industrial Transport Equipment and Devices*
- *Contact Problems in Machine Elements Analyses*
- *Modelling of Engineering Structures*
- *Design Science*
- *Compliant Elements and Mechanisms*
- *Principles of High and Ultra-High Precision Devices*
- *Special Mechanical Transmissions*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Hidrostatski pogoni, Pneumatski sustavi*
  Hydrostatic transimission, Pneumatic systems
- *Karakterizacija i numeričko modeliranje ponašanja materijala*
  Characterisation and numerical modelling of material behaviour
- *Konstrukcijsko strojarstvo*
  Mechanical engineering design
- *Kontaktni problemi u konstrukcijskim elementima*
  Contact problems in machine elements.
- *Modeliranje*
  Modelling
- *Precizno inženjerstvo: podatljivi mehanizmi, pozicioniranje ultravisokih preciznosti i točnosti, strukturna analiza, integracija u mehatroničke sustave, mjerne tehnike, oprema za sinkrotronsko zračenje*
  Precision engineering: compliant mechanisms, ultra-high precision positioning, structural analysis, integration into mechatronics devices, measurement techniques, equipment for synchrotron radiation
- *Prijenos energije i informacija u hidrauličkim i pneumatskim sustavima*
  The energy and information transmission in hydraulic and pneumatic systems
- *Procjena parametara materijala primjenom klasičnih metoda i neuronskih mreža*
  Estimation of material properties by means of classical methods and neural networks
- *Tehnologija mikro- i nanosustava: MEMS, manipulacija, montaža i pakiranje, skalirajući učinci, proizvodnja mikrostruktura, prikupljanje niskorazinske energije iz okoliša, tribologija*
  Micro- and nanosystems technologies: MEMS, handling, assembly and packaging, scaling effects, micro-fabrication, energy harvesting, tribology
- *Zamor materijala*
  Fatigue of materials
- *Zupčasti prijenosnici, planetarni prijenosi, evolventno ozubljenje s velikim stupnjem prekrivanja profila, transportni sustavi, inženjerska etika.*
  Gear transmissions, planetary gears, high transverse contact ratio gears, transport systems, engineering ethics
- *Ponašanje materijala*
  Behaviour of materials

PROJEKTI | PROJECTS

- *Karakterizacija i modeliranje ponašanja materijala i konstrukcija za inovativne primjene, Potpore znanstvenim istraživanjima na Sveučilištu u Rijeci, Robert Basan, 2014-2017*
  Characterization and modelling of materials and structures for innovative applications, Scientific support of University of Rijeka, Robert Basan, 2014-2017
- *Razvoj evolucijskih postupaka za karakterizaciju ponašanja bioloških tkiva - BIOMAT, Istraživački projekt Hrvatske zaklade za znanost IP-2014-09-4982, voditeljica Marina Franulović, 2015-2019*
  Development of evolutionary procedures for characterization of biological tissues behaviour

- BIOMAT, Research project supported by Croatian Science Foundation IP-2014-09-4982, principal investigator Marina Franulović, 2015-2019

- *Razvoj evolucijskih metoda za identifikaciju parametara materijala, Inicijalna potpora za mlađe istraživače Sveučilišta u Rijeci, voditeljica Marina Franulović, 2014-2017*
  Development of evolutionary methods for material parameter identification, Initial scientific support of University of Rijeka, Marina Franulović, 2014-2017

PUBLIKACIJE | PUBLICATIONS

KNJIGE | BOOKS

- *Križan, B.; Franulović, M.; Zelenika, S.; Konstrukcijski elementi - Zbirka zadataka: Osnove, elementi za spajanje, osovine i vratila (dotisak 2017), Tehnički fakultet Sveučilišta u Rijeci 978-953-6326-76-1, dotisak 2017, Rijeka, Hrvatska, dotisak 2017*

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Franulović, M.; Basan, R.; Prebil, I.; Trajkovski, A.; Marohnić, T.; Materials characterization – From metals to soft tissues, Materials Discovery, 2352-9245, 7, 1-7, 2017*
- *Basan, R.; Franulović, M.; Prebil, I.; Kunc, R.; Study on Ramberg-Osgood and Chaboche models for 42CrMo4 steel and some approximations, Journal of constructional steel research, 0143-974X, 136, 65-74, 2017*
- *Franulović, M.; Marković, K.; Vrcan, Ž.; Šoban, M.; Experimental and analytical investigation of the influence of pitch deviations on the loading capacity of HCR spur gears, Mechanism and machine theory, 0094-114X, 117, 96-113, 2017*
- *Marohnić, T.; Basan, R.; Franulović, M.; Evaluation of Methods for Estimation of Cyclic Stress-Strain Parameters from Monotonic Properties of Steels, Metals, 2075-4701, 7, 1-15, 2017*
- *Brnčić. D.; Gregov, G.; Numerical simulation study of parallel hydraulic hybrid system for a delivery van, Tehnical Journal, 1846-6168, 11, 21-28, 2017, Varaždin, Hrvatska*
- *Kamenar, E.; Zelenika, S.; Nanometric positioning accuracy in the presence of presliding and sliding friction: Modelling, identification and compensation, Mechanics based design of structures and machines, 1539-7734, 45, 111-126, 2017, inozemstvo*
- *Marković, K.; Zelenika, S.; Optimised cross-spring pivot configurations with minimised parasitic shifts and stiffness variations investigated via nonlinear FEA, Mechanics based design of structures and machines, 1539-7734, 45, 380-394, 2017., inozemstvo*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Franulović, M.; Marković, K.; Study on objective function in soft tissues characterization Published abstracts - 23 Congress of the European Society of Biomechanics, 2017, Seville, Španjolska*
- *Franulović, M.; Marković, K.; Piličić, S.; Procedure for Modelling of Soft Tissues Behavior, Mipro Proceedings, 978-953-233-093-9, 498-502, 2017, Opatija, Hrvatska*
- *Marohnić, T.; New insights into estimation of cyclic behaviour of steels based on their monotonic properties using artificial neural networks, Proceedings of the 5th Symposium on Structural Durability in Darmstadt, 978-3-939195-55-9, 223-230, 2017, Darmstadt, Njemačka*

- *Basan, R.; Marohnić, T.; Analysis of differences among steel subgroups regarding their strain-life fatigue parameters, Proceedings of International Conference on Structural Integrity and Durability 2017, 2584-3982, 2017, Dubrovnik, Hrvatska*
- *Marohnić, T.; Basan, R.; Analysis of relevance of monotonic properties for estimation of fatigue parameters, Proceedings of EUROMAT 2017 - European Congress and Exhibition on Advanced Materials and Processes, 2017, Thessaloniki, Grčka*
- *Brumini, M.; Kamenar, E.; Gljušćić, P.; Zelenika, S.; Špalj, S.; Determination of efficiency of orthodontic treatment by using engineering tools, Proceedings of the 17th EUSPEN International Conference, 978-0-9957751-0-7, 479-480, 2017., Cranfield, UK*
- *Perčić, M.; Zelenika, S.; Kamenar, E.; Issues in validation of friction in the nanometric domain, Proceedings of the 17th EUSPEN International Conference, 978-0-9957751-0-8, 105-106, 2017., Cranfield, UK*
- *Bilandžija, Z.; Gregov, G.; Numerical simulation of a hydraulic system for a parabolic solar collectors positioning, Proceedings of the 25th International Congress "Energy and the Environment", 247-256, 2016, Opatija, Hrvatska*
- *Brnčić, D.; Gregov, G.; Numerical simulation of a parallel hydraulic hybrid system for a delivery van, Proceedings of the 25th International Congress "Energy and the Environment", 409-414 2016, Opatija, Hrvatska*

POZVANA PREDAVANJA | INVITED LECTURES

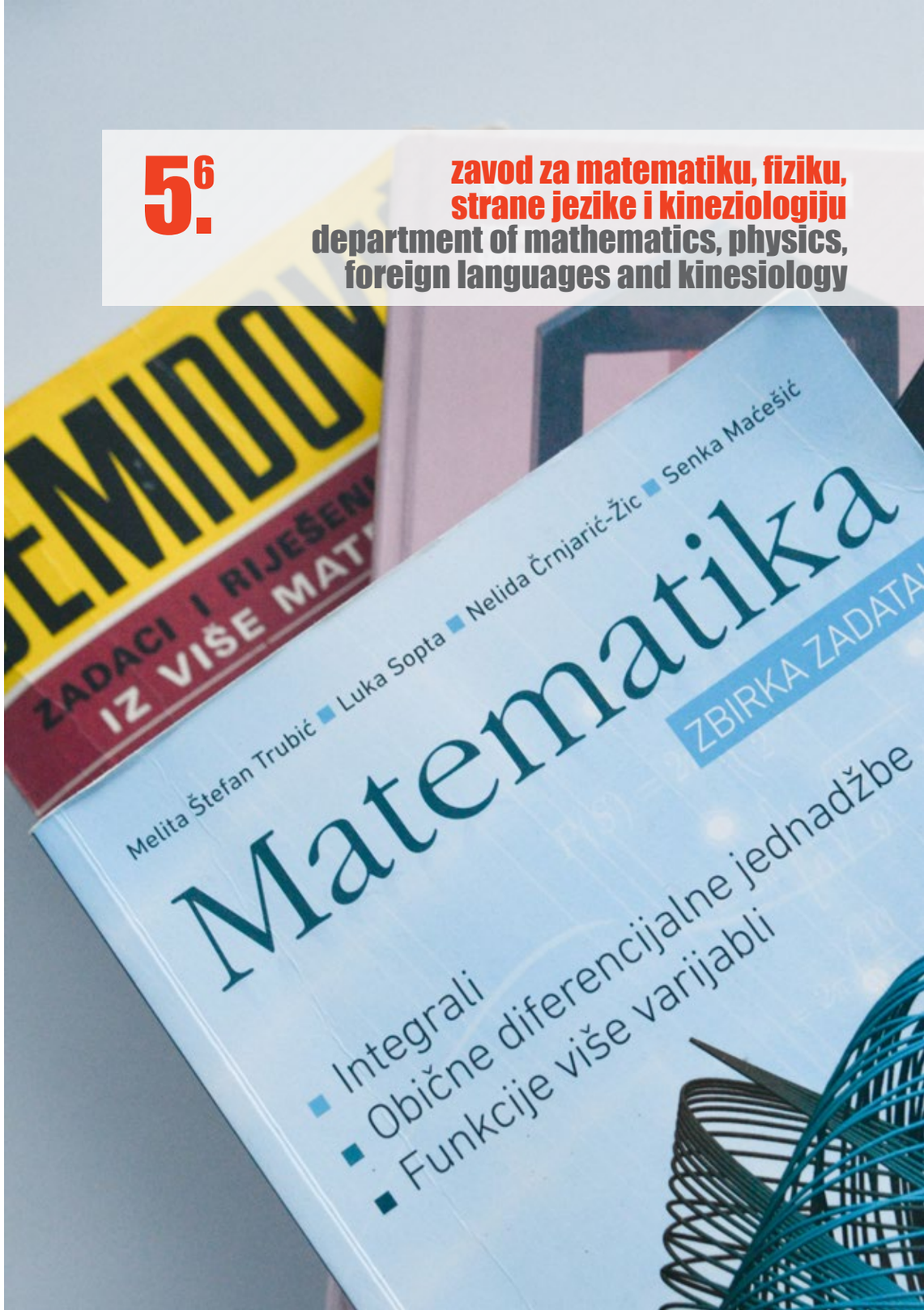
- *Basan, R.; Resources of material parameters of steels – Overview, Evaluation and Selection, Seminar Structural Integrity and Durability, 2017., Zagreb, Hrvatska*
- *Zelenika, S.; Precision engineering, nanotechnology and friction-related studies at the University of Rijeka, Predavanje za studente Joint European Master Programme in Tribology of Surfaces and Interfaces TRIBOS, Univerza v Ljubljani - Fakulteta za strojništvo, 2017., Ljubljana, Slovenija*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *Elettra, Italija, Italy*
- *Faculty of Industrial Technology, Technical University - Sofia, Bugarska, Bulgaria*
- *Faculty of Mechanical Engineering, Technical University - Sofia, Bugarska, Bulgaria*
- *Fakultet strojarstva i brodogradnje, Sveučilište u Zagrebu, Hrvatska, Croatia*
- *Fakulteta za strojništvo, Univerza v Ljubljani, Slovenija, Slovenia*
- *Fakulteta za strojništvo, Univerza v Mariboru, Slovenija, Slovenia*
- *Mašinki fakultet, Univerzitet u Nišu, Srbija, Serbia*
- *University of Applied Sciences, Graz, Austrija, Austria*
- *University of Chemical Technology and Metallurgy, Bugarska, Bulgaria*
- *University of Udine, Italija, Italy*
- *Moscow State Industrial University, Rusija, Russia*
- *Institut für Stahlbau und Werkstoffmechanik, Technische Universität, Darmstadt, Njemačka, Germany*
- *Czech Technical University in Prague, Češka Republika, Czech Republic*

5.6

zavod za matematiku, fiziku, strane jezike i kineziologiju
department of mathematics, physics, foreign languages and kinesiology



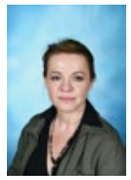
PREDSTOJNICA ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. **Nelida Črnjarić-Žic**

http://www.riteh.uniri.hr/ustroj/zavodi/zmfsjk/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS



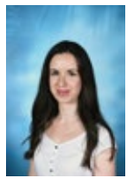
Senka Maćešić

numerička matematika; znanstveno računanje; matematičko modeliranje; optimalno upravljanje; dinamički sustavi
numerical mathematics; scientific computing; mathematical modelling; optimal control; dynamical systems

Nelida Črnjarić-Žic

numerička matematika; znanstveno računanje; računalne simulacije u tehnici; matematičko modeliranje; analiza podataka; dinamički sustavi
numerical mathematics; scientific computing; computer simulations in engineering; mathematical modelling; data analysis

DOCENTI | ASSISTANT PROFESSORS



Loredana Simčić

kombinatorna i diskretna matematika; mikropolarni fluidi
combinatorial and discrete mathematics; micropolar fluids

Tomislav Žic

fizika; astrofizika; fizika Sunca; magnetohidrodinamika (MHD); numeričko MHD modeliranje; koronini izbačaji mase; svemirska prognostika; modeliranje udarnih valovova u Sunčevoj atmosferi, koroni i međuplanetarnom prostoru
physics; solar physics; magnetohydrodynamics (MHD); numerical MHD modelling; coronal mass ejections; space weather; shock waves modelling in solar atmosphere, corona and interplanetary space

VIŠI PREDAVAČI | SENIOR LECTURERS

Ivan Dražić

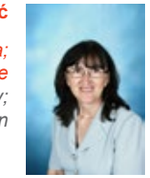
parcijalne diferencijalne jednadžbe; mikropolarni fluidi; numerička analiza; statistička obrada podataka; metodika nastave matematike
partial differential equations; micropolar fluids; numerical analysis; statistical analysis; methodology of teaching mathematics

Elisa Velčić-Janjetić

njemački jezik i književnost; engleski jezik i književnost; jezik struke
german language and literature; english language and literature; professional language

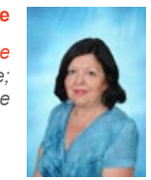
Katica Jurasić

euklidska i neeuklidska geometrija; metodika nastave matematike
euclidean and noneuclidean geometry; mathematics education



Ksenija Mance

engleski jezik i književnost; njemački jezik i književnost; jezik struke
english language and literature; german language and literature; professional language



PREDAVAČI | LECTURERS

Melita Štefan-Trubić

numerička matematika; metodika nastave matematike
numerical mathematics; methodology of teaching mathematics

Vanja Čotić Poturić

matematika
mathematics

VANJSKI SURADNICI | ASSOCIATES

Sanja Vranić
Igor Lulić
Dean Dešković
Sara Ban
Matteo Mravić
Biserka Draščić-Ban

matematika
mathematics

Bojan Crnković

numerička matematika; matematičko modeliranje; računalne simulacije u tehnici
numerical mathematics; mathematical modelling; computer simulations in engineering

Marta Žuvić - Butorac
Zdravko Lenac
Vedran Vujnović

fizika
physics

nastava i znanost
education and science

Nastava matematičkih kolegija izvodi se za inženjere s odabranim poglavljima iz područja linearne algebre, matematičke analize, diferencijalnih jednadžbi, vjerojatnosti i statistike te numeričke i stohastičke matematike. Nastava fizikalnih kolegija izvodi se za inženjere s odbranim poglavljima iz moderne fizike i zaštite okoliša. Nastava engleskog i njemačkog jezika obuhvaća obrađivanje odabranih poglavlja iz područja strojarstva, brodogradnje, elektrotehnike i računarstva te usavršavanje stručnog vokabulara i gramatičkih struktura jezika tehnike.

Mathematical lectures for engineers with selected chapters in the fields of: linear algebra, mathematical analysis, differential equations, probability and statistics, numerical and stochastic mathematics. Phisics lectures for engineers with selcted chapters in modern physics and enviroment protection. The English and German Language courses of study cover the analysis of selected chapters in the field of Mechanical Engineering, Naval Architecture, Electrical Engineering and Computer Science as well as the enhancement of professional-technical vocabulary and grammar.

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

- *Matematika 1*
- *Matematika 2*
- *Inženjerska matematika ET*
- *Inženjerska matematika R*
- *Inženjerska statistika*
- *Uvod u modernu fiziku*
- *Fizika 1*
- *Fizika 2*
- *Zaštita okoliša*
- *Engleski jezik I*
- *Engleski jezik II*
- *Njemački jezik I*
- *Njemački jezik II*
- *Tjelesna i zdravstvena kultura I*
- *Tjelesna i zdravstvena kultura II*

- *Mathematics 1*
- *Mathematics 2*
- *Engineering mathematics ET*
- *Engineering mathematics R*
- *Statistics for engineers*
- *Introduction to modern physics*
- *Physics 1*
- *Physics 2*
- *Environment protection*
- *English Language I*
- *English Language II*
- *German Language I*
- *German Language II*
- *Physical and Health Education I*
- *Physical and Health Education II*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

- *Inženjerska matematika*
- *Numerička i stohastička matematika*
- *Stohastička matematika*

- *Engineering mathematics*
- *Numerical and stochastic mathematics*
- *Stochastic mathematics*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Matematika 1*
- *Matematika 2*
- *Fizika*
- *Engleski jezik I*
- *Engleski jezik II*
- *Njemački jezik I*
- *Njemački jezik II*
- *Tjelesna i zdravstvena kultura I*
- *Tjelesna i zdravstvena kultura II*

- *Mathematics 1*
- *Mathematics 2*
- *Physics*
- *English Language I*
- *English Language II*
- *German Language I*
- *German Language II*
- *Physical and Health Education I*
- *Physical and Health Education II*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Statističke metode i stohastički procesi*
- *Matematičko modeliranje i numeričke metode*
- *Metode optimizacije*
- *Metodologija znanstvenoistraživačkog rada*
- *Izabrana poglavlja iz zaštite okoliša*
- *Instrumentacija i analitičke tehnike u zaštiti okoliša*
- *Kemija okoliša*
- *Zaštita mora i priobalja*

- *Statistical Methods and Stochastic Processes*
- *Mathematical Modeling and Numerical Methods*
- *Optimization Methods*
- *Methodology of Scientific Work and Research*
- *Selected Topics on Environment Protection*
- *Instrumentation and Analytical Techniques in Environment Protection*
- *Environmental Chemistry*
- *Protection of Sea and Coastal Zone*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *parcijalne diferencijalne jednadžbe, numerička matematika, matematičko modeliranje, optimizacija, operacijska istraživanja, statističke metode, diferencijalna geometrija, kombinatorna i diskretna matematika; dinamički sustavi*
  partial differential equations, numerical mathematics, mathematical modeling, optimization, operational research, statistical methods, differential geometry, combinatorial and descrete mathematics; dynamical systems
- *zaštita okoliša, atomska i nuklearna fizika*
  environment protection, atomic and nuclear physics
- *interdisciplinarno znanstvenoistraživački pristup području antropologije i temama kulture (znanstvena grana anglistika, područje lingvistike); istraživanje pojma tehnike uopće kao i njegove prisutnosti u izabranim romanima njemačke književnosti weimarskog doba (1918.-1933.) (znanstvena grana germanistika, područje književnosti)*
- *interdisciplinary scientific-research approach to the field of anthropology and cultural themes (the scientific branch of English studies, field Linguistics; research of the term technics and its presence in selected novels of the German literature of the Weimar period (1918-1933) (the scientific branch German studies, field Literature)*

- *astrofizika, fizika Sunca: magnetohidrodinamika (MHD); numeričko modeliranje*
  astrophysics, solar physics; magnetohydrodinamics (MHD); numerical modelling

PROJEKTI | PROJECTS

- *DARPA projekt "On a Data-Driven, Operator-Theoretic Framework for Space-Time Analysis of Process Dynamics", glavni istraživači Maria Fonoboreva i Igor Mezić, UCSB, suradnici Nelida Črnjarić-Žic i Senka Maćešić*
  DARPA project "On a Data-Driven, Operator-Theoretic Framework for Space-Time Analysis of Process Dynamics", principal investigators Maria Fonoberova and Igor Mezić, UCSB, collaborators Nelida Črnjarić-Žic and Senka Maćešić
- *"Matematičko i numeričko modeliranje kompresibilnog mikropolarnog fluida", istraživanje uz potporu Sveučilišta, voditelj Nermina Mujaković, suradnici Ivan Dražić, Nelida Črnjarić-Žic, Senka Maćešić i Loredana Simčić*
  "Mathematical and numerical modeling of compressible micropolar fluid", research supported by the University, principal investigator Nermina Mujaković, collaborators Ivan Dražić, Nelida Črnjarić-Žic, Senka Maćešić and Loredana Simčić
- *"Ekološko modeliranje u obalnom području Riječkog zaljeva", istraživanje uz potporu Sveučilišta, voditelj Lado Kranjčević, suradnice Nelida Črnjarić-Žic i Senka Maćešić*
  "Ecological modeling in the Bay of Rijeka coastal area", research supported by the University, principal investigator Lado Kranjčević, collaborators Nelida Črnjarić-Žic and Senka Maćešić
- *"Karakterizacija i modeliranje ponašanja materijala i konstrukcija za inovativne primjene", istraživanje uz potporu Sveučilišta, voditelj Robert Basan, suradnica Nelida Črnjarić-Žic*
  "Characterization and modeling of materials and constructions behavior for innovative applications", research supported by the University, principal investigator Robert Basan, collaborator Nelida Črnjarić-Žic
- *"Reciklirajući endosomalni putevi" istraživanje uz potporu Sveučiišta, voditeljica Gordana Blagojević-Zagorac, suradnik Senka Maćešić*
  "Recycling endosomal paths", research supported by the University, principal investigator Gordana Blagojević-Zagorac, collaborator Senka Maćešić
- *"Inicijalno-rubni problemi u istraživanju kompresibilnog mikropolarnog termoprovodljivog fluida", istraživanje uz potporu Sveučilišta, voditelj Ivan Dražić, suradnici Nelida Črnjarić-Žic i Loredana Simčić*
  "Initial-boundary problems in the research of compressible micropolar and heat-conducting fluid", research supported by the University, principal investigator Ivan Dražić, collaborators Nelida Črnjarić-Žic and Loredana Simčić

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Vukić Lušić, D.; Kranjčević, L.; Maćešić, S.; Lušić, D.; Jozić, S.; Linšak, Ž.; Bilajac, L.; Grbčić,L.; Bilajac, N.; Temporal variations analyses and predictive modeling of microbiological seawater quality, Water research, 0043-1354, 119, 160-170, 2017*
- *Mujaković, N.; Simčić, L.; Dražić, I., 3-D flow of a compressible viscous micropolar fluid with cylindrical symmetry: uniqueness of a generalized solution, Mathematical methods in the applied sciences, 0170-4214, 40, 2686-2701, 2017*
- *Crnković, D.; Rukavina, S.; Simčić, L., On triplanes of order twelve admitting an automorphism of order six and their binary and ternary codes, Utilitas Mathematica, 0315-3681103, 23-40, 2017*

- *Dražić, I.; Črnjarić-Žic, N.; Mujaković, N.; Three-dimensional compressible viscous micropolar fluid with cylindrical symmetry: derivation of the model and a numerical solution, Mathematics and Computers in Simulation, 0378-4754, 140, 107–124, 2017*
- *Dražić, I.; 3-D flow of a compressible viscous micropolar fluid with cylindrical symmetry: a global existence theorem, Mathematical methods in the applied sciences, 0170-4214, 40, 4785-4801, 2017*
- *Mujaković, N.; Črnjarić-Žic, N.; Global solution to 3D problem of a compressible viscous micropolar fluid with spherical symmetry and a free boundary, Journal of mathematical analysis and applications, 0022-247X, 449, 1637-1669, 2017*
- *Long, D.M.; Bloomfield, D.S.; Chen, P.-F.; Downs, C.; Gallagher, P.T.; Kwon, R.-Y.; Vanninathan, K.; Veronig, A.; Vourlidas, A.; Vršnak, B.; Warmuth, A.; Žic, T., Understanding the Physical Nature of Coronal "EIT Waves", Solar Physics, ISSN 0038-0938 292, 7-31, 2017*
- *Wang, Y.; Zhang, Q.; Liu, J.; Shen, C.; Shen F.; Yang, Z.; Žic, T.; Vršnak, B.; Webb, D. F.; Liu, R.; Wang S.; Zhang, J., On the propagation of a geoeffective coronal mass ejection during 15-17 March 2015., Journal of Geophysical Research-Space Physics, ISSN 2169-9402, 121, 7423-7434, 2016*
- *Vršnak, B.; Žic T.; Lulić, S.; Temmer, M.; Veronig, A.M.; Formation of Coronal Large-Amplitude Waves and the Chromospheric Response, Solar Physics, ISSN 0038-0938, 291, 89-115, 2016*
- *Štefan Trubić M., Radošević I.; Diferencijalni račun, Poučak: časopis za metodiku i nastavu matematike, 1332-3008, 17, 40-53, 2017*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Maćešić, S; Mezić, I.; Fonoberova, M.; Črnjarić-Žic, N.; Drmač, Z.; Andrejčuk A.; Baroreflex Physiology using Koopman mode analysis, SIAM Conference on Applications of Dynamical Systems, 2017, Snowbird, Utah, SAD*
- *Črnjarić-Žic, N.; Simčić, L.; A shear flow problem for compressible viscous micropolar fluid: derivation of the model and numerical solution, Equadiff 2017, 2017, Bratislava, Slovačka*
- *Dražić, I.; Simčić, L.; A shear flow problem for compressible viscous and heat conducting micropolar fluid, 5th Najman Conference on Spectral Theory and Differential Equations, 2017, Opatija, Hrvatska*
- *Dražić, I.; Mujaković, N.; A shear flow problem for compressible viscous and heat conducting micropolar fluid: local existence theorem, Equadiff 2017, 2017, Bratislava, Slovačka*
- *Dražić, I.; Homogeneous boundary value problem for the compressible viscous and heat-conducting micropolar fluid model with cylindrical symmetry, ICDDEA 2017 – International Conference on Differential & Difference Equations and Applications 2017, 2017, Lisabon, Portugal*
- *Dražić, I.; Simčić, L.; Compressible viscous and heat-conducting micropolar fluid model with spherical and cylindrical symmetry, Modern challenges in continuum mechanics, 2017, Zagreb, Hrvatska*
- *Vršnak, B.; Žic, T.; Čalogović, J.; Dumbović, M.; Forecasting the arrival of Coronal Mass Ejections: The Drag-Based Model, ASP (Astronomical Society of the Pacific) Conference Series, ISBN 978-1-58381-892-3, 504, 209, 2016, San Francisco*
- *Žic, T.; Temmer M.; Vršnak, B.; The Drag-Based Model in a Complex Numerical Environment European Week of Astronomy and Space Science (EWASS 2016), 2016, Atena, Grčka*

- *Žic, T.; Vršnak, B.; Lulić, S.; Formation of Coronal Large-Amplitude Waves, ASTRONUM 2016 – 11th international Conference on Numerical Modeling of Space Plasma Flows, 2016, Monterey, SAD*
- *Žic, T.; Temmer M.; Vršnak, B.; Usage of the Drag-Based Model, European Geosciences Union General Assembly 2016, 2016, Beč, Austrija*
- *Žic, T.; Mays, L. M.; The Drag-Based Model, NASA – The 8th Community Coordinated Modeling Center Workshop, 2016, Annapolis, SAD*
- *Žic, T.; Temmer M.; Vršnak, B.; Lulić, S.; The Drag Based Model Application, Science for Space Weather, 2016, Goa, Inidija*
- *Čotić, V.; Štefan Trubić, M.; Laplace Transform and Applications to Electric Circuit, Conference proceedings. New perspectives in science education. 6th Edition, 8862928475, 174-180 2017, Italy*
- *Štefan Trubić, M.; Radošević Medvidović I.; Fourier Analysis - Impacts of Mathematics on Other Educational Sciences, Conference proceedings. New perspectives in science education. 6th Edition, 8862928475, 143-147, 2017, Italy*
- *Štefan Trubić, M.; Čotić, V.; Vranić S.; Application of modern technology in teaching mathematics, The 6th International Scientific Colloquium MATHEMATICS AND CHILDREN, 978-953-6965-60-1, 2017, Croatia*

POZVANA PREDAVANJA | INVITED LECTURES

- *Maćešić, S.; Application of Koopman Analysis & Uncertainty Analysis to Physiology and CFD DARPA project kick-off meeting, 2016, Santa Barbara, California, USA*
- *Črnjarić-Žic, N.; Koopman Operator Formalism for Nonautonomous and Stochastic Systems DARPA project kick-off meeting, 2016, Santa Barbara, California, USA*
- *Žic, T.; Leila M., M.; The Drag-based Model, NASA – The 8th Community Coordinated Modeling Center Workshop, 2016, Annapolis, Maryland, SAD*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *University of California, Santa Barbara, SAD, USA*

5.7 zavod za materijale department of materials science and engineering

PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Doc. dr. sc. / Assist. Prof. D. Sc. Dario Iljkić

http://www.riteh.uniri.hr/ustroj/zavodi/zm/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Božo Smoljan

materijali; tehnologija materijala; materijali i tehnološki postupci; metalni materijali; ljevarstvo; karakterizacija materijala; toplinska obrada i inženjerstvo površina; ispitivanje materijala i analiza loma
materials; technology of material; materials and technological processes; metallic materials; casting; materials characterisation; heat treatment and surface engineering; materials testing and fracture analysis

DOCENTI | ASSISTANT PROFESSORS

Dario Iljkić

materijali; tehnologija materijala; materijali i tehnološki postupci; postupci toplinske obrade; metalni materijali; ljevarstvo; ispitivanje materijala i analiza loma
materials; technology of material; materials and technological processes; processes of heat treatment; metallic materials; casting; materials testing and fracture analysis

Sunčana Smokvina - Hanza

materijali; tehnologija materijala; postupci toplinske obrade; materijali i tehnološki postupci; ispitivanje materijala i analiza loma; karakterizacija materijala; zaštita materijala
materials; technology of material; processes of heat treatment; materials and technological processes; materials testing and fracture analysis; materials characterisation; materials protection

ASISTENTI | ASSISTANTS

Lovro Štic

materijali; tehnologija materijala; postupci toplinske obrade; materijali i tehnološki postupci; zaštita materijala
materials; technology of material; processes of heat treatment; materials and technological processes; materials protection

Andrej Borić

termalni procesi materijala
thermal processes of materials

VANJSKI SURADNICI | ASSOCIATES

Domagoj Rubeša
FH JOANNEUM, University of Applied Sciences, Graz

mehanika materijala; mehanika prijeloma i umorljivost; selekcija materijala; procesi oštećivanja materijala
materials mechanics; fracture mechanics and fatigue of materials; materials selection; processes of damaging of materials

Neven Tomašić
RENETEH Ogulin d.o.o.

materijali; tehnologija materijala; materijali i tehnološki postupci; postupci toplinske obrade; metalni materijali
materials; technology of material; materials and technological processes; processes of heat treatment; metallic materials

Vojteh Leskovšek
IMT Ljubljana

karakterizacija materijala; toplinska obrada i inženjerstvo površina; mehanika prijeloma i umorljivost
materials characterisation; heat treatment and surface engineering; fracture mechanics and fatigue of materials

Robert Danzer
Institut für Struktur- und Funktionskeramik

keramički i kompozitni materijali
ceramics and composite materials

Leszek Adam Dobrzanski
Silesian University of Technology, Gliwice

materijali; tehnologija materijala; materijali i tehnološki postupci; metalni materijali; nemetalni materijali; zaštita materijala; ljevarstvo; karakterizacija materijala; mehanika materijala; toplinska obrada i inženjerstvo površina; mehanika prijeloma i umorljivost; ispitivanje materijala; selekcija materijala; procesi oštećivanja materijala; kemija materijala; korozija i zaštita metala
materials; technology of material; materials and technological processes; metallic materials; nonmetal materials; materials protection; casting; materials characterisation; materials mechanics; heat treatment and surface engineering; fracture mechanics and fatigue of materials; materials testing; materials selection; processes of damaging of materials; materials chemistry; corrosion and metals protection

nastava i znanost
education and science

Nastava se izvodi iz područja materijala, tehnologije materijala, materijala i tehnoloških postupaka, karakterizacije materijala, metalnih materijala, nemetalnih materijala, zaštite materijala, mehaničkog ponašanja i odabira materijala, termalnih procesa materijala, ispitivanja materijala i analize loma, procesa oštećivanja materijala, kemije materijala, korozije i zaštite metala.

Lectures in the field of materials, technology of materials, materials and technological processes, materials characterisation, metallic materials, nonmetal materials, materials protection, mechanical behaviour and selection of materials, thermal processes of materials, materials testing and fracture analysis, processes of damaging of materials, materials chemistry, corrosion and metals protection.

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

- *Materijali I*
- *Materijali II*
- *Tehnologija materijala*
- *Izborni projekt - Materijali I*
- *Izborni projekt - Materijali II*
- *Karakterizacija materijala*
- *Postupci toplinske obrade*

- *Materials I*
- *Materials II*
- *Technology of Material*
- *Elective project - Materials I*
- *Elective project - Materials II*
- *Materials Characterisation*
- *Processes of Heat Treatment*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

- *Metalni materijali*
- *Nemetalni materijali*
- *Zaštita materijala*
- *Projekt I - Zaštita materijala*
- *Projekt I - Metalni materijali*
- *Ispitivanje materijala i analiza loma*
- *Termalni procesi materijala*
- *Projekt II - Termalni procesi materijala*
- *Mehaničko ponašanje i odabir materijala*

- *Metallic Materials*
- *Nonmetallic Materials*
- *Materials Protection*
- *Project I - Materials Protection*
- *Project I - Metallic Materials*
- *Materials Testing and Fracture Analysis*
- *Thermal Processes of Materials*
- *Project II - Thermal Processes of Materials*
- *Mechanical Behaviour and Selection of Materials*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Materijali*
- *Materijali i tehnološki postupci*

- *Materials*
- *Materials and Technological Processes*

KOLEGIJI NA POSLIJEDIPLOMSKIM (DOKTORSKIM) SVEUČILIŠNIM STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Procesi oštećivanja materijala*
- *Mehanika prijeloma i umorljivost*
- *Kemija materijala*
- *Korozija i zaštita materijala*
- *Toplinska obrada i inženjerstvo površina*
- *Izabrana poglavlja iz ispitivanja materijala*

- *Processes of Damaging of Materials*
- *Fracture Mechanics and Fatigue of Materials*
- *Materials Chemistry*
- *Corrosion and Metals Protection*
- *Heat Treatment and Surface Engineering*
- *Selected Chapters on Material Testing*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Znanstvenoistraživački rad iz znanstvenog područja tehničke znanosti, znanstvenih polja strojarstvo i temeljne tehničke znanosti, znanstvenih grana proizvodno strojarstvo i materijali.*
  Research and development activities in the scientific area of Technical Sciences, scientific fields of Mechanical Engineering and Fundamental Engineering Sciences, scientific branches of Mechanical Production Engineering and Materials

PROJEKTI | PROJECTS

- *Optimiranje i modeliranje termalnih procesa materijala, HRZZ - Hrvatska zaklada za znanost, Božo Smoljan, 2014 - 2018, znanstvenoistraživački.*
  Optimisation and modelling of thermal processes of materials, HRZZ - Croatian science foundation, Božo Smoljan, 2014 - 2018, research and scientific project.
- *Računalno optimiranje parametara termalnih procesa obrade metala, Sveučilište u Rijeci, Božo Smoljan, 2013 - 2015, znanstvenoistraživački.*

Computer optimization of parameters of thermal processes of metal, University of Rijeka, Božo Smoljan, 2013 - 2015, research and scientific.

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Smoljan, B.; Iljkić, D.; Maretić M.; Adhesivity of electroless Ni-P layer on austenitic stainless steel Archives of Materials Science and Engineering, 1897-2764, 80, 53-58, 2016, Gliwice, Poljska*
- *Smoljan, B.; Iljkić, D.; Maretić M.; Computer simulation of hardness and microstructure of casted steel 100Cr6, Archives of Materials Science and Engineering, 1897-2764, 78, 23-28 2016. Gliwice, Poljska*
- *Smoljan, B.; Iljkić, D.; Štic, L.; Kolumbić, Z.; Mathematical modelling of steel quenching Materials Science Forum, 1662-9752, 879, 1813-1818, 2017., Zürich, Švicarska*
- *Smoljan, B.; Maretić M.; Iljkić, D.; Heat treatment of electroless Ni-P layers on an austenitic stainless-steel substrate, Materiali in tehnologije, 1580-2949, 51, 413-417, 2017., Ljubljana, Slovenija*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Smoljan, B.; Iljkić, D.; Štic, L.; Pomenić, L.; Smokvina Hanza, S.; Numerical modelling of case hardening of steel, Proceedings of the International conference "Mechanical Technologies and Structural Materials" MTSM2016., 127-135, 2016, Split, Hrvatska*
- *Smoljan, B.; Iljkić, D.; Štic, L.; Rubeša, D.; Numerical Modelling of Steel Carburizing, Proceedings of the 3rd Mediterranean Conference on Heat Treatment and Surface Engineering MCHT&SE 2016., 2016, Portorož, Slovenija*
- *Smoljan, B.; Iljkić, D.; Smokvina Hanza, S.; Štic, L.; Borić, A.; Computer simulation of cast steel properties, Proceedings of the 16th International Foundrymen Conference, Global Foundry Industry – Perspectives for the Future, IFC17, 2017, Opatija, Hrvatska*
- *Smoljan, B.; Iljkić, D.; Pomenić, L.; Smokvina Hanza, S.; Štic, L.; Borić, A.; Computer simulation of steel casting, Proceedings of the 26th International Conference on Metallurgy and Materials - METAL 2017., 2017., Brno, Češka*
- *Smoljan, B.; Iljkić, D.; Maretić, M.; Smokvina Hanza, S.; Štic, L.; Borić, A.; An analysis of properties of electroless Ni-P layer on stainless steel, Proceedings of the ESSC & DUPLEX 2017, 9th European Stainless Steel Conference - Science & Market & 5th European Duplex Stainless Steel Conference & Exhibition, 2017., Bergamo, Italija*
- *Smoljan, B.; Iljkić, D.; Štic, L.; Smokvina Hanza, S.; Borić, A.; Tomašić, N.; Numerical modelling of heat treated welded joint, Proceedings of the 24th IFHTSE Congress 2017 combined with the European Conference on Heat Treatment and Surface Engineering together with A3TS Congress, 2017., Nica, Francuska*
- *Smoljan, B.; Iljkić, D.; Smokvina Hanza, S.; Štic, L.; Borić, A.; Rubeša, D.; Novak, H.; An application of Jominy test results in computer simulations of steel quenching, Book of Abstracts of the 10th International Conference on Industrial Tools and Advanced Processing Technologies, ICIT&APT 2017, 2017., Ljubljana, Slovenija*
- *Smoljan, B.; Iljkić, D.; Smokvina Hanza, S.; Štic, L.; Borić, A.; Rubeša, D.; Numerical modeling and simulation of case hardening of steel, Book of Abstracts of the 5th International Conference on Modern Manufacturing Technologies in Industrial Engineering, ModTech 2017, 2017., Sibiu, Rumunjska*

- *Smoljan, B.; Iljkić, D.; Smokvina Hanza, S.; Štic, L.; Borić, A.; Senčić, B.; Vertnik, R.; Numerical model and computer simulation of controlled cooling of hot rolled steel bars Proceedings of the International Conference MATRIB 2017 (Materials, Trybology, Recycling), 2017., Vela luka, Hrvatska*
- *Smoljan, B.; Iljkić, D.; Smokvina Hanza, S.; Štic, L.; Borić, A.; Rubeša, D.; Numerical modelling of welding of martensitic stainless steel, Book of Abstracts of the of the International Conference on Frontiers in Materials Processing Applications, Research and Technology, FiMPART'2017, 2017. Bordeaux, Francuska*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *Faculty of Mechanical Engineering, State University of Campinas, Campinas, Brazil, Brasil*
- *Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenija, Slovenia*
- *Institute of Metals and Technology, Ljubljana, Slovenija, Slovenia*
- *John von Neumann Faculty of Informatics, Obuda University, Mađarska, Hungary*
- *Materials Engineering, Silesian University of Technology in Gliwice, Gliwice, Poljska, Poland*
- *Metallurgy and Materials Science Research Institute, Chulalongkorn University, Bangkok, Tajland, Thailand*
- *The Institute of Materials, Minerals and Mining, Velika Britanija, UK*

5.8 zavod za mehaniku fluida i računarsko inženjerstvo
department of fluid mechanics and computational engineering

PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Izv. prof. dr. sc. / Assoc. Prof. D. Sc. **Lado Kranjčević**

http://www.riteh.uniri.hr/ustroj/zavodi/zmfri/

djelatnici
faculty and staff

IZVANREDNI PROFESORI | ASSOCIATE PROFESSORS

Zoran Čarija

analiza i optimizacija hidrauličkih sustava; analiza i optimizacija strujanja u hidroturbinama; strujanje sa slobodnom površinom
hydraulic systems analysis and optimization; hydroturbine flow analysis and optimization; free surface fluid flow

Lado Kranjčević

numeričko modeliranje strujanja u otvorenim vodotocima; strujanje u mreži cjevovoda; paralelno programiranje
pipe network flow; open channel flow; parallel programming

Siniša Družeta

analiza i optimizacija hidrauličkih sustava; strujanje u otvorenim vodotocima; optimizacijske metode
hydraulic systems analysis and optimization; open channel flow; optimizaton methods

Jerko Škifić

hidraulički tranzijenti; analiza i optimizacija hidrauličkih sustava; programiranje tehničkih aplikacija
hydraulic transients; hydraulic systems analysis and optimization; technical software development

DOCENTI | ASSISTANT PROFESSORS

Stefan Ivić

programiranje tehničkih aplikacija; polaganje cjevovoda; optimizacija
technical software development; pipe laying; optimization

ASISTENTI | ASSISTANTS

Luka Grbčić

hibridno 2D/3D modeliranje strujanja sa slobodnom površinom; VOF 3D modeliranje; optimizacija; programiranje; paralelno računanje
hybrid 2D/3D free surface flow modeling; VOF 3D modeling; optimisation; programming; parallel computing

Ivana Hreljac

3D modeliranje u računalnoj mehanici fluida; programiranje
3D modelling in CFD; programming

nastava i znanost
education and science

Nastava iz područja: mehanika fluida, hidraulički strojevi, računalne metode, numeričko modeliranje, optimizacija.

CO: Primjena računarskih metoda

Lectures in the field of: fluid mechanics, hydraulic machines, computational methods, numerical modeling, optimization.

LLL: Applied Computational Methods

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

- *Računalne aplikacije u inženjerstvu*
- *Uvod u računarstvo*
- *Mehanika fluida*
- *Računarske metode*
- *Hidraulički strojevi*
- *Računalne simulacije u tehnici*
- *Računarsko inženjerstvo*
- *Programiranje*
- *Računalna grafika*

- *Computer Applications in Engineering*
- *Introduction to Computer Science*
- *Fluid Mechanics*
- *Computational Methods*
- *Hydraulic Machines*
- *Computer Simulations in Engineering*
- *Computational Engineering*
- *Programming*
- *Computer Graphics*

5.8 zavod za mehaniku fluida i računarsko inženjerstvo department of fluid mechanics and computational engineering

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

- *Dinamički sustavi* — *Dynamic Systems*
- *Dinamika fluida* — *Fluid Dynamics*
- *Modeliranje u tehnici* — *Models in Engineering*
- *Numeričko modeliranje hidrauličkih strojeva* — *Numerical Modeling of Hydraulic Machines*
- *Optimizacije u tehnici* — *Optimization in Technics*
- *Primjena paralelenog računanja* — *Applied Parallel Computing*
- *Primjena računalne grafike* — *Applied Computer Graphics*
- *Programiranje: skriptni jezici* — *Programming: Script languages*
- *Programiranje tehničkih aplikacija* — *Programming of Technical Applications*
- *Računarska mehanika fluida* — *Computational Fluid Dynamics*
- *Računarske metode u brodogradnji* — *Computational Methods in Naval Engineering*
- *Vizualizacija i priprema računalnih simulacija* — *Visualisation and setup of computer simulations*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Hidraulički strojevi ST* — *Hydraulic Machines ST*
- *Mehanika fluida ST* — *Fluid Mechanics ST*

KOLEGIJI NA POSLIJEDIPLOMSKIM SVEUČILIŠNIM (DOKTORSKIM) STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Dinamika fluida* — *Fluid Dynamics*
- *Hidrodinamika turbostrojeva* — *Hydrodynamics of Turbomachines*
- *Turbulentno strujanje* — *Turbulent Flow*
- *Računarska mehanika fluida* — *Computational Fluid Mechanics*
- *Modeliranje nestacionarnog strujanja u cjevovodima* — *Unsteady Pipe Flow Modeling*
- *Metode optimizacije* — *Optimization Methods*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Strujanje u priobalnom području*
  Coastal flow
- *Strujanje u otvorenim vodotocima*
  Open channel flow
- *Analiza i optimizacija hidrauličkih sustava*
  Hydraulic systems analysis and optimization
- *Hidraulički tranzijenti*
  Hydraulic transients
- *Strujanje u cjevovodima*
  Pipe flow
- *Optimizacijske metode*
  Optimization methods
- *Hibridno 2D/3D modeliranje strujanja sa slobodnom površinom*
  Hybrid 2D/3D free surface flow modeling

PROJEKTI | PROJECTS

- *Škrlec, J.; Družeta, S.; Sopta, L.; Micro Tunnel Pit Seawater Feeding Flow Analysis, Tehnički fakultet Sveučilišta u Rijeci, 2016.*
  Škrlec, J.; Družeta, S.; Sopta, L.; Micro Tunnel Pit Seawater Feeding Flow Analysis, Faculty of Engineering University of Rijeka, 2016.
- *Družeta, S.; Sopta, L.; Marušić, J.; Škrlec, J.; Grbčić, L.; Funkcionalnost i optimalizacija zahvata vode sustava navodnjavanja Valtura, Tehnički fakultet Sveučilišta u Rijeci, 2017.*
  Družeta, S.; Sopta, L.; Marušić, J.; Škrlec, J.; Grbčić, L.; Functionality and optimization of Valtura irrigation system water intake, Faculty of Engineering University of Rijeka, 2017.
- *Kranjčević, L.; Kontrola i analiza ponude dokumentacije za nadmetanje Opremanje SEECEL-a IT multimedijskom opremom i softverom*
  Kranjčević, L.; Control and analysis of offers of tender documents Equipping SEECEL IT with multimedia equipment and software
- *Sopta, L.; Ivić, S.; Škrlec, J.; Družeta, S.; Andrejčuk, A.; Hržić, F.; Hrastnik, M.; Weather Standby Software Research And Development Project, phase 1, Tehnički fakultet Sveučilišta u Rijeci, 2015. - 2017.*
  Sopta, L.; Ivić, S.; Škrlec, J.; Družeta, S.; Andrejčuk, A.; Hržić, F.; Hrastnik, M.; Weather Standby Software Research And Development Project, phase 1, Faculty of Engineering University of Rijeka, 2015 - 2017
- *Škrlec, J.; Ivić, S.; Družeta, S.; Andrejčuk, A.; Weather Standby Software Research And Development Project, phase 2, Tehnički fakultet Sveučilišta u Rijeci, 2017.*
  Škrlec, J.; Ivić, S.; Družeta, S.; Andrejčuk, A.; Weather Standby Software Research And Development Project, phase 2, Faculty of Engineering University of Rijeka, 2017
- *DARPA projekt "On a Data-Driven, Operator-Theoretic Framework for Space-Time Analysis of Process Dynamics", glavni istraživači Maria Fonoboreva i Igor Mezić, UCSB, suradnici Nelida Črnjarić-Žic, Senka Maćešić i Stefan Ivić*
  DARPA project "On a Data-Driven, Operator-Theoretic Framework for Space-Time Analysis of Process Dynamics", principal investigators Maria Fonoberova and Igor Mezić, UCSB, collaborators Nelida Črnjarić-Žic, Senka Maćešić and Stefan Ivić
- *"Ekološko modeliranje u obalnom području Riječkog zaljeva", istraživanje uz potporu Sveučilišta, voditelj Lado Kranjčević, suradnice Nelida Črnjarić-Žic i Senka Maćešić*
  "Ecological modeling in the Bay of Rijeka coastal area", research supported by the University, principal investigator Lado Kranjčević, collaborators Nelida Črnjarić-Žic and Senka Maćešić

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Vukić Lušića, D.; Kranjčević, L.; Maćešić, S.; Lušić, D.; Jozić, S.; Linšak, Ž.; Bilajac, L.; Grbčić, L.; Bilajac, N.; "Temporal variations analyses and predictive modeling of microbiological seawater quality", Water Rearch, 119, 160-170, 2017*
- *Družeta, S.; Ivić, S.; Examination of benefits of personal fitness improvement dependent inertia for Particle Swarm Optimization, Soft Computing, 21 (12), 3387-3400, 2017*
- *Ivić, S.; Crnković, B.; Mezić, I.; Ergodicity-Based Cooperative Multiagent Area Coverage via a Potential Field, IEEE transactions on cybernetics 47 (8), 1983 - 1993, 47 (8), 1983 - 1993, 2017*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *Technische Universität München, Ingenieurfakultät Bau Geo Umwelt, Njemačka, Germany*
- *University of Santa Barbara, California, SAD, USA*

5.9 zavod za računarstvo department of computer engineering

PREDSTOJNICA ZAVODA | DEPARTMENT HEAD:

Izv. prof. dr. sc. / Assoc. Prof. D. Sc. Tihana Galinac Grbac

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Ivo Ipšić

umjetna inteligencija; raspoznavanje uzoraka; govorne tehnologije
artificial intelligence; pattern recognition; speech technologies

Željko Jeričević

znanstveno računanje; bioračunalstvo; razvoj algoritama; digitalna obrada slika
scientific computing; biocomputing; algorithm development; digital image processing

IZVANREDNI PROFESORI | ASSOCIATE PROFESSORS

Miroslav Joler

bežične komunikacije; računalni elektromagnetizam; biomedicinske aplikacije elektromagnetizma; mobilne aplikacije
wireless communications; computational electromagnetics; biomedical applications of electromagnetics; applications for mobile

Kristijan Lenac

mobilna robotika; operacijski sustavi; razvoj algoritama; ugradbeni sustavi
mobile robotics; operating systems; algorithm development; embedded systems

Ivan Štajduhar

umjetna inteligencija; strojno učenje
artificial intelligence; machine learning

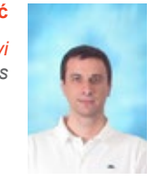
Tihana Galinac Grbac

programsko inženjerstvo; meko računarstvo; inženjerski menadžment; informacijsko-komunikacijske tehnologije
software engineering; soft computing; engineering management; information-communication technologies

DOCENTI | ASSISTANT PROFESSORS

Jonatan Lerga

digitalna obrada signala; vremensko-frekvencijska analiza signala
digital signal processing; time-frequency signal analysis



Mladen Tomić

digitalna obrada signala i slike; teorija valića; filtarski slogovi
digital signal and image processing; wavelets; filter banks

Dražen Brščić

interaktivna robotika; mobilna robotika; inteligentni prostori
human-robot interaction; mobile robotics; intelligent spaces

POSLIJEDOKTORANDI | POSTDOCTORAL RESEARCH ASSISTANTS

Sandi Ljubić

interakcija čovjeka i računala; mobilne aplikacije; inženjerstvo upotrebljivosti
human-computer interaction (HCI); mobile applications; usability engineering

Damir Arbula

bežične mreže osjetila; raspodjeljeni algoritmi; lokalizacija
wireless sensor networks; distributed algorithms; localization

Goran Mauša

umjetna inteligencija; meko računarstvo; predviđanje programskih pogrešaka
artificial intelligence; soft computing; software defect prediction

Joao Paulo Pita da Costa

računalna topologija; topološka analiza podataka
computational topology; topological data analysis

ASISTENTI | ASSISTANTS

Diego Sušanj

ugradbeni sustavi; umjetna inteligencija; računalni vid
embedded systems; artificial intelligence; computer vision

Ana Vranković

programsko inženjerstvo; strukturalna analiza sustava
software engineering; structural system analysis

VANJSKI SURADNICI | ASSOCIATES

Predrag Domijan

građa računala
computer architecture

Dean Noč

Iva Vlah

Irena Jurdana

svjetlovodne mreže
optical networks

Renato Filjar

postupci određivanja položaja; navigacije i vremenskog usklađivanja obrada signala; ionosferski učinci na tehnološke sustave; usluge zasnovane na lokaciji; programski određen radio
positioning, navigation and timing (PNT) methods and systems; Signal processing; Space weather and ionospheric effects on technological systems; Location Based Services (LBS); Software-Defined Radio (SDR)

nastava i znanost
education and science

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

Algoritmi i strukture podataka	*Algorithms and Data Structures*
Baze podataka	*Database Systems*
Digitalna logika	*Digital logic*
Dijagnostičke metode u medicini I	*Diagnostic Methods in Medicine I*
Dijagnostičke metode u medicini II	*Diagnostic Methods in Medicine II*
Građa računala	*Computer Architecture*
Informacijski sustavi	*Information Systems*
Operacijski sustavi	*Operating Systems*
Uvod u umjetnu inteligenciju	*Introduction to Artificial Intelligence*
Primjena računala R	*Applied Computing R*
Programsko inženjerstvo	*Software Engineering*
Programiranje	*Programming*
Računalne mreže	*Computer Networks*
Razvoj web aplikacija	*Web Applications Development*
Ugradbeni računalni sustavi	*Embedded Systems*
Uvod u objektno orijentirano programiranje	*Introduction to Object Oriented Programming*
Uvod u računalstvo	*Introduction to Computer Engineering*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

Bežične mreže osjetila	*Wireless Sensor Networks*
Bioinformatika	*Bioinformatics*
Građa računala	*Computer Architecture*
Komunikacija čovjek-stroj	*Human-Machine Interaction*
Mobilne komunikacije	*Mobile Communications*
Napredni algoritmi i strukture podataka	*Advanced Algorithms and Data Structures*
Napredne računalne mreže	*Advanced Computer Networks*
Objektno orijentirano programiranje	*Object Oriented Programming*
Programiranje ugradbenih sustava	*Embedded Systems Programming*
Računalna obrada govora i jezika	*Computer Speech and Language Processing*
Radiokomunikacije	*Radiocommunications*
Razvoj mobilnih aplikacija	*Mobile Applications Development*
Teorija informacija i kodiranja	*Information Theory and Coding*
Upravljanje u programskom inženjerstvu	*Software Engineering Menagement*
Usluge zasnovane na lokaciji	*Location-Based Services*
Napredna korisnička sučelja	*Advanced User Interfaces*
Mobilna robotika	*Mobile Robotics*
Programski određen radio	*Software-Defined Radio*
Analiza računalnih i komunikacijskih sustava	*Computer and communication system analysis*
Strojno učenje	*Machine Learning*
Digitalna mikroskopija	*Digital Microscopy*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Informacije i komunikacije*
- *Primjena računala ST*
- *Računalne mreže ST*
- *Radiokomunikacije ST*
- *Svjetlovodne mreže*
- *Telekomunikacijski uređaji i mreže*

- *Information and Communication*
- *Applied Computing ST*
- *Computer Networks ST*
- *Radiocommunications ST*
- *Optical Networks*
- *Telecommunication Devices and Networks*

KOLEGIJI NA POSLIJEDIPLOMSKIM SVEUČILIŠNIM (DOKTORSKIM) STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Osnove znanstvenog računanja*
- *Računalne vjestine I*
- *Slikovne metode*
- *Programiranje I*
- *Programiranje II*

- *Basic Scientific Computing*
- *Computing Skills i*
- *Imaging Methods*
- *Programming I*
- *Programming II*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Bežične mreže osjetila, raspodijeljeni algoritmi*
  Wireless sensor networks, distributed algorithms
- *Programsko inženjerstvo, informacijsko-komunikacijske tehnologije*
  Software engineering, information-communication technologies
- *Računalna obrada govora i jezika, raspoznavanje uzoraka*
  Speech processing and pattern recognition
- *Razvoj i optimizacija algoritama*
  Development and optimization of algorithms
- *Rekonfigurabilne i nosive antene, samoadaptivni sustavi, numeričko modeliranje širenja vala*
  Reconfigurable and wearable antennas, self-adaptive systems, numerical modeling of wave propagation
- *Mobilna robotika, autonomni sustavi, interakcija čovjeka i računala*
  Mobile robotics, autonomous systems, human computer interaction
- *Digitalna obrada signala, vremensko-frekvencijska analiza signala, primjene obrade signala*
  Digital signal processing, time-frequency signal analysis, signal processing applications
- *Digitalna obrada signala, adaptivni wavelet algoritmi*
  Digital signal processing, adaptive wavelet algorithms
- *Inženjerstvo upotrebljivosti, prediktivno modeliranje i vrednovanje, univerzalni pristup*
  Usability engineering, predictive modeling and evaluation, universal access
- *Analiza slike, računalom potpomognuto dijagnosticiranje, strojno učenje*
  Image analysis, computer aided diagnosis, machine learning
- *Meko računarstvo, programsko inženjerstvo*
  Soft computing, software engineering
- *Interaktivna robotika, mobilna robotika, inteligentni prostori*
  Human-robot interaction, mobile robotics, intelligent spaces

PROJEKTI | PROJECTS

- *Tihana Galinac Grbac: Programski sustavi u evoluciji: analiza i inovativni pristupi pametnom upravljanju, Hrvatska Zaklada za Znanost, UIP-2014-09-7945, uspostavni istraživački projekt*
  Tihana Galinac Grbac: Evolving Software Systems: Analysis and Innovative Approaches for Smart Management (EVOSOFT), Croatian Science Foundation, UIP-2014-09-7945, Tihana Galinac Grbac, 2015 - 2018, instalation research grant
- *Tihana Galinac Grbac: Međunarodna suradnja u računarstvu, CEEPUS, CIII-HU-0019-13-1718-M-109157*
  Tihana Galinac Grbac: International Cooperation in Computer Science, CEEPUS, CIII-HU-0019-13-1718-M-109157
- *Tihana Galinac Grbac: Teorija iz ponašanja tipova za pouzdane velike programske sustave, COST Action IC1201, voditelj za HR: Tihana Galinac Grbac, 2012-2016, znanstveno-istraživački.*
  Tihana Galinac Grbac: Behavioral Types for Reliable Large-Scale Software Systems, COST Action, project no. IC1201, MC Cro: Tihana Galinac Grbac, 2012-2016.
- *Tihana Galinac Grbac: Pouzdana mreža Internetskih usluga temeljanja na samoupravljanju, COST Action IC 1304, voditelj za HR: Tihana Galinac Grbac, 2013-2017,znanstveno-istraživački.*
  Tihana Galinac Grbac: Autonomous Control for a Reliable Internet of Services, COST Action, project no. IC1304, MC Cro: Tihana Galinac Grbac, 2013-2017.
- *Tihana Galinac Grbac: Analiza i inovativni pristupi razvoju, upravljanju i primjeni kompleksnih softverskih sustava; Sveučilište u Rijeci; 58.384,02; 2013 - 2016, Tihana Galinac Grbac, znanstveno-istraživački.*
  Tihana Galinac Grbac: Analysis and innovative approaches to management and application of complex software systems, University of Rijeka, 58.384,02;2013-2017, Tihana Galinac Grbac, research and scientific project
- *Joler: Studija utjecaja proreza na ponašanje rezonantnih frekvencija mikrotrakastih antena. Sveučilište u Rijeci, znanstveno-istraživački. Voditelj projekta.*
  Joler: A study of the Slot Effects on the Behavior of Resonant Frequencies of Microstrip Antennas. Funded by: University of Rijeka, Croatia. Scientific research. Principal Investigator.
- *Štajduhar: Automatizirana detekcija oblika ozljede ligamenta koljena iz snimke koljena magnetskom rezonancijom. Financirano od strane agencije TÜBITAK. Partneri: Sveučilište Sabanci, Istanbul, Turska i KBC Rijeka. Voditelj projekta.*
  Štajduhar: Automated Detection of Knee Ligament Injury from Magnetic Resonance Scans. Funded by The Scientific & Technological Research Council of Turkey (TÜBITAK). Partners: Sabanci University, Istanbul, Turkey and Clinical Hospital Center Rijeka. Principal Investigator.
- *Štajduhar: "RadiologyNet: Strojno učenje za prijenos znanja". Znanstveni projekt financiran od strane Sveučilišta u Rijeci. Glavni istraživač.*
  Štajduhar: "RadiologyNet: Machine Learning for Knowledge Transfer". A scientific project funded by the University of Rijeka. Principal investigator.
- *Lerga: "Implementacija vremensko-frekvencijskih i drugih naprednih algoritama u analizi biomedicinskih signala". Znanstveni projekt financiran od strane Sveučilišta u Rijeci. Glavni istraživač.*
  Lerga: "Implementation of time-frequency and other advanced algorithms for biomedical signal analysis". A scientific project funded by the University of Rijeka. Principal investigator.

PUBLIKACIJE | PUBLICATIONS

KNJIGE | BOOKS

- *Budimac, Z.; Galinac Grbac, T.; "Proceedings of the Third workshop on Software Quality Analysis, Monitoring, Improvement and Applications", Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad, Serbia, 978-86-7031-374-3, 2014, Novi Sad, Serbia, dostupno na Internetskoj adresi: http://www.riteh.uniri.hr/SQAMIA/2014/files/SQAMIA2014_proceedings.pdf*
- *Sucic, V.; Lerga, J.; Rankine, L.; Boashash, B.; Components Extraction from TFDs for Multicomponent Signals IF Estimation, Academic Press, In press, 2015, Ch. 10.6 in B. Boashash, ed., "Time-Frequency Signal Analysis and Processing: A Comprehensive Review, " 2nd ed.*

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Joler, M.; Kučan, J.; Impact of Slot Parameters on the Three Resonant Frequencies of a Rectangular Microstrip Antenna: Study of the impact of the slot length, width, and position IEEE Antennas & Propagation Magazine, ISSN: 1045-9243, 57, (4), 48-63, 2015*
- *Štajduhar, I.; Mamula, M.; Miletić, D.; Unal, G.; Semi-automated detection of anterior cruciate ligament injury from MRI, Computer methods and programs in biomedicine, ISSN: 0169-2607, 140, 151-164, 2017*
- *Štajduhar, I.; Tomić, M.; Lerga, J.; Mirroring quasi-symmetric organ observations for reducing problem complexity, Expert systems with applications, ISSN: 0957-4174, 85, 318-334, 2017*
- *Lerga, J.; Saulig, N.; Mozetič, V.; Algorithm Based On the Short-Term Rényi Entropy And IF Estimation For Noisy EEG Signals Analysis, Computers in biology and medicine, ISSN: 0010-4825, 80, 1-13, 2017*
- *Šegon, G.; Lerga, J.; Sučić, V.; Improved LPA-ICI-Based Estimators Embedded in a Signal Denoising Virtual Instrument, Signal, image and video processing, ISSN: 1863-1711, 11 (2), 211–218, 2017*
- *Volarić, I.; Lerga, J.; Sučić, V., A Fast Signal Denoising Algorithm Based on the LPA-ICI Method for Real- Time Applications, Circuits, systems and signal processing, ISSN: 1531-5878, 2017, 1-17, 2017*
- *Peršurić, Ž.; Osuga, J.; Galinac Grbac, T.; Peter-Katalinić, J.; Kraljević Pavelić, S.; MALDI-SpiralTOF technology for assessment of triacylglycerols in Croatian olive oils European journal of lipid science and technology, ISSN: 1438-9312, 119, (2), 1-10, 2017*
- *Mauša, G.; Galinac Grbac, T.; Co-evolutionary Multi-Population Genetic Programming for Classification in Software Defect Prediction: an Empirical Case Study, Applied soft computing, ISSN: 15684946, Vol. 55, 331 – 351, 2017*
- *Tanković, N.; Galinac Grbac, T.; Žagar, M.; ElaClo: A Framework for Optimizing Software Application Topology in the Cloud EnvironmentExpert systems with applications, ISSN: 0957-4174, In Press, 2017*
- *Ljubic, S.; Arbula, D.; Smrekar K.; An Adaptable Scan-Based Text Entry for Mobile Devices: Design, Predictive Modeling, and Empirical Evaluation, Engineering Review, ISSN: 1330-9587 Vol. 37, (1), 38-49, 2017*
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- *Jericevic, Z.; Non-linear Optimization of Parameters in Hill Kinetics, Croatica Chemica Acta ISSN: 0011-1643, Vol. 89, 213-215, 2016*

POZVANA PREDAVANJA | INVITED LECTURES

- *Galinac Grbac, T.; Reliable Software Networks 1st EIT, ICTLabs Future Networking Solutions Outreach Workshop, 2014, Budapest, Hungary*
- *Galinac Grbac, T.; Modeling complex software systems behaviour, CEEPUS teaching mobility programme, 2016, Novi Sad, Srbija*
- *Galinac Grbac, T.; Modeling fault behaviour in evolving complex open software environments ICT COST Action IC1304, 2016, Bilbao, Španjolska*
- *Galinac Grbac, T.; Modeliranje ponašanja sustava uz primjenu informacijsko-komunikacijskih tehnologija, MEDRI piknik, 2016, Rijeka, Hrvatska*
- *Brščić, D.; People tracking for enabling human-robot interaction in large public spaces, International Workshop on Cooperative Dynamic Simultaneous Localization and Mapping 2017, Zagreb, Hrvatska*
- *Jericevic, Z.; Truncated Least Squares: How Good Is the Approximation?, 11th Annual Baska GNSS Conference, 2017, Baška, Hrvatska*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Joler, M.; Hodanić, D.; Šegon, G.; A MATLAB Algorithm for Evaluation of a Rectangular Microstrip Antenna Slot Dimensions Given the Resonant Frequency, IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications (IEEE APWC 2015), ISBN: 978-1-4799-7809-0, 2015, Torino, Italy*
- *Brščić, D.; Zanlungo F.; Kanda, T.; Modelling of Pedestrian Groups and Application to Group Recognition, Proceedings of MIPRO MSB - Modelling System Behaviour Conference, ISBN: 978-953-233-093-9, 452-457, 2017, Opatija, Hrvatska*
- *Rodin, R.; Štajduhar, I.; The Challenge of Measuring Distance to Obstacles for The Purpose of Generating a 2-D Indoor Map Using an Autonomous Robot Equipped with an Ultrasonic Sensor, Proceedings of MIPRO CTS - Computers in Technical Systems Conference, ISBN: 978-953-233-093-9, 1212-1217, 2017, Opatija, Hrvatska*
- *Lacković D.; Tomić M.; Performance Analysis of Virtualized VPN Endpoints, Proceedings of MIPRO CTS - Computers in Technical Systems Conference, ISBN: 978-953-233-093-9, 466-471, 2017, Opatija, Hrvatska*
- *Lerga, J.; Saulig, N.; Lerga, R.; Milanović, Ž.; Effects of TFD Thresholding On EEG Signal Analysis Based On The Local Rényi Entropy Proceedings of the 2nd International Multidisciplinary Conference on Computer and Energy Science SpliTech 2017, 1-6, 2017, Split, Hrvatska*
- *Hržić, F.; Poljančić, D.; Galinac Grbac, T.; Secure Operations as Congestion Control Mechanism Within OpenStack Based Cloud Laboratory, Proceedings of SST 2016, "ISBN: 978-1-5090-3718-6", 129-134, 2016, Osijek, Hrvatska*
- *Vranković, A.; Galinac Grbac, T.; Structural dependencies between system fault distribution principles, Proceedings of SoftCOM PhD Forum 2016, "ISBN: 978-953-290-067-5", 20-22, 2016, Split, Hrvatska*
- *Galinac Grbac, T.; Mauša, G.; Analysis and Innovative Approaches to Smart Management of*

Software Intensive Systems-of-Systems, Proceedings of ECSA 2016 - Colloquium on Software-intensive Systems-of-Systems, 2016, Copenhagen, Danska

- *Pita Costa, J.; Galinac Grbac, T.; The Topological Data Analysis of Time Series Failure Data in Software Evolution, Companion Proceedings of ICPE 2017, "ISBN: 978-1-4503-4899-7", 25-30, 2017, L'Aquila, Italija*
- *Grbac Babić, S.; Galinac Grbac, T.; Analysis of Evolving Software-Systems as Complex Networks, Proceedings of CONTEL PhD Forum 2017, 2017, Zagreb, Hrvatska*
- *Grbac Babić, S.; Galinac Grbac, T.; Network analysis of evolving software-systems, Proceedings of Softcom 2017, In press, 2017, Split, Hrvatska*
- *Galinac Grbac, T.; Runeson, P.; Huljenić, D.; Unit verification effects on reused components in sequential project releases, Proceeding of SEAA 2017, In press, 2017, Beč, Austrija*
- *Jericevic, Z.; Kozar, I.; Using Fourier and Hartley Transform for Fast, Approximate Solution of Dense Linear System, Proceedings of MIPRO DC VIS - Distributed Computing, Visualization and Biomedical Engineering, ISBN: 9781509025435, 274-276, 2016, Opatija, Hrvatska*
- *Susanj, D.; Gulan, G.; Kozar, I.; Jericevic, Z.; Bone Shape Characterization Using the Fourier Transform and Edge Detection in Digital X-Ray Images, Proceedings of MIPRO DC VIS - Distributed Computing, Visualization and Biomedical Engineering, ISBN: 9781509025435, 380-382, 2016, Opatija, Hrvatska*
- *Covic, M.; Gradisnik, V.; Jericevic, Z.; The investigation of influence of localized states on a-Si:H p-i-n photodiode transient response to blue lighr impulse with blue light optical bias, Proceedings of MIPRO MEET - Microelectronic, Electronic and Electronic Technology, ISBN: 9781509025435, 30-33 2016, Opatija, Hrvatska*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *Galinac Grbac: Institute of Informatics, Faculty of elecrical engineering and computer science, University of Maribor Slovenia, Slovenija*
- *Galinac Grbac: Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad, Srbija, Serbia*
- *Galinac Grbac: Faculty of Informatics, Eötvös Loránd University, Mađarska, Hungary*
- *Štajduhar: Sabanci University, Faculty of Engineering and Natural Sciences, Istanbul, Turkey Turska*
- *Lenac: University of Trieste, Trieste, Italy, Italija*
- *Lenac: AIBS Lab S.r.l., Trieste, Italy, Italija*
- *Štajduhar: Faculty of Mathematics and Physics, University of Ljubljana, Slovenia, Slovenija*
- *Štajduhar: Jožef Stefan Institute, Slovenia, Slovenija*
- *Štajduhar: University Colledge Dublin, Ireland, Irska*
- *Mauša: Faculty of electrical engineering, computing and informatics, University of Maribor, Slovenia, Slovenija*
- *Mauša: Institute for research in biomedicine, Barcelona, Spain, Španjolska*

5.10 zavod za tehničku mehaniku
department for engineering mechanics

PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. Roberto Žigulić

http://www.riteh.uniri.hr/ustroj/zavodi/ztm/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Josip Brnić

statika; čvrstoća konstrukcija; teorija elastičnosti i plastičnosti; metoda konačnih elemenata; eksperimentalna mehanika; optimizacija konstrukcija; mehanika grešaka i loma
statics; strength of materials; theory of elasticity and plasticity; finite element method; experimental mechanics; optimization of structures; failure and fracture mechanics

Goran Turkalj

čvrstoća konstrukcija; elasto-plastomehanika; stabilnost konstrukcija; računarska analiza konstrukcija
strength of materials; elasto-plastomechanics; structural stability; computational structural analysis

Marko Čanađija

termomehanika; eksperimentalna mehanika; statika; metoda konačnih elemenata; nanomehanika
thermomechanics; experimental mechanics; statics; finite element method; nanomechanics

Roberto Žigulić

kinematika; dinamika; dinamika strojeva i robota; mehatronika; eksperimentalna mehanika
kinematics; dynamics; dynamics of robots and machines; mechatronics; experimental mechanics

Sanjin Braut

kinematika; dinamika; vibracije; eksperimentalna mehanika; trajnost strojeva i konstrukcija; dinamika rotora
kinematics; dynamics; vibration; experimental mechanics; durability of machines and structures; rotordynamics

Domagoj Lanc

čvrstoća; elasto-plastomehanika; stabilnost konstrukcija; kompozitne konstrukcije
strength of materials; elasto-plastomechanics; structural stability; composite structures

DOCENTI | ASSISTANT PROFESSORS

Marino Brčić

statika; čvrstoća konstrukcija; mehanika i elementi konstrukcija, laboratorijske vježbe; eksperimentalna ispitivanja u mehanici konstrukcija i strojeva; nanomehanika
statics; strength of materials; mechanics and structural elements; experimental methods in mechanics; nanomechanics

Sanjin Kršćanski

statika; čvrstoća konstrukcija; mehanika i elementi konstrukcija; trajnost strojeva i konstrukcija; laboratorijske vježbe
statics; strength of materials; mechanics and structural elements; durability of machines and structures; laboratory exercises

Igor Pešić

statika; čvrstoća konstrukcija; mehanika i elementi konstrukcija; laboratorijske vježbe
statics; strength of materials; mechanics and structural elements; laboratory exercises

Goranka Štimac Rončević

kinematika; dinamika; regulacija; aktivni magnetski ležajevi
kinematics; dynamics; control; active magnetic bearings

VIŠI ASISTENTI | SENIOR ASSISTANTS

Ante Skoblar

kinematika; dinamika; vibracije; akustika
kinematics; dynamics; vibration; acoustics

POSLIJEDOKTORAND | POSTDOCTORAL RESEARCH ASSISTANT

Neven Munjas

statika; čvrstoća konstrukcija; mehanika i elementi konstrukcija; laboratorijske vježbe
statics; strength of materials; mechanics and structural elements; laboratory exercises

ASISTENTI | ASSISTANTS

Damjan Banić

na znanstvenom projektu Hrvatske zaklade za znanost (HRZZ)

Sandra Kvaternik

na znanstvenom projektu Hrvatske zaklade za znanost (HRZZ)

VANJSKI SURADNICI | ASSOCIATES

Franc Kosel
Fakulteta za Strojništvo, Univerza v Ljubljani, Ljubljana, Slovenija | Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenia

tehnička mehanika; čvrstoća; elastoplastomehanika
engineering mechanics; strength of materials; elasto-plastomechanics

Stojan Kravanja
Fakulteta za gradbeništvo, Univerza v Mariboru, Maribor, Slovenija | Faculty of Civil Engineering, University of Maribor, Maribor, Slovenia

tehnička mehanika; optimizacija konstrukcija
engineering mechanics; structural optimization

nastava i znanost
education and science

Nastava se izvodi iz područja primijenjene mehanike što uključuje analitičku, računalnu i eksperimentalnu mehaniku. Prema sadržaju razmatranja ovdje spadaju: statika, čvrstoća konstrukcija, stabilnost konstrukcija, mehanika konstrukcija, optimizacija konstrukcija, konačnoelementna analiza, tankostjene konstrukcije, računalna analiza konstrukcija, kompozitne konstrukcije, eksperimentalna ispitivanja u mehanici konstrukcija i strojeva, termomehanika, kontaktna mehanika, kinematika, dinamika, vibracije; akustika, regulacija i upravljanje dinamičkim sustavima; trajnost strojeva i konstrukcija; mehatronika, itd..

Courses are runing in the field of applied mechanics and includes analyticall, computational and experimental mechanics. According to the content of consideration, here belong: statics, strengt of materials, structural stability, structural mechanics, optimization of structures, finite element analysis, thin-walled structures, computational analysis of structures, composite structures, experimental testing of structures and machines, termomechanics, contact mechanics, kinematics, dynamics, vibrations, vibroacustics, dynamic system control, durability of machines and structures; mechatronics, etc.

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA | UNDERGRADUATE UNIVERSITY COURSES

Statika	*Statics*
Čvrstoća konstrukcija I	*Strength of Materials I*
Osnove primjene metode konačnih elemenata	*Introduction to Finite Element Method (FEM)*
Čvrstoća konstrukcija	*Strength of Materials*
Računarska analiza konstrukcija	*Computational Structural Analysis*
Mehanika i elementi konstrukcija	*Mechanics and Structural Elements*
Kinematika	*Kinematics*
Dinamika	*Dynamics*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA | GRADUATE UNIVERSITY COURSES

Čvrstoća konstrukcija II	*Strength of Materials II*
Metoda konačnih elemenata čvrstih tijela	*Finite Element Method of Solids*
Optimalni dizajn konstrukcija	*Optimization of Structures*
Eksperimentalna ispitivanja u mehanici konstrukcija i strojeva	*Experimental Testing in Mechanics of Structures and Machines*
Termomehanika	*Thermomechanics*
Elasto i plastomehanika	*Elasto and Plastomechanics*
Stabilnost konstrukcija	*Structural Stability*
Tankostjene konstrukcije	*Thin-Walled Structures*
Dinamika strojeva i robota	*Dynamics of Machines and Robots*
Eksperimentalna ispitivanja u mehanici konstrukcija i strojeva	*Experimental Testing in Mechanics of Structures and Machines*
Regulacija i upravljanje dinamičkim sustavima	*Dynamic Systems Control*
Simulacija dinamičkih sustava	*Simulation of Dynamic System*
Trajnost strojeva i konstrukcija	*Durability of Machines and Structures*
Vibracije	*Vibration*
Mehanika kompozita	*Mechanics of Composites*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Mehanika I*
- *Mehanika i elementni konstrukcija ST*
- *Čvrstoća*
- *Mehanika II*

- *Mechanics I*
- *Mechanics and Structual Elements ST*
- *Strength of Materials*
- *Mechanics II*

KOLEGIJI NA POSLIJEDIPLOMSKIM SVEUČILIŠNIM (DOKTORSKIM) STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Elastomehanika i plastomehanika*
- *MKE i optimizacija konstrukcija*
- *IP iz termomehanike*
- *Kontaktna mehanika*
- *Nelinearna analiza konstrukcija*
- *Stabilnost konstrukcija*
- *Vibracije i trajnost strojeva i konstrukcija*
- *Kinematika i dinamika robota*
- *Zaštita od buke i vibracija strojeva i konstrukcija*
- *Viskoelastičnost i viskoplastičnost*

- *Elastomechanics and Plastomechanics*
- *FEM and Optimization of Structures*
- *Advanced Thermomechanics*
- *Contact mechanics*
- *Nonlinear Structural Analysis*
- *Structural Stability*
- *Vibrations and Durability of Machines and Structures*
- *Kinematics and Dynamics of Robots*
- *Protection against Noise and Vibration of Machines and Structures*
- *Viscoelasticity and Viscoplasticity*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Primijenjena mehanika: računalna mehanika, eksperimentalna mehanika, mehanika grešaka i loma konstrukcija, optimalni dizajn konstrukcija, stabilnost konstrukcija, vibracije, vibroakustika, dinamika strojeva i konstrukcija, dinamika rotora, mehatronika, termomehanika, nanomehanika, integritet konstrukcija*
  Applied mechanics: computational mechanics, experimental mechanics, failure and fracture mechanics of structures, optimal structural design, structural stability, vibrations, vibroacoustics, dynamics of structures and machines, rotor dynamics, mechatronics, thermomechanics, nanomechanics, structural integrity

PROJEKTI | PROJECTS

- *Procjena ponašanja konstrukcija u graničnim uvjetima rada, Hrvatska zaklada za znanost, 2014 - 2018, Josip Brnić*
  Assessment of structural behaviour in limit state operating conditions, Hrvatska zaklada za znanost, znanstvenoistraživački, 2014 - 2018, Josip Brnić

- *Svojstva materijala, ponašanje pri puzanju, lomna žilavost i mikrostruktura metalnih legura -eksperimentalne analize i numeričke simulacije, bilateralni projekt Hrvatska - Kina, 2014 - 2015, Josip Brnić*
  Material properties, creep behavior, fracture toughness and microstructure of metal alloys – experimental analysis and numerical simulations, bilateral project Croatia - China, 2014 - 2015, Josip Brnić

- *Utjecaj toplinske zone uzrokovane elektronskim snopom zavarenog martenzitnog čelika GX4CrNi13-4 na čvrstoću materijala pri zamoru, bilateralni projekt Hrvatska - Austria, 2014 - 2015, Josip Brnić*
  Influence of Heat Affected Zone of electron beam welded steel casting GX4CrNi13-4 on the fatigue strength, bilateral project Croatia - Austria, 2014 - 2015, Josip Brnić

- *Modeliranje i vibracijska dijagnostika rotacijskih strojeva, OJ 221 MT 146, Inicijalna potpora za mlade istraživače, Sveučilište u Rijeci, Sanjin Braut.*
  Modeling and vibration diagnosis of rotating machines, OJ 221 MT 146, Initial support for young researchers, University of Rijeka, Sanjin Braut

- *Redukcija vibracija i buke rotacijskih strojeva, OJ 213 MT 118, Potpora za istraživački tim s najmanje 5 istraživača, Sveučilište u Rijeci, Roberto Žigulić*
  Reduction of vibrations and noise of the rotational machines, OJ 213 MT 118, Support for the research team with min. 5 researchers, University of Rijeka, Roberto Žigulić.

- *Numerička analiza odziva konstrukcija i eksperimentalna istraživanja svojstava materijala, OJ 203 , Sveučilište u Rijeci, Josip Brnić*
  Numerical analysis of structural response and experimental investigations of material properties, OJ 203, University of Rijeka, Josip Brnić

- *Razvoj numeričkih modela za analizu stabilnosti deformacijskih formi grednih konstrukcija, Sveučilište u Rijeci, Goran Turkalj, od 2013.*
  Development of numerical models for stability analysis of beam-type structure deformation modes, University of Rijeka, since 2013.

- *I. Eksperimentalna istraživanja svojstava materijala portala i II. Analiza izvedenog stanja i procjena mehaničkog ponašanja dijela rasklopnog postrojenja 110 kV u EVP Vrata,, Brnić, J., Čanađija, M., Lanc, D., Brčić, M., Turkalj, G.*
  I. Experimmental investigations of the material properties of the portal and II. Structural analysis and estimation of mechanical behaviour of the part of 110 KV plant in EVP Vrata

- *Konačnoelementno modeliranje laminatno kompozitnih konstrukcija grednog tipa, OJ11222, Sveučilište u Rijeci, Domagoj Lanc, od 2014.*
  Finite element modeling o flaminated composite beam-type structurs,OJ11222, University of Rijeka, Domagoj Lanc, since 2014.

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Čanađija, M.; Mosler, J.; A variational formulation for thermomechanically coupled low cycle fatigue at finite strains, International journal of solids and structures, 0020-7683, 100/101 388-398, 2016*

- *Apuzzo, A.; Barretta, R.; Čanađija, M.;Feo, L.; Luciano, R.; Marotti de Sciarra, F.; A closed-form model for torsion of nanobeams with an enhanced nonlocal formulation, Composites. Part B, Engineering, 1359-8368, 108, 315-324, 2017*

- *Munjas, N.; Čanađija, M.; Brnić, J.; Thermo-Mechanical Multiscale Modeling in Plasticity of Metals Using Small Strain Theory, Journal of mechanics, 1727-7191, 2017*

- *Torić, N.; Brnić, J.; Boko, I.; Brčić, M.; Burgess, I. W.; Uzelac- Glavinić, I.; Development of a high temperature material model for grade S275JR steel, Journal of Constructional Steel Research, 0143-974X, 137, 161–168, 2017*

- *Vukelić, G.; Brnić, J.; Numerical Prediction of Fracture Behavior for Austenitic and Martensitic Stainless Steels, International Journal of Applied Mechanics, 1758-8251, 9, 1750052 (11 pages), 2017*

- *Vukelić, G.; Brnić, J.; Numerically Predicted J-integral as a Measure of Crack Driving force for Steels 1.7147 and 1.4762, Journal of Theoretical and Applied Mechanics. 55 (2017), 2; 659-666, 1429-2955, 55, 659-666, 2017*

- *Brnić, J.; Kršćanski, S.; Lanc, D.; Brčić, M.; Turkalj, G.; Čanađija, M.; Niu, J.; Analysis of the Mechanical Behavior, Creep Resistance and Uniaxial Fatigue Strength of Martensitic Steel X46Cr13, Materials, 1996-1944, 10, 388-406, 2017*
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POZVANA PREDAVANJA | INVITED LECTURES

- *Brčić, M.; Čanađija, M.; Brnić, J.; Influence of imperfections on carbon nanotube properties, 8th International Conference on Physical and Numerical Simulation of Materials Processing, 2016, Seattle, Washington, USA*
- *Lanc, D.; Turkalj, G.; Brnić, J.; Pesic, I.; Buckling analysis of laminated composite box beams, 8th International Conference on Physical and Numerical Simulation of Materials Processing, 2016, Seattle, Washington, USA*
- *Brnić, J.; Kršćanski, S.; Brčić, M.; Niu, J.; Properties that characterize the material X46Cr13 steel, 8th International Conference on Physical and Numerical Simulation of Materials Processing, 2016, Seattle, Washington, USA*
- *Lanc, D.; Finite element model for buckling analysis of thin-walled beam-type structures, 2016, Bologna, Italija*

MEĐUNARODNI KONGRESI | INTERNATIONAL CONGRESSES

- *Vukelić, G.; Brčić, M.; Pastročić, D.; Experimental and Numerical Analysis of a Helical Spring Failure, XIV International Conference on Computational Plasticity, Fundamentals and Applications COMPLAS 2017, 978-84-946909-6-9, 545-555, 2017 Barcelona, Španjolska*
- *Brčić, M.; Čanađija, M.; Brnić, J.; Influence of imperfections on double walled carbon nanotube mechanical properties, 9th International conference on Advanced Nano Materials; ANM 2017, Aveiro, Portugal*

- *Torić, N.; Burgess, I. W.; Brnić, J.; Boko, I.; Turkalj, G.; Čanađija, M.; Harapin, A.; Divić, V.; Uzelac, I.; A unified rheological model for analysis of steel behaviour at high temperature Structures in Fire, Proceedings of the Ninth International Conference / Moreyra Garlock, Maria E.; Kodur, V.K.R. (ur.), DEStech Publications, Inc., 1008-1015., 2016., Lancaster, Pennsylvania*
- *Turkalj, G.; Lanc, D.; Banić, D.; Brnić, J.; A shear-flexible beam model for large displacement analysis of composite beam-type structures, 3rd International Conference on Mechanics of Composites MECHCOMP3, Bologna, Italy, July 4-7, 2017., ISSN 2421-2822, 45, 2017 Bologna, Italija*
- *Lanc, D.; Turkalj, G.; Kvaternik, S.; Thermal buckling analysis of thin-walled functionally graded box beams, 3rd International Conference on Mechanics of Composites MECHCOMP3, Bologna, Italy, July 4-7, 2017., ISSN 2421-2822, 50, 2017, Bologna, Italija*
- *Vo, T.P.; Thai, T.; Aydogdu, M.; Lanc, D.; Bending, vibration and buckling of of laminated composite and sandwich beams using a four-unknown shear and normal deformation theory 3rd International Conference on Mechanics of Composites MECHCOMP3, Bologna, Italy, July 4-7, 2017., ISSN 2421-2822, 355, 2017, Bologna, Italija*
- *Anđelić, N.; Car, Z.; Braut, S.; Žigulić, R.; Study of influence of geometry, rotational speed and heat generated by wood cutting on vibrations of circular saw blade International Conference on Innovative Technologies IN-TECH 2016, 1849-0662, 105-109, 2016, Republika Češka*
- *Blažević, S.; Braut, S.; Car, Z.; Žigulić, R.; Modification on active magnetic bearings test-rig for implementing different control algorithms, International Conference on Innovative Technologies IN-TECH 2016, 1849-0662, 89-92, 2016, Republika Češka*

MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *Faculty of Civil Engineering, University of Maribor, Slovenija, Slovenia*
- *Institute of Mechanics, Department of Mechanical Engineering TU, Dortmund, Njemačka, Germany*
- *School of Materials Science and Engineering, Henan Polytechnic University, Kina, China*
- *Harbin Institute of Technology, School of Materials Science and Engineering, Kina, China*
- *University of Bologna, Italija, Italia*
- *Faculty of Engineering, University of Kragujevac, Srbija, Serbia*
- *Faculty of Mechanical Engineering, University of Montenegro, Crna Gora, Montenegro*
- *Faculty of Mechanical Engineering, University of Ljubljana, Slovenija, Slovenia*
- *Institute of Materials and Welding, Graz University of Technology, Austrija, Austria*
- *Faculty of Engineering and Environment, Northumbria University, Newcastle upon Tyne, Velika Britanija, United Kingdom*
- *L'Università degli Studi di Napoli Federico II, Naples, Italija, Italy*
- *Lappeenranta University of Technology, Finska, Finland*

5.11 zavod za termodinamiku i energetiku department of thermodynamics and energy engineering

PREDSTOJNIK ZAVODA | DEPARTMENT HEAD:

Prof. dr. sc. / Prof. D. Sc. **Branimir Pavković**

http://www.riteh.uniri.hr/ustroj/zavodi/zte/

djelatnici
faculty and staff

REDOVITI PROFESORI | PROFESSORS

Vladimir Medica

motori s unutarnjim izgaranjem; toplinski strojevi; brodski pogonski strojevi; numeričko modeliranje; numeričke simulacije izgaranja
internal combustion engines; heat engines; ship propulsion machinery; numerical modelling; numerical simulations of combustion

Tomislav Mrakovčić

brodski energetski sustavi; brodski pogonski sustavi; brodski pomoćni strojevi; numeričko modeliranje prijenosa topline i tvari
marine energy systems; marine propulsion systems; marine auxiliary machinery; numerical modeling of heat and mass transfer

Branimir Pavković

tehnika hlađenja; mjerenja u termotehnici; kompresori; procesna oprema; dizalice topline; energetska učinkovitost; obnovljivi izvori energije
eration; thermal measurements; compressors; process equipment; heat pumps; energy efficiency; renewable energy sources

Anica Trp

termodinamika; izmjenjivači topline; numeričko modeliranje prijenosa topline i tvari; obnovljivi izvori energije
thermodynamics; heat exchangers; numerical modeling of heat and mass transfer; renewable energy sources

Kristian Lenić

termodinamika; izmjenjivači topline; numeričko modeliranje prijenosa topline i tvari; obnovljivi izvori energije
thermodynamics; heat exchangers; numerical modeling of heat and mass transfer; renewable energy sources

DOCENTI | ASSISTANT PROFESSORS

Vladimir Glažar

termoenergetska postrojenja; energetski sustavi; grijanje i klimatizacija; inženjerska vizualizacija; oblikovanje pomoću računala
thermal power plants; energy systems; heating and air condtitioning systems; engineering visualization; modelling by computer

Tomislav Senčić

termoenergetika; toplinski strojevi; goriva, maziva i voda
thermoenergetics; thermal machines; fuels, lubricants and water

Igor Wolf

termotehnička oprema i sustavi; toplinska ugodnost; kvaliteta zraka u prostoru; obnovljivi izvori energije; centralni sustavi nadzora i upravljanja; optimizacija sustava
thermo-technical equipment and systems; thermal comfort; indoor air quality; renewable energy sources; central management and control systems; system optimization

Igor Bonefačić

termodinamika; numeričko modeliranje procesa izgaranja; prijenosa topline i tvari; obnovljivi izvori energije
thermodynamics; numerical modelling of combustion; heat and mass transfer; renewable energy sources

Ozren Bukovac

motori s unutranjim izgaranjem; termodinamika: toplinski strojevi; numeričko modeliranje; neuronske mreže
internal combustion engines; thermodynamics; heat engines; numerical modeling; neural networks

VIŠI ASISTENT | SENIOR ASSISTANT

Viktor Dragičević

energetski sustavi; energetski i procesni uređaji; inženjerstvo zaštite okoliša
thermodynamics; numerical modelling of combustion; heat and mass transfer; renewable energy sources

POSLIJEDOKTORANDI | POSTDOCTORAL RESEARCH ASSISTANTS

Paolo Blecich

termodinamika; numeričko modeliranje prijelaza topline i izmjene tvari; obnovljivi izvori energije
thermodynamics; numerical modelling of heat and mass transfer; renewable energy sources

Boris Delač

tehnika hlađenja; mjerenja u termotehnici; kompresori; procesna oprema; dizalice topline
refrigeration; thermal measurements; compressors; process equipment; heat pumps

Vedran Mrzljak

motori s unutranjim izgaranjem; termodinamika; toplinski strojevi; toplinske turbine; numeričko modeliranje
internal combustion engines; thermodynamics; heat engines; heat turbines; numerical modeling

ASISTENTI | ASSISTANTS

Mateo Kirinčić

termodinamika; izmjenjivači topline; numeričko modeliranje prijenosa topline i tvari; obnovljivi izvori energije
thermodynamics; heat exchangers; numerical modeling of heat and mass transfer; renewable energy sources

Fran Torbarina

termodinamika; izmjenjivači topline; numeričko modeliranje prijenosa topline i tvari; obnovljivi izvori energije
thermodynamics; heat exchangers; numerical modeling of heat and mass transfer; renewable energy sources

VANJSKI SURADNICI | ASSOCIATES

Katarina Knafelj
KD Čistoća d.o.o.

goriva i maziva
fuels and lubricants

Bojan Jurdana

plinska tehnika
gas technology

nastava i znanost
education and science

Nastava iz područja znanstvenih polja strojarstva, temeljnih i interdisciplinarnih tehničkih znanosti, znanstvenih grana procesnog energetskog strojarstva, brodskog strojarsva, termodinamike, energetike i inženjerstva okoliša, energetski sistemi; energetska postrojenja; energetska oprema, uređaji i strojevi; zaštita okoliša; procesno inženjerstvo.

"Program stručnog osposobljavanja osoba koje provode energetske preglede i/ili energetsko certificiranje zgrada s jednostavnim tehničkim sustavom (Modul 1)

Program stručnog osposobljavanja osoba koje provode energetske preglede i/ili energetsko certificiranje zgrada sa složenim tehničkim sustavom (Modul 2)"

Lectures in the field of scientific fields of Mechanical Engineering, Fundamental and Interdisciplinary Engineering Sciences, the scientific branches of Process Energy Engineering, Marine Engineering, Thermodynamics, Energy Engineering and Environmental Engineering, Energy systems; Power plants; Energy equipment, facilities and engines; Environmental protection, Process engineering.

"Education of persons who are to perform energy audits and/or energy certifi cation of buildings with a simple technical system (Module 1)

Education of persons who are to perform energy audits and/or energy certifi cation of buildings with a complex technical system (Module 2)"

KOLEGIJI NA PREDDIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| UNDERGRADUATE UNIVERSITY COURSES

- *Toplinski strojevi i uređaji* — *Thermal machine and devices*
- *Izvori energije* — *Energy Sources*
- *Nauka o toplini I* — *Thermodynamics I*
- *Termodinamika BG* — *Thermodynamics NA*
- *Termodinamika i energetika* — *Thermodynamics and Energy Engineering*
- *Energetski sustavi* — *Energy systems*
- *Tehnika grijanja* — *Heating Systems*
- *Brodski pomoćni strojevi* — *Marine Auxiliary Machinery*

KOLEGIJI NA DIPLOMSKIM SVEUČILIŠNIM STUDIJIMA
| GRADUATE UNIVERSITY COURSES

- *Goriva i maziva* — *Fuels and lubricants*
- *Nauka o toplini II* — *Thermodynamics II*
- *Numeričko modeliranje u termodinamici* — *Numerical Modelling in Thermodynamics*
- *Plinska tehnika* — *Gas Engineering*
- *Tehnički izmjenjivači topline* — *Heat Exchangers*
- *Termodinamika smjesa* — *Thermodynamics of Mixtures*
- *Energetski i procesni uređaji* — *Energy and process facilities*
- *Termoenergetska postrojenja* — *Thermal energy plants*
- *Energetska postrojenja* — *Power plants*
- *Inženjerstvo zaštite okoliša* — *Environmental engineering*
- *Procesno inženjerstvo* — *Process engineering*
- *Automatizacija i regulacija u sustavima klimatizacije* — *HVAC Control Systems*
- *Brodski termotehnički sustavi* — *Marine HVAC&R Systems*
- *Obnovljivi izvori energije* — *Renewable Energy Sources*
- *Toplinska mjerenja* — *Thermal Measurements*

- *Brodski energetski uređaji*
- *Brodski sustavi*
- *Toplinske turbine*
- *Kompresori*
- *Tehnika hlađenja*
- *Laboratorijske vježbe u termotehnici*
- *Oprema procesnih postrojenja*

- *Ship Energy Facilities*
- *Ship Systems*
- *Heat turbines*
- *Compressors*
- *Refrigeration*
- *Laboratory Practice in Thermal Engineering*
- *Process Plants Equipment*

KOLEGIJI NA PREDDIPLOMSKIM STRUČNIM STUDIJIMA
| UNDERGRADUATE VOCATIONAL COURSES

- *Toplinski strojevi i uređaji 1*
- *Toplinski strojevi i uređaji 2*
- *Toplina*
- *Energetika u procesnoj industriji*
- *Zaštita okoliša i radne sredine*
- *Tehnološki procesi u procesnoj industriji*
- *Grijanje i klimatizacija*
- *Brodski sustavi, pomoćni strojevi i uređaji*

- *Thermal machines and devices 1*
- *Thermal machines and devices 2*
- *Thermodynamics*
- *Energetics in process industry*
- *Environmental and working space protection*
- *Technological processes in process industry*
- *Heating and Air-Conditioning Systems*
- *Ship Systems and Auxiliaries*

KOLEGIJI NA POSLIJEDIPLOMSKIM SVEUČILIŠNIM (DOKTORSKIM) STUDIJIMA
| POSTGRADUATE UNIVERSITY (DOCTORAL) COURSES

- *Eksperimentalne metode u toplinskoj tehnici i termoenergetici*
- *Izabrana poglavlja iz toplinskih znanosti*
- *Izabrana poglavlja iz izmjenjivača topline*
- *Numeričko modeliranje prijelaza topline*
- *Termodinamička analiza procesa*
- *Termodinamika smjesa i toplinski uređaji*
- *Izabrana poglavlja iz grijanja i klimatizacije*
- *Obnovljivi izvori energije*
- *Izabrana poglavlja iz brodskih energetskih postrojenja*
- *Izabrana poglavlja iz brodskih strojnih kompleksa*
- *Izabrana poglavlja iz tehnike hlađenja i tehnike niskih temperatura*
- *Zaštita okoliša u tehnici hlađenja*

- *Experimental Methods in Thermal and Power Engineering*
- *Selected Topics on Thermal Sciences*
- *Selected Topics on Heat Exchangers*
- *Numerical Modeling of Heat Transfer*
- *Thermodynamic Analysis of Processes*
- *Thermodynamics of Mixtures and Thermal Devices*
- *Selected Topics on Heating and Air-Conditioning*
- *Renewable Energy Sources*
- *Selected Topics Marine Energy Systems*
- *Selected Topics of Marine Machinery Systems*
- *Selected Chapters on Refrigeration and Low Temperature Refrigeration*
- *Environmental Refrigeration*

ZNANSTVENOISTRAŽIVAČKI RAD | SCIENTIFIC RESEARCH

- *Istraživanja na toplinskim aparatima i uređajima, izmjenjivačima topline i toplinskim spremnicima koja obuhvaćaju teorijska i laboratorijska istraživanja prijelaza topline, prijenosa mase te izmjene topline pripromjenifaza;istraživanjaioptimizacijasustavagrijanjaiklimatizacijetesustavazakorištenje obnovljivihizvoraenergije;istraživanjanapodručjurashladnetehnikekojaobuhvaćajukompresijske i apsorpcijske rashladne uređaje i dizalice topline; istraživanja u području energetske učinkovitosti i optimizacija termotehničkih sustava grijanja, hlađenja i klimatizacije; istraživanja utjecaja parametara vlažne pare na proces erozije rotorskih lopatica toplinskih turbina; istraživanja erozije korozije protočnog dijela parnih turbina; istraživanja mogućnosti smanjenja emisije štetnih tvari motora s unutarnjim izgaranjem uz zadržavanje niske specifične potrošnje goriva te s ciljem povećanja specifične snage i pouzdanosti u preuzimanju naglih opterećenja snage kod motora s prednabijanjem; istraživanja iz brodskog strojarstva s ciljem optimalnog i energetski racionalnog vođenja brodskih pogonskih sustava; istraživanja na području optimizacije energetskih procesa; istraživanja na području smanjenja emisija štetnih sastojaka iz energetskih i procesnih postrojenja*

Research on heat devices, heat exchangers and heat storages which encompass theoretical and laboratory research of heat and mass transfer, as well as heat transfer during phase change processes; research and optimization of heating and cooling systems, as well as of renewable energy systems; research into the field of refrigeration which embraces compression and absorption cooling devices and heat pumps; research into energy efficiency and optimization of HVAC&R systems; research into influence of wet steam parameters on the erosion process of rotor turbine blades; research into erosion - corrosion in the fl owing part of steam turbines; research into reducing pollution species emission of internal combustion engines while retaining low specific fuel consumption and aiming at increasing specific power and reliability by sudden overload of a super charged engine; research to field of marine engineering aiming at the optimizing ships power plant control; investigation into optimization of energy processes; investigation into the field of emission reduction from energy and process facilities.

- *Optimizacija energetskih sistema; Zaštita okoliša u energetskim postrojenjima*
  Optimisation of energy systems; Environmental protection in energy plants
- *Članovi Zavoda uključeni su u rad istraživačkog projekta financiranog od Hrvatske zaklade za znanost pod nazivom Povećanje energetske učinkovitosti izmjenjivača topline (HEXENER) voditeljice prof. dr. sc. Anice Trp.*
  The members of the Department are involved in the work of a research project financed by the Croatian Science Foundation entitled Enhancement of the heat exchanger energy efficiency (HEXENER), project leader D. Sc. Anica Trp.

PROJEKTI | PROJECTS

- *Povećanje energetske učinkovitosti izmjenjivača topline (HEXENER), istraživački projekt financiran od Hrvatske zaklade za znanost, 2017.-2021., voditeljica projekta prof. dr. sc. Anica Trp.*
  Enhancement of the heat exchanger energy efficiency (HEXENER), research project financed by the Croatian Science Foundation, 2017-2021, project leader Prof. D. Sc. Anica Trp.
- *Istraživanje i razvoj komponenata i sustava obnovljivih izvora energije, potpora znanstvenim istraživanjima Sveučilišta u Rijeci, voditeljica prof. dr. sc. Anica Trp.*
  Research and development of the renewable energy sources components and systems, support for scientific research, University of Rijeka, head prof. D. Sc. Anica Trp.
- *Primijenjena istraživanja trigeneracijskih sustava s dizalicama topline koje rade s prirodnim radnim tvarima, potpora znanstvenim istraživanjima Sveučilišta u Rijeci, voditelj prof. dr. sc. Branimir Pavković.*
  Applied research of trigeneration system with heat pumps that operate with natural refrigerants, support for scientific research, University of Rijeka, head prof. D. Sc. Branimir Pavković.
- *Pavković, B.; Delač, B.; Projekt poboljšanja energetske učinkovitosti VII odjela bolnice za ortopediju i rehabilitaciju „Prim. dr. Martin Horvat“, Rovinj, Tehnički fakultet u Rijeci 2016., glavni projekt strojarskih instalacija GVIK*
  Pavković, B.; Delač, B.; Design project for increasing energy efficiency of the 7th department in hospital for orthopaedy and Rehabilitation „Prim. dr. Martin Horvat“, Rovinj, Faculty of Engineering 2016., main design of HVAC installation

PUBLIKACIJE | PUBLICATIONS

RADOVI U ČASOPISIMA | JOURNAL PAPERS

- *Kirinčić, M.; Trp, A.; Lenić, K., Numerical investigation and experimental validation of heat transfer in a small size shell and tube heat exchanger, Engineering review, ISSN 1330-9587, 37 (2), 122-133, 2017, Rijeka*
- *Blecich, P.; Bonefačić, I.; Wolf, I., Space heating and cooling energy demand in energy efficient*

single-family house with mechanical ventilation system, Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku, ISSN 1330-3651, 24, 119-126, 2017, Osijek

- *Bonefačić, I.; Wolf, I.; Blecich, P.; Improvement of fuel oil spray combustion inside a 7 MW industrial furnace: A numerical study, Applied thermal engineering, 1359-4311, 110, 795-804, 2017, Amsterdam*
- *Mrzljak, V.; Poljak, I.; Medica-Viola, V.; Efficiency and losses analysis of low-pressure feed water heater in steam propulsion system during ship maneuvering period, Pomorstvo: journal of maritime studies, ISSN 1332-0718, 30, 133-140, 2016, Rijeka*
- *Mrzljak, V.; Mrakovčić, T.; Comparison of COGES and diesel-electric ship propulsion systems Pomorski zbornik, ISSN 0554-6397, 1, 131-148, 2016, Rijeka*
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MEĐUNARODNA SURADNJA | INTERNATIONAL COLLABORATIONS

- *ASHRAE – American Society of Heating, Refrigerating and Air-Conditioning Engineers, California Institute of Technology, SAD, USA*
- *Dipartimento di fisica tecnica, Universita' degli studi di Padova, Italija, Italy*
- *Dipartimento di energetica, Universita' degli studi di Trieste, Italija, Italy*
- *Dipartimento di energetica, Politecnico di Milano, Italija, Italy*
- *EAEC – European Automobile Engineers Cooperations, Austrija, Austria*
- *Ente per le Nuove tecnologie, l'Energia e l'Ambiente, ENEA, Roma, Italija, Italy*
- *EURAMMON - a joint initiative by companies, institutions and individuals committed to increasing the use of natural refrigerants, Frankfurt, Njemačka, Germany*
- *Faculty of Chemistry and Chemical Engineering, University of Maribor, Slovenija, Slovenia*
- *Faculty of Mechanical Engineering, University of Ljubljana, Slovenija, Slovenia*
- *Faculty of Mechanical Engineering, University of Maribor , Slovenija, Slovenia*
- *FH Joanneum, University of Applied Sciences, Graz, Austrija, Austria*
- *FISITA – International Federation of Automotive Engineering Societes, Ujedinjeno Kraljevstvo United Kingdom*
- *GRETh, Bâtiment Lynx, SavoieTechnolac, Le Bourget du Lac – Cedex, Francuska, France*
- *Institute of Energy Technology, ETH Zürich, Švicarska, Switzerland*
- *Institut für angewandte Thermo- und Fluiddynamik, Fakultät Maschinenbau, Hochschule Mannheim, Njemačka, Germany*
- *Institute for Resource Efficient and Sustainable Systems, Graz University of Technology, Austrija, Austria*
- *International Institute of Refrigeration, Paris, Francuska, France*
- *ISES – The International Solar Energy Society, Freiburg, World Organisation, Germany/ Njemačka ISES Europe Freiburg, Njemačka, Germany*
- *Laboratory for Heating, Sanitary and Solar Technology, University of Ljubljana, Slovenija, Slovenia*
- *REHVA - Federation of European Heating, Ventilation and Air Conditioning Associations, Brussels, Belgija, Belgium*
- *Research and Development Center, Compagnie Industrielle d'Aplications Thermiques (CIAT), Culoz Francuska, France*
- *Szent Istvan University, Gödollo, Mađarska, Hungary*
- *Universität in Kassel, Njemačka, Germany*

5.12 akademici i profesori emeritusi
academics and professors emeritus

Ivan Katavić

professor emeritus
professor Emeritus

Elso Kuljanić

professor emeritus, Akademik HAZU
professor Emeritus, HAZU academician

Špiro Milošević

professor emeritus
professor Emeritus

Julijan Dobrinić

professor emeritus
professor Emeritus

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6 stručne službe
professional and administrative staff

6.1 knjižnica library

VODITELJICA | HEAD:

Prof. i dipl. knjižničarka / prof., grad. librarian **Marta Lončarević**

http://www.riteh.uniri.hr/ustroj/knjiznica

Marta Lončarević prof. i dipl. knjižničarka prof., grad. librarian

mr. sc. **Mario Šlosar-Brnelić** dipl. knjižničar grad. librarian

Knjižnica Tehničkog fakulteta Sveučilišta u Rijeci dio je znanstvene, istraživačke i obrazovne djelatnosti Fakulteta. Obavlja poslove oblikovanja i izgradnje knjižničnog fonda (nabava, stručna obrada), pružanja knjižničnih usluga korisnicima (posudba i korištenje građe, informacijsko-edukacijsku djelatnost) te ostale poslove koji proizlaze iz tih procesa.

Korisnici knjižnice su redovni i izvanredni studenti, nastavno osoblje i stručni suradnici Fakulteta, ali i ostali članovi šire društvene zajednice koji se bave znanstvenim i stručnim radom, a usluge knjižnice koriste po posebnim uvjetima. Knjižnica funkcionira kao informacijsko, izobrazbeno i komunikacijsko središte. Nalazi se u prizemlju zgrade Fakulteta, gdje su na 403 m2, na dvije etaže, smještene čitaonica, računalna čitaonica te otvoreni i zatvoreni fond.

The Library of the Faculty of Engineering, University of Rijeka is a part of the scientific, research and educational activities of the Faculty. It performs tasks of designing and construction of the library collection (procurement, expertise) the provision of library services to users (loan and the use of materials, information and educational activities) and other matters arising from these processes.

The Library is used by full and part-time students, faculty and professional staff of the Faculty but also by other members of the wider community engaged in scientific and professional work who use library facilities under special conditions. Therefore, the library functions as a media, education and communication center. It is located on the ground floor of the Faculty, namely on two floors covering 403 m2 where there are situated a Reading Room, computer Reading Room, Open and Closed-End Fund.

Čitaonica se sastoji od trideset i tri mjesta za učenje i korištenje prijenosnih računala s priključcima na mrežu. Računalna čitaonica ima dvadeset i četiri mjesta s dvanaest računala namijenjenih istraživanju i učenju; preko njih studenti imaju pristup bazama podataka i katalozima svih knjižnica. Nedavnom modernizacijom knjižničnoga sustava, Knjižnica je integrirana u knjižnični sustav Sveučilišta u Rijeci, dodano je niz novih funkcionalnosti i usluga i omogućeno je pretraživanje svih baza kroz jedan sustav. Pomoću Discovery servisa, jedinstvenog sučelja za pretraživanje, omogućeno je pretraživanje skupnog kataloga Sveučilišta čime i kataloga svih knjižnica Sveučilišta, pretplaćenih baza podataka dostupnih na Fakultetu i Sveučilištu u Rijeci, portala znanstvenih časopisa RH HRČAK i drugih odabranih znanstvenih izvora u slobodnom pristupu na internetu. Knjižnica je uključena u projekt Centra za online baze podataka čime su znanstveni i stručni časopisi .dostupni našim korisnicima

Knjižnični fond Knjižnice je svojim sadržajem i obimom prilagođen znanstveno-istraživačkom programu rada na Fakultetu. Kontinuirano se dopunjava, obnavlja i osuvremenjuje pri čemu se težište stavlja na nabavu literature iz tehničkih znanosti, elektrotehnike, brodogradnje, računarstva. Početkom 2015. godine, knjižnični fond iznosi oko 22000 svezaka omeđenih publikacija te tridesetak naslova domaćih i stranih periodičkih publikacija. Uz klasičnu posudbu tiskane građe, pridaje se pažnja i pretraživanju i odabiru relevantne građe prema individualnim potrebama korisnika kao i njihovoj edukaciji za samostalno pretraživanje izvora informacija. Knjižnica, prema zahtjevima korisnika, vrši usluge i međuknjižnične posudbe.

Uključeni smo u sustav upravljanja kvalitetom ISO 9001.

The Reading Room consists of thirty-three places for learning and using laptop computers with connections to the network. The Computer Reading Room has twenty four places with twelve computers intended for research and learning; through them, students have access to licensed databases and catalogs of all libraries. With recent modernization of the library system, the Library has been integrated into the library system of the University of Rijeka, a number of new features and services have been added and searches over databases through one system enabled. Using the Discovery Service as a unified search interface, it is now possible to search not only over the Union University Catalogue but also over the catalogs of all the libraries of the University, subscribed databases available on the Faculty and the University of Rijeka, the central portal of Croatian scientific journals named RH HRČAK and other selected scientific resources freely accessible on the Internet. The library is also included in the project of the Center for online databases making thus all scientific and professional journals available to our customers.

The library fund of the Library is in its funding sources, contents and scope adjusted to scientific research program at the Faculty. It has been continuously complementing, renewing and modernizing whereby the emphasis has been placed on the acquisition of literature in engineering sciences, electrical engineering, naval architecture and computing. In early 2015 the library fund covered about 22000 volumes of monographs and thirty titles of domestic and foreign periodicals. However, apart from lending the classic printed materials, due attention is also given to the search and selection of relevant material for individual search of sources of information according to the individual needs of users as well as their education. The Library provides services and interlibrary loans meeting thus the requirements of their users.

It is also worth pointing out that the Library and its members are involved in the quality management system ISO 9001 standard.

6.2 računalni centar computer center

VODITELJICA | HEAD:

Tatjana Škorjanc, dipl. ing. graduate engineer

http://www.riteh.uniri.hr/ustroj/rc/

Tatjana Škorjanc, dipl. ing. graduate engineer

voditelj
head

Siniša Vukotić

stručni suradnik
associate

Domagoj Crljenko, dipl. ing. graduate engineer

stručni suradnik
associate

Dario Maršanić, prof.

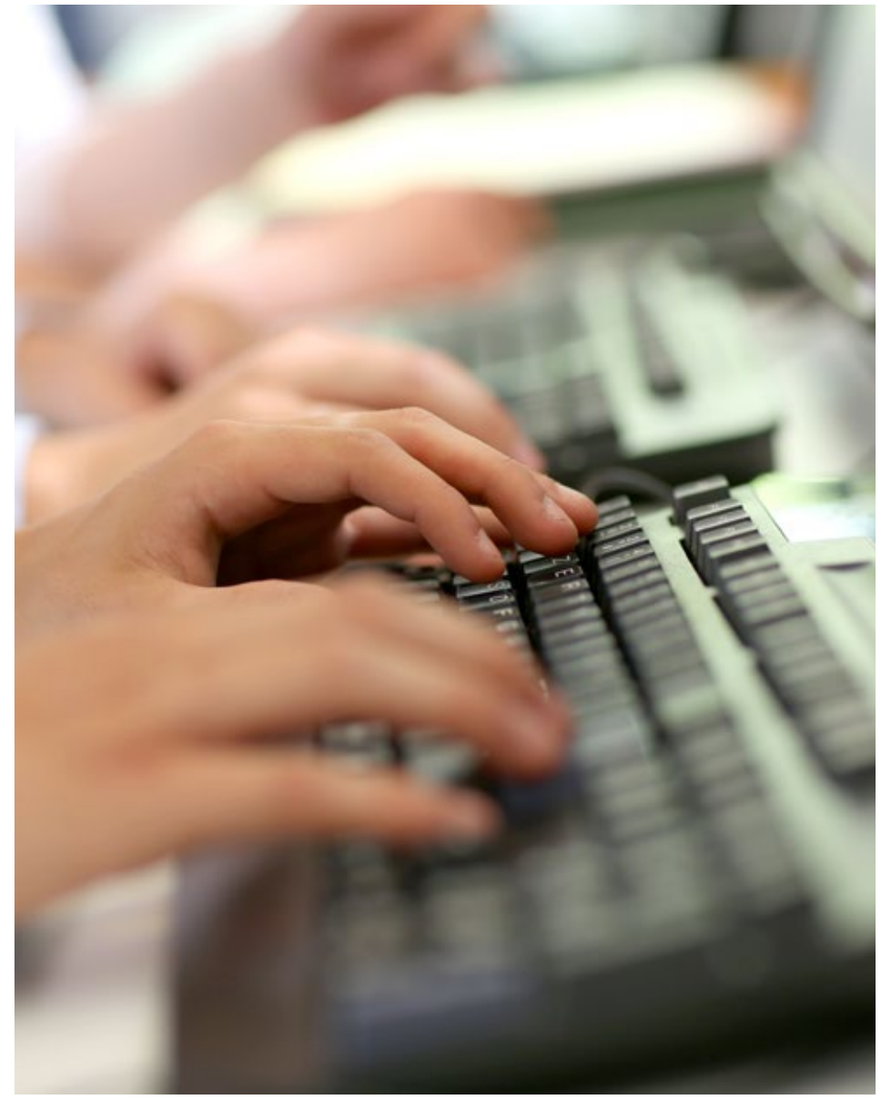
viši stručni suradnik
senior associate

RAČUNALNI KABINETI

- *Računalni kabinet 1: 20 + 1 računalo*
- *Računalni kabinet 2: 20 + 1 računalo*
- *Računalni kabinet 3: 20 + 1 računalo*
- *Računalni kabinet 4: 20 + 1 računalo*
- *Računalni kabinet 5: 10 računala*
- *Računalni kabinet 6: 10 računala*
- *Računalni kabinet 7: 20 + 1 računalo*
- *Računalni kabinet 8: 20 + 1 računalo*

COMPUTER CLASSROOMS

- *Computer Classroom 1: 20 + 1 computers*
- *Computer Classroom 2: 20 + 1 computers*
- *Computer Classroom 3: 20 + 1 computers*
- *Computer Classroom 4: 20 + 1 computers*
- *Computer Classroom 5: 10 computers*
- *Computer Classroom 6: 10 computers*
- *Computer Classroom 7: 20 + 1 computers*
- *Computer Classroom 8: 20 + 1 computers*



6.3 financijska služba accounting division

VODITELJICA | HEAD:

Ana Mirković Pavlović, mag. oec. grad. economist

http://www.riteh.uniri.hr/ustroj/strucne-sluzbe/fs/

Financijska služba obavlja financijske i računovodstvene poslove. Financijska služba vodi računa o zakonitosti financijskog poslovanja, obavlja sve isplate vezane uz plaće, autorske honorare i ugovore o djelu, kontrolira, obračunava i isplaćuje putne naloge, plaća račune u tuzemstvu i inozemstvu, knjiži na računima glavne knjige sve poslovne događaje, sastavlja prijedlog financijskog plana Fakulteta te mjesečne, tromjesečne, polugodišnje i godišnje izvještaje, kontaktira s Ministarstvom znanosti i obrazovanja, Sveučilištem u Rijeci, Poreznom upravom, FINA-om, Revizijom, bankama i usklađuje svoje poslovanje i izvještaje s tim subjektima iz okruženja.

The accounting division performs financial and accounting activities. Specifically, it takes into account the legality of the financial business and performs all payments related to salaries, author`s fees and work contracts. Furthermore, the accounting division controls, calculates and pays travel orders, pays domestic and foreign accounts, records all business events in the ledger accounts, compiles the proposal of the Faculty's financial plan as well as the monthly, quarterly, semi-annual and annual reports. It also maintains contact with the Ministry of Science and Education, the University of Rijeka, the Tax Office, the Financial Administration, the Audit, the banks and it coordinates its own business and reports with all these entities from the area.

Ana Mirković Pavlović, mag. oec. grad. economist

voditeljica
head

Mirjana Mihaljević Vukelić, ing. bacc. eng.

računovodstveni poslovi
accounting activities

Karolina Kaštelan, dipl. oec. grad. economist

financijski poslovi
financial activities

Ana Šutalo, struc. spec. oec. spec. grad. economist

financijski poslovi
financial activities

Iva Spajić Zubčić, dipl. oec. grad. economist

financijski poslovi
financial activities

Višnja Valčić, dipl. oec. grad. economist

financijski poslovi
financial activities

6.4 služba nabave i komercijale
procurement and commercialе office

VODITELJ | HEAD:

Robert Mohorić, dipl. oec. grad. economist

http://www.riteh.uniri.hr/ustroj/strucne-sluzbe/skn/

Robert Mohorić, dipl. oec. grad. economist

voditelj
head

Bruna Martinović,
mag. oec. economist

ekonom za inventar
inventory economist

Mladen Ostrogović,
mag. oec. economist

ekonom za potrošni materijal i prodaju publikacija
economist for consumables and publications sales

Služba obavlja poslove komercijale, nabave i ekonomata. Vodi poslove u vezi nabave roba, usluga i radova, izradom plana nabave robe, usluga i radova za tekuću godinu, priprema i provodi postupke odabira godišnjih dobavljača, vodi evidenciju nabave male i velike vrijednosti, administrativno provodi postupke nabave prema Zakonu o javnoj nabavi, priprema dokumentaciju ovisno o načinu nabave, kontaktira s dobavljačima, sudjeluje u pripremanju odluka i prijedloga ugovora, pohranjuje cjelokupnu dokumentaciju o nabavi, preuzima naručenu robu, vodi evidenciju o sitnom inventaru, osnovnim sredstvima i potrošnom materijalu, radi na izradi, održavanju i unapređenju baza podataka Službe te održava i unapređuje sustav kontrole kvalitete u Službi.

This office performs commercial, procurement and economic services. It runs services connected with the procurement of goods and services, prepares and implements the procedures for the annual selection of suppliers, contracts with suppliers, receives ordered goods, keeps records of small inventories, basic resources and consumables, works on the office's databases and maintains and improves the system of quality control of its services.

6.5 služba općih i kadrovskih poslova
general and personnel office

VODITELJICA | HEAD:

Lenka Štajduhar, oec. **economist**

http://www.riteh.uniri.hr/ustroj/strucne-sluzbe/sokp/

Lenka Štajduhar, oec. economist

voditeljica opće i kadrovske službe
general and personnel office head

Lidija Petričić

administrativna tajnica
administrative secretary

Snježana Mikuličić

voditeljica kadrovskih poslova
personnel operation manager

TAJNICE ZAVODA | DEPARTMENT SECRETARY:

Natalija Forgić

Lovorka Malinić

Dragica Jurin

Tijana Ćupurdija

Željka Gulić

SPREMAČICE | **CLEANING STAFF:**

Dragica Alempić

Marica Gnjatović

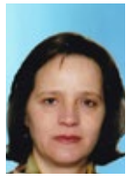
Lidija Antunović

Jasna Mijolović

Snježana Ban

Patricija Vukić

Mirjana Košpić



Julijana Nenadović

6.6 služba studentske evidencije
student's registar and affairs office

VODITELJ | HEAD:
Žarko Burić, mag. ing.
http://www.riteh.uniri.hr/ustroj/strucne-sluzbe/sse/

Žarko Burić, mag. ing.

voditelj
office head

Antonela Ćaleta

voditelj ostalih ustrojstvenih jedinica
head of other organizational units

Darko Vidučić

stručni savjetnik ISVU
ISVU Advisor

Tanja Veljčić

administrativna tajnica
administrative secretary

Služba studentske evidencije Fakulteta obavlja sve poslove vezane uz potrebe studenata. Zaprima i obrađuje dokumentaciju za razredbeni postupak, obavlja upis studenata u prvu i u više studijske godine, priprema dokumentaciju studenata za završni ili diplomski ispit, organizira promocije završenih studenata, prima i izdaje razne zahtjeve, uvjerenja i potvrde, izrađuje izvješća prostručne analize za potrebe Fakulteta te vodi potrebnu korespondenciju i daje izvješća zainteresiranim strankama.

The students' Registar and Affairs Office is in charge of all the issues pertaining to students' needs. It collects and manages documentation for the admission exams, manages the enrolment of students to all the study years, prepares students' documents for the graduation exams, organizes the commencement of graduates, receives and delivers various requests and certificates, produces reports and analyses as per Faculty need, manages the necessary correspondence and gives reports to interested parties.

6.7 tehnička služba
tehnical and maintenance services

VODITELJ | HEAD:

Goran Bakotić, struč. spec. ing. sec.

http://www.riteh.uniri.hr/ustroj/strucne-sluzbe/tehnicka-sluzba/

Goran Bakotić, struč. spec. ing. sec.

voditelj
office head

Bernardo Badurina, bacc.ing.

Nevio Poniš, dipl. ing.

Josip Jurasić

Andrej Miljuš

DOMARI - KUĆEPAZITELJI | MAJOR - DOMO

Dražen Tadejević

Boris Šegota

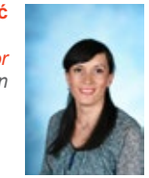
Tehnička služba obavlja poslove održavanja, zaštite na radu i zaštite od požara. U sastavu Tehničke službe su i laboranti koji pod nadzorom nastavnika sudjeluju u pripremi, odnosno izvedbi dijela nastave.

The Tehnical and Maintenance Services perform activities pertaining to maintenance, work safety and fire protection. Involved in the Technical Services are also laboratory tehnicians that, under supervision of teaching staff, participate in the preparation of performing parts of lectures.

6.8 IPA projekti
IPA projects

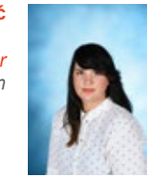
Nadija Surać

projekt administrator
project admin



Jelena Višnić

projekt administrator
project admin



6.9 hamag-bicro projekti
hamag-bicro projects

Guruprasad Madhale Jadav

istraživač
researcher

Nino Miškić-Pletenac

istraživač
researcher

7 studentske aktivnosti student activities

7.1 studentski zbor tehničkog fakulteta
student council at the faculty of engineering

Studentski zbor je najviše predstavničko tijelo studenta unutar Fakulteta čiji je rad definiran Statutom. Broji 15 članova predstavnika i isto toliko zamjenika koji se biraju u 5 izbornih jedinica. Prema Statutu Fakulteta i drugim općim aktima, Studentski zbor bira 14 predstavnika koji aktivno sudjeluju pri radu Fakultetskog vijeća Tehničkog fakulteta. Članovi Studentskoga zbora, kroz odbore i povjerenstva, sudjeluju u kreiranju politike Fakulteta.

Studentski zbor dužan je braniti interese studenata, upozoravati na nepravilnosti i nepravde te sufinancirati i podržavati rad studentskih udruga i organizacija na Fakultetu. U okviru svojih mogućnosti i sufinanciranja od Fakulteta i Sveučilišta u Rijeci, raspolaže određenim sredstvima predviđenim za sudjelovanje u troškovima studentskih projekta i za rad njihovih udruga i organizacija. Preko svojega ovlaštenog predstavnika aktivno sudjeluje i u tijelima odlučivanja unutar Sveučilišnog zbora Sveučilišta u Rijeci.

Tijekom ove akademske godine proveli smo nekoliko stručnih ekskurzija: posjetili smo tvornicu Rimac, tvornicu DOK-ING, Zagrebački inkubator poduzetništva, itd. Nastavili smo prošlogodišnji projekt „Elektrijada“ i ove se godine puno bolje plasirali u ukupnom poretku.Također smo organizirali i "Dan sporta" u suorganizaciji sa RŠSS u kojem smo obilježili završetak UNI SPORT lige u kojoj pobijedili u muškoj konkurenciji osvojivši drugo mjesto u ukupnom poretku.

Studentski zbor aktivno sudjeluje u radu tijela Fakulteta i Sveučilišta u Rijeci. Predstavnik Studentskog zbora Tehničkog fakulteta pri Studentskom zboru Sveučilišta bio je Šimun Rogoznica, a zamjenik Denis Mijolović. Kolega Šimun Rogoznica ujedno je i obnašao dužnost zamjenika

The Student Council is the highest representative body of the students within the Faculty whose work is defined by the Statute. It counts 15 representatives and 15 deputies who are elected in 5 constituencies. According to the Statue of the Faculty and other regulations, the Student Council chooses 14 representatives who are actively involved in the work of the Faculty Council of the Faculty of Engineering. Members, through boards and commissions, participate in creating Faculty’s politics.

The Student Council must defend students' interests, warn about irregularities and injustices, and co-finance and support the work of student associations and organizations at the Faculty. Within its possibilities and co-financing from the Faculty and University of Rijeka, it has certain funds foreseen for the participation in the costs of student projects and the work of their associations and organizations. Through its authorised representative, it actively participates in decision-making bodies within the University Council of the University of Rijeka.

During this academic year, we conducted several professional excursions: we visited the Rimac factory, the DOK-ING factory, the Zagreb incubator of entrepreneurship, etc. We have continued last year’s project "Elektrijada" and this year it was placed much better in the overall ranking.We have also organised ,,Dan sporta˝ in cooperation with RŠSS where we marked the end of the UNI SPORT league in which we won in the male competition, taking the second place in the overall ranking.

The Student council is actively involved in the work of the Faculty and the University of Rijeka. The representative of the Student Council of the

predsjednika Studentskog zbora Sveučilišta u Rijeci te bio jedan od studentskih predstavnika u Senatu Sveučilišta.

Faculty of Engineering at the Student Council of the University was Šimun Rogoznica, and the deputy Denis Mijolović.

Šimun Rogoznica also served as the deputy of the representative of the Student Council of the University of Rijeka and was one of the students' representatives at the Senate of the University.

članovi studentskog zbora po izbornim jedinicama
members, listed by electorial wards

1. PREDDIPLOMSKI SVEUČILIŠNI STUDIJ STROJARSTVA I BRODOGRADNJE
1. UNDERGRADUATE UNIVERSITY STUDY OF MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE
- *Grigor Dumbović*
- *Ivan Golik*
- *Marko Mesarić*
- *Marin Smilović*

2. PREDDIPLOMSKI SVEUČILIŠNI STUDIJ ELEKTROTEHNIKE I RAČUNARSTVA
2. UNDERGRADUATE UNIVERSITY STUDY OF ELECTRICAL ENGINEERING AND COMPUTER ENGINEERING
- *Denis Mijolović*
- *Endi Miletić*
- *Gordan Nekić*
- *Ivana Žužić*

4. DIPLOMSKI SVEUČILIŠNI STUDIJ STROJARSTVA I BRODOGRADNJE
4. GRADUATE UNIVERSITY STUDY OF MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE
- *Luka Bukvić*
- *Ivana Gašpert*
- *Šimun Rogoznica*

5. DIPLOMSKI SVEUČILIŠNI STUDIJ ELEKTROTEHNIKE I RAČUNARSTVA
5. GRADUATE UNIVERSITY STUDY OF ELECTRICAL ENGINEERING AND COMPUTER ENGINEERING
- *Franko Hržić*
- *Domagoj Poljančić*

6. POSLIJEDIPLOMSKI SVEUČILIŠNI (DOKTORSKI) STUDIJ
6. POSTGRADUATE UNIVERSITY (DOCTORAL) STUDY
- *Damjan Banić*
- *Diego Sušanj*

7.2 ieee sb rijeka

IEEE studentski ogranak Sveučilišta u Rijeci nastao je 2006. godine kao jedan od studentskih ogranaka unutar Hrvatske sekcije IEEE. Cilj mu je okupljanje studenata iz različitih područja tehničkih znanosti te organizacija raznovrsnih događanja. Zbog toga se pod okriljem Ogranka održavaju predavanja iz područja tehničkih znanosti, natjecanja, radionice i razna druženja. Time se studentima omogućuje razmjena ideja i iskustava, sklapanje niza korisnih poznanstava, ali i nerazdvojnih prijateljstava. Sve to vodi boljoj umreženosti i napretku na privatnom i poslovnom planu svake osobe, kao i u znanosti.

Članovi IEEE SB Rijeka, kroz različite projekte, svoja znanja i iskustva nastoje prenijeti kolegama na fakultetu i mlađim generacijama koje tek ulaze u svijet visokog obrazovanja. Uz svoje studentske, kao i obaveze preuzete aktivnim članstvom Ogranka, nerijetko se prihvaćaju i drugih zadataka u sklopu rada Tehničkog fakulteta i Sveučilišta u Rijeci.

Kroz jedanaest godina postojanja, rad Ogranka kontinuirano se prilagođavao potrebama i željama studenata radi podizanja razine studentskog standarda i kvalitete studija koje pohađaju.

Rad Ogranka je transparentan. Temelji se na godišnjim izmjenama vodstva i motivaciji svih aktivnih članova. Redoviti sastanci kao i neformalna druženja članova, stvaraju složnu grupu, ne više samo kolega, već i nerazdvojnih prijatelja. Članovi Ogranka aktivnim radom ostvaruju zajedničke i vlastite ciljeve i doprinose napretku suvremenog hrvatskog društva.

Broj članova Ogranka izrazito je varirao tijekom godina. Danas, Ogranak broji nešto više od 25 članova i većina sudjeluje u njegovim aktivnostima. U sklopu IEEE studentskog ogranka Sveučilišta u Rijeci djeluju dva podogranka, Power and Energy Society i Computer Society, skupina Young Professional, a do kraja 2017. godine planira se osnivanje podogranka Women in Engineering.

Nagrade

Studentski ogranak Rijeka priznat je kao perspektivan i jedan od najboljih studentskih ogranaka u Regiji 8 i svijetu osvojivši nagradu „Regional Exemplary Student Branch Award“. Aktivnosti riječkog Ogranka prate ideju IEEE-a:

IEEE student branch of Rijeka University was created in 2006 as one of the student branches within Croatian IEEE section. Its goal is to bring together students from different fields of engineering sciences and organise various events. For this reason, lectures are held under the aegis of the Branch in the field of the engineering sciences, as well as competitions, workshops and various gatherings. This allows students to exchange ideas and experiences, make a series of useful acquaintences but also establish inseparable friendships. All this leads to better networking and progress on the private and business level of every person, as well as in science.

Through various projects the members of Rijeka IEEE SB try to transfer their knowledge and experience to Faculty`s colleagues and younger generations who are just entering the world of higher education. Along with their student duties, as well as the commitments taken with the active membership of the Branch, other tasks are often accepted by its members as part of the activity of the Faculty of Engineering and the University of Rijeka

Through its eleven years of existence, the work of the Branch has continually adapted to the needs and wishes of students to raise the level of student standards and the quality of the studies they are attending.

The work of the Branch is transparent. It is based on annual change of leadership and the motivation of all the active members. Regular meetings as well as informal gatherings of members create a group of friends, not just colleagues but also close friends. Through active work, members of the Branch have achieved their common and personal goals and they contribute to the progress of the contemporary Croatian society.

The number of members of the Branch has markedly varied over the years. Today, the branch counts just over 25 members and the majority of members participate in its activities. The IEEE Student Branch of Rijeka University comprises two subbranches: Power and Energy Society and Computer Society, along with the Young Professional group. By the end of 2017, the establishment of the subbranch
Women in Engineering is planned.

Prizes

lokalnim djelovanjem pridonijeti boljitku na globalnoj razini. Prema službenom poretku IEEE SB Rijeka nalazi se na visokom četvrtom mjestu. Ponosni smo što je naš rad prepoznat te smo izuzetno motivirani da i u nadolazećoj akademskoj godini ostvarimo značajne rezultate.

Kratak pregled aktivnosti Ogranaka u akademskoj godini 2016./2017. predstavljen je u nastavku.

Sudjelovanje na natjecanjima

Od 2011. godine članovi Studentskog ogranka Rijeka sudjeluju na prestižnom natjecanju u programiranju IEEExtreme. Riječ je o cjelodnevnom natjecanju koje se održava svake godine krajem listopada, a obuhvaća studente cijeloga svijeta.

U desetom, jubilarnom izdanju natjecanja (listopad 2016.), sudjelovala su četiri tima iz Rijeke sačinjenih od ukupno jedanaest sudionika. Od 2517 prijavljenih timova, naši su članovi ostvarili značajne rezultate u svijetu osvojivši 293. mjesto na globalnoj ljestvici poretka. Članovi ogranka sudjelovali su i u izradi mobilnih aplikacija u sklopu natjecanja IEEE MadC.

The Rijeka Student Branch is recognized as a prospective and one of the best student branches in Region 8 and the world by winning the “Regional Exemplary Student Branch Award“. The activities of the Rijeka Branch follow the idea of IEEE: to contribute globally through local action. According to the official ranking the IEEE Rijeka SB is on the top fourth place. We are proud of our work being recognized and we are extremely motivated to have significant results in the upcoming academic year.

A brief overview of the activities of the Branch in the academic year 2016/2017 is presented below.
Participation in competitions

As of 2011, members of the Rijeka Student Branch have participated in the prestigious competition in IEEExtreme programming. It is a full-day event that takes place every year at the end of October and
includes students from all over the world.
Four teams from Rijeka made up of eleven participants participated in the tenth, jubilee edition of the competition (October 2016). Out of 2517 registered teams, our members achieved significant results worldwide, winning the 293rd place in the global ranking. Members of the

SVEUČILIŠTE U RIJECI
TEHNIČKI FAKULTET
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Edukacija i upoznavanje s tehnologijom

Tijekom realizacije različitih projekata nastojimo zainteresirati studente za razvoj tehnologije i upoznati ih s novim dostignućima na području tehničkih znanosti.

Od 2015. godine uveden je „Pripremni seminar iz programiranja“. Cilj seminara je upoznavanje studenata prve godine studija na Tehničkom fakultetu u Rijeci s osnovnim znanjem iz programiranja. Na taj način studenti su spremniji pristupiti zadacima s kojima se susreću već u prvom semestru. Seminar je održan i ove godine u suradnji sa Zavodom za Računarstvo Tehničkog fakulteta, pod vodstvom članova Studentskog ogranka Rijeka.

Cilj projekta „Success Stories“ bio je prikazati studentima vezu akademskog obrazovanja i zaposlenja po završetku studija na primjerima iskustava osoba koje su postigle uspjeh na području tehničkih znanosti i gospodarstva. Ove godine, u sklopu projekta, predavanje je održao gospodin Paolo Zenzerović, dipl. ing. el., motiviravši studente za daljnji rad i obrazovanje. Odaziv na dosadašnja predavanja bio je velik, dojmovi studenata bili su izuzetno pozitivni pa se planira nastavak projekta.

Radionicu „7 Essential Inovation Skills & Insigts“ održao je gospodin Marko Bervanakis, zaposlenik tvrtke Ericsson Nikola Tesla d.d.

U suradnji s Microsoft Community - Developer User Group Rijeka organizirali smo radionicu pod nazivom „Supermoći i kompajleri“, namijenjenu računarcima i iskusnim programerima.

Sudjelovanje na kongresima

Početkom akademske godine 2016./2017. održan je „6. CroSYP“ kojem je Studenski ogranak Rijeka po drugi put bio domaćin. Kongres studenata i mladih profesionalaca održao se na Tehničkom fakultetu Sveučilišta u Rijeci, u razdoblju od 23. do 25. rujna, u slavljeničkoj atmosferi povodom desete godišnjice postojanja Studentskog ogranka Rijeka. Na kongresu su prisustvovali studenti iz hrvatskih ogranaka (zagrebačkog, osječkog i riječkog) te dvojica studenata iz slovenskog studentskog ogranka u Ljubljani. Dolazak stranih studenata novitet je na ovoj vrsti kongresa te se nadamo da će se u budućnosti nastaviti razvijati međunarodna suradnja.
Program kongresa započeo je u petak kada su

branch also participated in the development of mobile applications within the IEEE MadC competition.

Education and learning about technology

During the realisation of various projects, we strive to attract students to the development of technology and to familiarise them with new achievements in the field of engineering sciences.

As of 2015, an “Introductory Programming Seminar“ has been organised. The objective of the seminar is to introduce the first-year students of the Faculty of Engineering in Rijeka with basic knowledge of programming. In this way, students are more willing to approach the tasks they are facing in the first semester. The seminar was held this year again in cooperation with the Department of Computer Engineering of the Faculty of Engineering, led by the members of the Rijeka Student Branch.

The aim of the “Success Stories“ project was to show students the link between academic education and employment at the end of their studies on examples of people who have achieved success in the field of engineering sciences and economics. This year, as part of the project, the lecture was held by Mr. Paolo Zenzerović, B.S. in Electrical Engineering, motivating students for further work and education. Students attended the lectures in large numbers and with lively interst, thus we plan to continue with the project.

The workshop “7 Essential Inovation Skills & Insigts“ was held by Mr. Marko Bervanakis, an employee of Ericsson Nikola Tesla d.d.

In cooperation with Microsoft Community - Developer User Group Rijeka, we organised a workshop “Superpowers and Compilers“ intended for computer engineers and experienced programmers.

Participation in congresses

At the beginning of the academic year 2016/2017, “6. CroSYP“ was organised and hosted for the second time by Rijeka Student Branch. The Congress of Students and Young Professionals took place at the Faculty of Engineering of Rijeka University, in the period from 23 to 25 September, in the celebratory atmosphere of the tenth anniversary of the existence of the Rijeka

dočekani svi sudionici. U subotu su predstavljeni projekti i rad pojedinih studentskih ogranaka dok su u nastavku programa predstavljena natjecanja koja se provode već dugi niz godina. To su IEEE MadC, natjecanje u izradi mobilnih aplikacija, i natjecanje u programiranju IEEEXtreme. Nakon pauze za ručak uslijedila su dva stručna predavanja. Prvo predavanje održao je gospodin Guruprasad Madhale Jadav koji je predstavio svoj rad na području asistivne tehnologije, dok su na drugom predavanju svoj rad predstavili članovi udruge Idea4. Posljednji dan kongresa sudionici su posjetili jedinstveni hrvatski muzej starih računala i informatičke tehnologije, Peek & Poke.

Članovi Power and Energy Societyja prošle su godine sudjelovali na, drugoj po redu, konferenciji „ZEC – Zagreb Energy Conference“. Kao i svake godine predstavili smo IEEE i prezentirali aktivnosti IEEE SB Rijeka na konferenciji MIPRO 2017. Ove godine, u suorganizaciji sa Studentskim zborom Tehničkog fakulteta Rijeka, posjetili smo seminar Budućnost ugodnog stanovanja (BUS) udruge SUPEUS u Zagrebu.
Kolega Franko Hržić, predstavnik Ogranka i jedan od predstavnika IEEE hrvatske sekcije, prisustvovao je na IEEE Region 8 Student & Young Professional Congress u Regensburgu. Krajem lipnja, kolege Diego Sušanj i Endi Miletić sudjelovali su na Central European Student and Young Professional Congress koji se održao u Lvivu, u Ukrajini. Posljednja dva tipa kongresa održavaju se naizmjenično svake dvije godine. Na kongresu se obrađuju teme edukativnog, socijalnog, tehničkog i kulturnog karaktera kroz predavanja, radionice, prezentacije i druga događanja.

Stručna putovanja

Članovi IEEE SB Rijeka i studenti Tehničkog fakulteta posjetili su tvrtku Rockwool Adriatic d.o.o. u Industrijskoj zoni Pićan i Termoelektranu Rijeka.

Promocija IEEE i rada Ogranka

Upoznavanje studenata s radom Studentskog ogranka Rijeka i IEEE-a aktivnost je od posebne važnosti. Promocija Ogranka održava se nekoliko puta godišnje da bi se IEEE i Studentski ogranak Rijeka prezentirali srednjoškolcima koji biraju Tehnički fakultet i Sveučilište u Rijeci. Naši članovi nekoliko su puta držali prezentacije i radionice u srednjim školama u Rijeci, Labinu, Puli te na otoku Krku. Sudjelovali su i u aktivnostima povodom Dana otvorenih vrata Tehničkog fakulteta.

Student Branch. The congress was attended by students from the Croatian branches (Zagreb, Osijek and Rijeka) and by two students from the Slovenian Student Branch in Ljubljana. The presence of foreign students at such a congress is a novelty and we hope that the international cooperation will continue in the future.
The program of the Congress began on Friday when all the participants were welcomed. On Saturday, the projects and work of individual student branches were presented. Competitions were also presented that had been going on for several years. These are IEEE MadC, a competition in development of mobile applications and the IEEEXtreme programming competition. After lunch breaks, two professional lectures followed. The first lecture was given by Mr. Guruprasad Madhale Jadav, who presented his work in the field of assistive technology, while the second lecture was held by the members of the Idea4 association. The last day of the congress, the congress participants visited the unique Croatian museum of old computers and IT, Peek & Poke.

Last year, members of the Power and Energy Society participated in the second conference “ZEC - Zagreb Energy Conference“. Like every year, we introduced IEEE and presented the activities of IEEE Rijeka SB at the MIPRO 2017 conference. This year and in collaboration with the Student Council of the Faculty of Engineering Rijeka we attended the SUPEUS seminar Sustainable Housing in Zagreb.
Our colleague, Franko Hržić, representative of the Branh and one of the representatives of the IEEE Croatian section, attended the IEEE Region 8 Student & Young Professional Congress in Regensburg. In late June, colleagues Diego Sušanj and Endi Miletić participated in the Central European Student and Young Professional Congress held in Lviv, Ukraine. The last two congresses are held alternately every two years. At the congress, topics of educational, social, engineering and cultural character are dealt with through lectures, workshops, presentations and other events.

Professional trips

Members of IEEE Rijeka SB and students of the Faculty of Engineering visited the company Rockwool Adriatic d.o.o. in the industrial zone Pićan and the Thermal power plant Rijeka.

IEEE promotion and work of the Branch
Introducing students to the activities of the Rijeka Student Branch and IEEE is of special importance. Promotion of the Branch is held

Idući je korak prezentacija IEEE na uvodnom predavanju studentima prvih godina studija u suradnji s Tehničkim fakultetom i njegovim Studentskim zborom. Također, rad Ogranka prezentira se i u sklopu Pripremnog seminara iz programiranja.

Početkom listopada organizira se proslava dana Organizacije, IEEEDay, na globalnoj razini i u Hrvatskoj. Kroz prezentaciju Organizacije, zanimljive radionice i kviz, studenti i profesori mogu se upoznati s aktivnostima i uključiti u rad Ogranka.

several times a year to familiarise the high school students who opt for the Faculty of Engineering and the University of Rijeka with IEEE and the Rijeka Student Branch. Our members held presentations and workshops in secondary schools in Rijeka, Labin, Pula and on the island of Krk several times. They also participated in activities on the Open Doors Day of the Faculty of Engineering.

The next step is the presentation of IEEE at the introductory lecture to students of the first years of study in collaboration with the Faculty of Engineering and its Student Council. Furthermore, the work of the Branch is also presented within the Introductory programming seminar.

Rad Ogranka kontinuirano možete pratiti na službenim stranicama:

www.facebook.com/ieeesbrijeka
www.ieee.hr
i YouTube kanalu StudentBranch Rijeka

At the beginning of October, the Organisation Day, IEEEDay, is organised on a global scale and in Croatia. Through the presentation of the Organisation, interesting workshops and quizzes take place, and both students and teachers can get acquainted with the activities and join the Branch.

The work of the Branch can be continuously tracked on the official website:

www.facebook.com/ieeesbrijeka
www.ieee.hr
and the YouTube channel Student Branch Rijeka

7.3 iaeste

IAESTE (The International Association for the Exchange of Students for Technical Experience) najveća je svjetska udruga za razmjenu studenata tehničkih i prirodnih znanosti. Udruga je utemeljena 1948. godine na Imperial College of London i danas organizirano djeluje u više od 90 zemalja diljem svijeta. U Hrvatskoj djeluje još od 1952. godine, a od 1992. g. kao međunarodna udruga za razmjenu stručnih praksi tehničkih i prirodnih znanosti IAESTE Croatia.

Udruga već godinama uspješno djeluje i na Sveučilištu u Rijeci, i to zahvaljujući volonterskom radu svojih članova. Od osnivanja 1952. godine, više od 1400 hrvatskih studenata dobilo je priliku svoju stručnu praksu odraditi u inozemstvu dok je u Hrvatsku, na stručnu praksu, primljeno više od 1300 studenata iz cijeloga svijeta.

Posljednjih desetak godina više od 400 studenata hrvatskih sveučilišta dobilo je priliku otići na stručnu praksu u inozemstvo posredstvom udruge IAESTE, od čega više od 60 studenata Tehničkog fakulteta Sveučilišta u Rijeci. Naši su studenti na stručnom usavršavanju bili u Portugalu, Njemačkoj, Mađarskoj, Velikoj Britaniji, Nizozemskoj, Grčkoj, Finskoj, Kazahstanu, Indiji, Japanu, Švedskoj, itd. Pružena im je prilika vidjeti i upoznati nove zemlje i kulture te stjecati, ne samo praktična životna iskustva, već i prijateljstva.

U istom je razdoblju lokalni odbor Rijeka ugostio više od 20 stranih studenata koji su na stručnom usavršavanju boravili na riječkom području. Za strane i naše studente svakog se ljeta organiziraju druženja i putovanja pod nazivom GETT (Get together days). Studenti Tehničkog fakulteta, članovi udruge, također su aktivni sudionici mnogobrojnih međunarodnih susreta, kongresa i seminara.

U listopadu 2016. organizirali smo CEC (Central European Convention) u Gradu Krku gdje smo ugostili preko 250 članova IAESTE organizacije iz centralne Europe. CEC je trodnevna manifestacija edukativnog karaktera kojoj je cilj unaprjeđenje i poboljšanje rada Lokalnih odbora.

IAESTE (The International Association for the Exchange of Students for Technical Experience) is the largest international association for the exchange of students of engineering and natural sciences. The association was founded in 1948 at the Imperial College of London and today operates in more than 90 countries around the world. In Croatia it has been active since 1952, and since 1992 it has developed into the international association for the exchange of professional practices from the field of engineering and natural sciences IAESTE Croatia.

The association has also been successfully working at the University of Rijeka, thanks to the volunteer work of its members. Since its foundation in 1952, more than 1,400 Croatian students have been given the opportunity to do their professional practice abroad, while more than 1,300 students from across the world have been admitted to professional practice in Croatia.

Over the last ten years, more than 400 students from Croatian universities have been given the chance to go abroad and do their professional practice there through IAESTE Association, of whom more than 60 students were from the Faculty of Engineering of Rijeka University. Our students have been trained in Portugal, Germany, Hungary, the United Kingdom, the Netherlands, Greece, Finland, Kazakhstan, India, Japan, Sweden, etc. They have the opportunity to meet and get acquainted with new cultures and new countries, and acquire not only practical life experiences but also make friendships.

In the same period, the local board of Rijeka hosted more than 20 foreign students who stayed in vocational training in the area of Rijeka. For both foreign and home students each summer, social gatherings and trips (called GETT – get together days) are organized. Students of the Faculty of Engineering, members of the association, are also active participants in many international meetings, congresses and seminars.

In October 2016, we organised CEC (Central European Convention) in the City of Krk where we hosted over 250 members of the IAESTE Central European Organisation. The CEC is a three-day event of educational character aimed at enhancing and improving the work of Local boards.

IAESTE HRVATSKA
new experience today, new expert tomorrow
iaestecroatia

7.4 elektrijada

RITEH ELEKTRIJADA je projekt ponovno oživljen prethodne akademske godine. Studentima Tehničkog fakulteta omogućuje odlazak na višednevno natjecanje u sportu i znanju, uz razne popratne zabavne aktivnosti i događanja. Ovogodišnja Elektrijada održala se u Budvi, u Crnoj Gori, od 20. do 25. svibnja. Sudjelovalo je četrdeset i šest studenata i studentica Tehničkog fakulteta.

Realizacija projekta započela je 20. 5., u ranim jutarnjim satima, kada se iz Rijeke krenulo za Budvu. Studenti Tehničkog fakulteta pokazali su izuzetan trud i dobre uspjehe u raznim sportskim disciplinama poput futsala, rukometa, veslanja, i sl., a sudjelovali su i u natjecanjima u znanju. U odnosu na prošlogodišnji nastup, ostvarili su za pet mjesta bolji ukupni plasman. Uz službeni dio natjecanja odvijale su se i razne zabavne aktivnosti pa su naši studenti imali priliku upoznati studente fakulteta raznih država regije. Posljednji dan Elektrijade ekipa Tehničkog fakulteta uputila se brodom u oblilazak Boke Kotorske.

Ovim projektom pozicionira se matični fakultet u odnosu na ostale fakultete. Interakcijom studenata razmjenjuju se iskustva o načinu studiranja i rada te sudjelovanju u projektima na raznim fakultetima. Povratne informacije projekta i sva prikupljena saznanja mogu služiti kao temelj za daljnja poboljšanja na Elektrijadi i fakultetu. Također, ovim projektom povećava se broj aktivnih studenata u razvoju studentske zajednice.

Zahvaljujemo svima koji su nam ustupili svoje vrijeme i pružili pomoć pri realizaciji projekta. Pripreme za nadolazeću godinu već su u tijeku. Očekuje se sudjelovanje većeg broja studenata i djelatnika fakulteta te poboljšanje u ostvarenim rezultatima.

The RITEH ELEKTRIJADA project was revived in the previous academic year. Students of the Faculty of Engineering are enabled to go on a several days long competition in sports and knowledge, with various accompanying entertaining activities and events. This year's Elektrijada was held in Budva, Montenegro, from 20 to 25 May. Forty-six students of the Faculty of Engineering participated.

The realization of the project started on 20 May, early in the morning, when students departed from Rijeka to Budva. The students of the Faculty of Engineering have shown remarkable efforts and good results in various sport disciplines such as futsal, handball, rowing, etc., and they also participated in knowledge competitions. Compared to the last year's performance, they scored five places better in the overall placement. Along with the official part of the competition, various amusing activities took place, so that our students had the opportunity to meet students from other countries of the region. On the last day, the Elektrijada team of the Faculty of Engineering went on a tour around Boka Kotorska by boat.

With this project, our Faculty is positioned with regard to other faculties. Through the interaction of students, experiences of the way of studying and working as well as participating in projects at various faculties are exchanged. Project feedback and all other gathered information can serve as a basis for further improvement at the Elektrijada and the Faculty. In addition, this project increases the number of active students in the development of the student community.

We thank everyone who gave us their time and helped us with the realization of the project. The preparations for the upcoming year are already in progress. The participation of a larger number of students and staff of the Faculty is expected as well as better results.

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7.5 riteh racing team

RITEH RACING TEAM SEZONA 2017

2017. sezona je bila najuspješnija sezona u deset godina postojanja tima. Naime, natjecali smo se na najprestižnijim, najvećim i najpoznatijim obrazovnim automoto natjecanjima na svijetu, pod nazivom Formula Student. Ovogodišnji rezultati u FS Italy i FS Baltic Open Bohemia u Češkoj dali su do znanja kako smo među najboljima u utrkama ubrzanja te izdržljivosti, najzahtjevnijima za vozače i bolide.

FS ITALY 2017. RICCARDOPALETTI CIRCUIT IN VARANO DE' MELEGARI

Prvi dan natjecanja, 19. 7., bio je dan okupljanja i registracije članova timova, a za nas se sastojao od pakiranja i puta. Krenuli smo u ranojutarnjim satima radi što ranijeg dolaska, ne bi li zauzeli najbolju moguću poziciju u kampu i boksu. Kada smo stigli, raspodijelili smo se na dva dijela tima: jedan je dio opremao boks na stazi, a drugi dio je podizao šatore pripremajući kamp za naredna četiri dana. U međuvremenu smo izvršili i samu registraciju članova i vozača koji su imali svoj prvi brifing (obavezan sastanak za vozače).

Drugi dan bio je rezerviran za tehničke preglede bolida i ocjenjivanje statičkih disciplina. Tehnički pregled smo prošli bez većih problema, uz gužvu zbog velikog broja prijavljenih timova. S tehničkog pregleda vratili su nas u boks zbog specifičnih pravila potrebnih izmjena, ne bi li suci vidjeli kako se tim adaptira u novonastaloj situaciji. Pošto smo na natjecanje poveli 15 članova tima, nekolicina je uvijek bila u kampu brinući se da članovi na stazi imaju vodu, hranu i sve potrepštine koje su bile u kampu s obzirom da se, nakon jutarnjeg odlaska iz kampa, nije dozvoljeno vraćati. Prva statička disciplina koju su nam ocjenjivali je bio Cost Report, odnosno Prikaz ekonomičnosti bolida. Druga statička disciplina je bila Business plan, odnosno prezentacija u kojoj se mora opisati put bolida od njegove proizvodnje pa do prodaje na tržištu.

Sljedeće jutro, nakon ranog ustajanja, požurili smo u red za ponovni tehnički pregled nakon kojega nastavljamo na Tilt Test (test nagiba), gdje se bolid naginje na rampi pod kutovima od 45° i 60°. Tilt test smo uspješno završili pa smo krenuli prema boksu jer nas je očekivao Design Report. Design Report je statička disciplina koja nosi najviše bodova. Kod te discipline svi članovi, konstruktori koji su radili na bolidu, moraju inženjerski obrazložiti svoja rješenja i potkrijepiti ih simulacijama, slikama i eksperimentalnim dijelovima. Nakon 45 minuta razgovora bili smo

RITEH RACING TEAM SEASON 2017

The season 2017 was the most successful season in ten years of the team existence. We competed in the most prestigious, largest and most famous educational automotive competition in the world, called Formula Student. This year's results in FS Italy and FS Baltic Open Bohemia in the Czech Republic have made it clear that we are among the best teams in acceleration and endurance races, which are the most demanding for drivers and vehicles.

ITALY 2017 RICCARDOPALETTI CIRCUIT IN VARANO DE' MELEGARI

The first day of the competition, 19 July, was the day of gathering and registering team members who were attending and the day also consisted of packing and storing the vehicle and necessities in the van and the early arrival in the camp to take the best possible position in the camp and pit box. We arrived around noon at the camp and divided our team into two parts: one part of the team equipped the pit box on the track, while the other part set the tents, arranged and prepared the camp for the next 4 days. In the meantime, we performed the registration of members and drivers who had their first briefing (a mandatory meeting for drivers).

The next day was organized and reserved for technical inspections of the vehicle and evaluation of static disciplines. We passed the technical inspection without major problems, but we waited for a long time because of the large number of teams in the competition. During the technical inspection we were sent back to the pit box, because of the specific rules each competition has, to make the necessary changes because of these rules, but also to make the judges see how the team adapts to the new situation. Since we brought 15 members of the team to the competition, a few of them were always in the camp taking care that the members on the track had water, food and all the necessities that were in the camp because once they left the camp in the morning there was no return from the pit box until the closing. The first static discipline we were assessed on was the Cost Report, i.e. the Demonstration of the economy of the vehicle. The second static discipline was the Business Plan, i.e. a presentation in which the path of the vehicle has to be described, from its production until the sale on the market.

The next morning we got up early and rushed to get in line for an anew technical inspection

gotovi te smo se mogli posvetiti Noise Testu (testu glasnoće).

Ujutro smo opet smo bili prvi na stazi. Odmah nakon testa kočenja slijedile su discipline ubrzanja i Autocrossa. Nakon kratke šetnje naših vozača po stazi za Autocross, došlo je vrijeme da RRC4 napokon pokaže svoju konkurentnost velikanima Formula Student scene. Odvozili smo solidno vrijeme i plasirali se 13. s vremenom od 60,849 sekunde, samo 4 sekunde sporije od prvoplasiranog tima.

Zadnji dan natjecanja, ujedno i peti dan, sa sobom nosi Endurance utrku, odnosno utrku izdržljivosti. RRC4 se okušao u izazovu staze Riccardo Palleti. U samoj utrci oba vozača voze 13 krugova, odnosno 11 km sa zamjenom koja po pravilima traje 3 minute. Prvi je na stazu krenuo David Mihoci, bez grešaka odvozivši svojih 13 krugova. Nakon njega na red je došao Matija Momčilović, spustivši vrijeme boreći se s malo većim prometom. Nakon 36 krugova, RRC4 je završio Endurance s tada 3. najbržim vremenom. Iza nas je bilo još 8 konkurentnih bolida. Nakon svih vožnji bili smo šesti, odnosno četvrti u našoj klasi.

Na tom natjecanju ostvarili smo najbolji rezultat u povijesti tima!

Rezultati koje smo ostvarili na FS Italy 2017 su:
4. mjesto - Endurance Klasa 1C
6. mjesto - Endurance Klase 1C i 1E
10. mjesto - ukupno 1C od 91 tima

BALTIC OPEN BOHEMIA 2017

Nakon završetka natjecanja u Italiji i povratka u garažu počeli smo se pripremati za drugo ovosezonsko natjecanje, Baltic Open Bohemia 2017. Natjecanje je trajalo od 8. 8. do 12. 8., održavalo se u češkom gradu Pisek i specifično je po tome što se timovi natječu samo u dinamičkim disciplinama.

8. kolovoza, nakon dužeg pakiranja i priprema, u jutarnjim smo satima krenuli prema Češkoj. Po dolasku postavili smo boks i odlučili prvi otići na tehnički pregled koji je bio istoga dana. Tehnički pregled je bio kao i na svakom natjecanju, uz puno objašnjavanja zašto, kako i koliko, a češki suci zaključili su kako se zaista radi o ''state of the art'' bolidu i jednom od ljepših dizajna auta. Nakon izvrsnog obavljenog tehničkog pregleda ostalo je pokazati im kako imamo ne samo lijep, već i brz bolid. U boksu i na bolidu pripremili smo sve za drugi dan; noć se lagano spuštala pa je

in order to complete it as soon as possible and continue with other inspections and static disciplines. After some time, we got through the technical inspection and continued with the Tilt Test, where the vehicle is tilted to the angels of 45° and 60°. The Tilt Test was successfully completed and we went back to the pit box to prepare for the Design Report. The Design Report is a static discipline which carries the most points. In this discipline all the members, constructors, who have worked on the vehicle must justify their solutions and support them with simulations, pictures and experimental parts. After 45 minutes of conversation, we were finished and we could devote ourselves to the Noise Test (loudness test). Everything looked great.

The next morning we were again the first ones on the track. Immediately after the brake test, the disciplines acceleration and Autocross followed, so we decided to direct all our forces to that.
After a short walk of our drivers on the Autocross route, it was time for RRC4 to finally show that it was a dangerous competitor in the competition. We drove a solid time and placed ourselves on the 13th position with a time of 60,849 seconds, which was only 4 seconds slower than the first team.

The last day of the competition, at the same time the fifth day, brings with it the Endurance race. After the lunch break, it was RRC4's turn to try the challenge on the Riccardo Palleti track. In the race, both drivers drive 13 laps, i.e. 11km with a switchover that lasts 3 minutes. The first driver on the track was David Mihoci who drove his 13 laps without mistakes, and after him was Matija Momčilović's turn, who got a better time and fought with a little bit more traffic. After 36 laps, RRC4 finished the Endurance race with the 3rd fastest time. Behind us were eight competitive teams. After all the races we were the sixth, i.e. fourth in our class.

In this competition we achieved the best result in the history of the team!

The results we achieved at FS Italy 2017 are:
4th place - Endurance Class 1C
6th place - Endurance Class 1C & 1E
10th place - Overall 1C of 91 teams

BALTIC OPEN BOHEMIA 2017

After finishing the competition in Italy and returning to the garage we started to prepare for the second competition of this season, the Baltic Open Bohemia 2017. The competition lasted from August 8 - 12 in the Czech town Pisek and

došlo i vrijeme za prijavu u domu, 15 minuta udaljenom od staze.

Drugi dan smo započeli laganim doručkom, uz veliko nestrpljenje pokazati na stazi ne samo snagu našeg bolida već i znanje naših vozača. Na stazi je svatko preuzeo svoj dio odgovornosti, uslijedio je prvi brifing, poslije čega i prva disciplina, Akceleracija. Bolid je bio u odličnom stanju i sve je išlo po planu. Ciljali smo na sam vrh što smo i postigli, napravili smo najbolje vrijeme na akceleraciji u klasi 1C. Akceleracija je trajala do 12 sati, mnogi su se trudili no nitko nije uspio dostići naše vrijeme. Nakon prve discipline i pauze za ručak uslijedila je druga disciplina, Hill Climb. Staza je specifična jer jedan njen dio čini uzbrdica, čime je i ova disciplina zanimljivija. Bolid i vozač odradili su vrhunski posao osvojivši visoko treće mjesto u Hill Climbu.

Treći dan su nas čekala dva Autocrossa. Jedan je bio na stazi koju su pripremili organizatori, a drugi na stazi koju su timovi imali priliku složiti po svojim željama. Točnije, svaki je tim dobio jednu dionicu na stazi složivši ju na svoj način.

Vremenska prognoza najavila je obilnu kišu s pljuskovima a utrka se još nije otkazivala, unatoč nemilosrdnom pljusku. Došao je red i na nas; guramo formulu na startnu liniju gdje se bolid zagrijava. Kiša topi sve boksove, prilaze i stazu pa je i utrka zbog poplavljenog stanja staze pauzirana do daljnjeg. Kraj je izgledao daleko, ali smo bili nabrijani za posljednju disciplinu. Za vrijeme naše vožnje kiša je, srećom, stala, i vrijeme je bilo na našoj strani. Glavni vozači, Momčilović i Mihoci, utrku izdržljivosti su odvozili fascinantno

it is very specific because the teams compete only in dynamic disciplines.

On August 8, after a long preparation, we started the trip to the Czech Republic early in the morning. Upon our arrival in the afternoon we started to set the pit box and decided to go to the technical inspection first. The technical inspection was on the same day we arrived, along with the registration of team members. In this way we wanted to save a lot of time and make it easier for the next day. We were the first at the technical inspection, which was like in every other competition, with a lot of explanations why, how and how much, and the conclusion of the Czech judges was that our vehicle is a “state of art” and that we have one of the most beautiful car designs. After an excellent accomplished technical inspection, there is only one thing left, to show them that we do not only have a nice car but a fast one too. We prepared everything in pit box and on the vehicle for the next day, and it was time to check-in into our headquarters, 15 minutes away from the track.

We started the next day with a light breakfast and great impatience to get to the track as soon as possible and to show not only the strength of our vehicle but also the knowledge of our drivers. With the arrival at the track at 9 o'clock, everyone took their responsibility and the first briefing followed and the first discipline, Acceleration. The vehicle was in great shape and everything went as planned. We were aiming at the very top what we achieved, and we made the best time in acceleration for the Class 1C. The acceleration lasted until 12 o'clock, a lot of the

i na kraju ostvarili treće ukupno vrijeme.

Rezultati koje smo postigli na natjecanju u Češkoj, Baltic Open Bohemia 2017, su:
1. mjesto – Utrka ubrzanja
3. mjesto – Hill Climb
3. mjesto – Autocross utrka
3. mjesto – Utrka izdržljivosti

Ukupan ostvaren poredak, zahvaljujući skupljenim bodovima na gore navedenim disciplinama, jest:
3. mjesto u klasi 1C

FORMULA STUDENT ALPE ADRIA 2017.
Natjecanje je održano 22. i 23. rujna na kartodromu Bura, u Šmriki, nedaleko od Rijeke. Potaknuti vlastitim uspjesima u ovogodišnjoj sezoni organizirali smo ovaj važan događaj u suradnji s Tehničkim fakultetom Sveučilišta u Rijeci, Sveučilištem u Rijeci, Kartodromom Bura i tvrtkom Elcon Gereatebau.

Cilj natjecanja bila je razmjena znanja i iskustava, stjecanje novih i učvršćivanje postojećih prijateljstava te promocija Sveučilišta u Rijeci, grada Rijeke, kao i prikazati Hrvatsku zemljom ambicioznih mladih ljudi. Za svoju misiju postavili smo izgradnju snažnije veze i zajedništva Formula Student timova iz Hrvatske i susjednih zemalja u interesu jačeg globalnog utjecaja. Ovim događajem htjeli smo predstaviti mlade ljude kao pokretače jedne priče koja će, nadamo se, prosperirati i kroz godine se razvijati u nešto više. Kao organizatori događaja okrunjujemo ovu, već sad uspješnu sezonu, nečim novim i zanimljivim. Događaji, kao što je i ovaj, odskočna su daska za mlade i perspektivne studente ka samom vrhu industrije svjetskog tržišta. To je ujedno i idealna prilika tvrtkama, koje su u potrazi za kompetentnim studentima i magistrima s iskustvom, da upoznaju upravo te studente koji stoje uz bok vrsnih inženjera iz svijeta i diskutiraju o rješenjima s vrhom autoindustrije. Sam događaj pruža jednu nesvakidašnju priliku, u kojoj naši pratitelji i sponzori mogu uživo vidjeti raznolikost Formula Student svijeta i naše prijatelje iz regije. Koncepcija događaja je slična službenom Formula Student natjecanju s jednom razlikom: statičke discipline su zanemarene, a naglasak je stavljen na dinamičke discipline, tj. vožnju bolida do njihovih i vozačevih granica.
Staza na kojoj se odvijalo natjecanje u dinamičkim disciplinama dužine je 860 m, a širine 5-8 m. Sastoji se od 8 desnih i 6 lijevih zavoja, smjerom vožnje u smjeru kazaljke na satu zbog razlike u visini staze.

competitors tried, but no one managed to reach our time. After the first discipline and lunch break the second discipline, Hill Climb, followed.

The second discipline was specific because a part of the track was an uphill, so the discipline became even more interesting. The vehicle and the driver did their best and won the third place in Hill Climb.

The third day we went later to the track. Two Autocross disciplines were waiting for us. One was on the track prepared by the organizers, and the other one was prepared by the teams according to their wishes. More precisely, each team got one part of the track and designed it in its own way. With the arrival of results for the day, we were satisfied.

The weather forecast reported rain with showers, and the race has not been cancelled yet even though the rain was falling relentlessly. It was our turn, we push the vehicle to the start line where it is warming up. The rain drips all over the pit box, accesses and the track, so the race is stopped because of the flooded condition of the track. The end looked far, but we were excited for the last discipline. Luckily, there was no rain during our race, everything was on our side. The main drivers, Momčilović and Mihoci, drove the race of endurance fascinatingly and achieved the third overall time.

The results we achieved at the competition in the Czech Republic, Baltic Open Bohemia 2017, are:
1st place - Acceleration race
3rd place – Hill Climb
3rd place - Autocross race
3rd place - Endurance Race

The total position we have achieved thanks to the points in the above mentioned disciplines is:
3rd place – overall Class 1C

FORMULA STUDENT ALPE ADRIA 2017.
The competition was held on September 22 and 23 at the Bura track, in Šmrika, near the city of Rijeka. Encouraged by our own successes in this year's season and in cooperation with the Faculty of Engineering of the University of Rijeka, the University of Rijeka, the track Bura and the company Elcon Gereatebau, we organized this important event.

The aim of the event was to exchange knowledge, experiences, acquire new and strengthen

7.5 riteh racing team

Sudionici FS Alpe Adria 2017 su bili FSB Racing Team (Zagreb), Road Arrow (Beograd), FESB Racing Team i FESB Moto Team (Split), Superior Engineering (Ljubljana) te Grand Prix Engineering (Maribor). Pobijedili smo mi, a drugo i treće mjesto zauzeli su Road Arrow i Superior Engineering.

RB	SB	TEAM	Nac	UBRZANJE	AUTOCROSS	ENDURANCE	UKUPNO
1	51	RITEH RACING TEAM	HR	100.00	125.00	275.00	500.00
2	35	ROAD ARROW	SRB	86.22	93.58	274.76	310.96
3	66	SUPERIOR ENGINEERING	SVN	93.09	115.79	195.79	404.67
4	33	FESB RACING TEAM	HR	56.47	80.39	25.00	161.86
5	324	FSB RACING TEAM	HR	46.38	106.19	3.00	139.57
6	22	FESB MOTO STUDENT	HR	15.83	0.00	2.00	17.83
7	235	UNI MARIBOR GRAND PRIX ENGINEERING	SVN	0	0	10	10

Visoka posjećenost ovog događaja laska organizatorima i neizmjerno smo zahvalni svima koji su nas podržali. Među posjetiteljima su se mogla vidjeti mnoga poznata lica, poput gradonačelnika Rijeke Vojka Obersnela, dekanice Tehničkog Fakulteta u Rijeci prof. dr. sc. Jasne Prpić Oršić, mnogih profesora Sveučilišta u Rijeci i drugih.

Hvala vam što ste nam omogućili, ne samo financijske i materijalne resurse i pomoć, već i podršku bez kojih ovakav rezultat ne bi bio moguć. Nadamo se da ste zadovoljni i sretni našim postignutim rezultatima i bilo bi nam neizmjerno drago kada biste i sljedeće sezone bili uz nas. Već smo počeli raditi na novom bolidu koji će biti spreman za 5 mjeseci i nadmašit će trenutni bolid. Nadamo se vašoj pomoći jer zajedno ćemo postići još bolje rezultate!

Lijep pozdrav od Riteh Racing Teama

existing friendships, promote the University of Rijeka, the city of Rijeka and show Croatia as a land of ambitious young people. As our mission, we have set to build a stronger relationship and solidify the fellowship of Formula Student teams from Croatia and neighbouring countries in the interest of a stronger global influence. With this event we wanted to introduce young people as the initiators of a story that will, hopefully, prosper and develop over the years into something more. As the organizer of the event we crown this already successful season with something new and interesting. The events, like this one, are a springboard for young and prospective students to the very top of the world market industry. It is also an ideal opportunity for companies that are looking for competent students and masters with experience to meet those students who compete with engineers from around the world and discuss solutions with the top automotive industry. The event itself provides an unusual opportunity where our companions and sponsors can see the diversity of the Formula Student world and our current friends from the region. The concept of the event is similar to the official Formula Student competition with one distinction, static disciplines are being placed a side while the emphasis is placed on dynamic discipline, i.e. driving the vehicle to its and the drivers limits.

The track where the competition in dynamic disciplines took place, on track Bura, is 860 m long and 5 – 8 m wide. It consists of 8 right and 6 left curves, with the direction of the clockwise movement due to differences in the height of the track.

The participants of FS Alpe Adria 2017 were FSB Racing Team (Zagreb), Road Arrow (Belgrade), FESB Racing Team and FESB Moto Team (Split), Superior Engineering (Ljubljana) and Grand Prix Engineering (Maribor).
We won the contest, while the second and third place was occupied by Road Arrow and Superior Engineering.

We are immensely grateful to all of those who supported us and for the high attendance at the race. Many recognizable faces were seen among the visitors, like for example the mayor of Rijeka, Vojko Obersnel, the dean of the Technical Faculty in Rijeka, Prof. D. Sc. Jasna Prpić and professors from the University of Rijeka and many others.

Thank you for providing us with not only financial and material resources and assistance, but also with the support without such a result would not have been possible. We hope you are happy and content with our achievements and we would be immensely pleased if you would be with us the next season. So, we have already started working on a new vehicle which will be ready in 5 months and which will surpass the current vehicle and we hope for your help and that we will achieve even better results!

Best regards from the Riteh Racing Team

7.6 riteh waterbike team

RITEH Waterbike Team (RWT) osnovala je grupa studenata brodogradnje Tehničkog fakulteta u Rijeci 1999. g., radi sudjelovanja na International Waterbike Regatta (IWR). Prva regata je održana 1980. godine u Hannoveru. Isprva je to bio skup studenata s raznih njemačkih sveučilišta te viših škola koji su svoje druženje nastojali upotpuniti natjecanjem u granama znanosti i tehnologijama koje najbolje poznaju. Time započinju prva natjecanja plovila na nožni pogon. Uključivanjem sveučilišta iz Nizozemske, regata poprima internacionalni karakter pa je 1988. godine održana prva regata izvan granica Njemačke.

Vodocikl (engl. Waterbike)
Plovilo je pokretano isključivo snagom ljudskih mišića dviju osoba. Prema pravilima IWR, vodocikli ne smiju biti duži od šest metara, širina im ne smije biti veća od dužine, gaz ne smije prelaziti 1,5 metara i ne smiju se koristiti elektronička pomagala na pogonu. Pobjednik natjecanja je plovilo koji skupi najmanje negativnih bodova u sedam disciplina:

- sprint 100 m,
- slalom 100 m,
- ubrzanje 10 m,
- naprijed - stop - natrag 50 m,
- maraton (1 h),
- vuča o stup na kojoj se mjeri prosječna vrijednost sile koju može proizvesti brodski vijak na vodociklu u periodu od 30 sekundi,
- utrka iznenađenja (ne boduje se za ukupni poredak, osim u slučaju istog broja bodova)

Na plovilu su moguće korekcije i izmjene dijelova između disciplina. Svi dijelovi korišteni na početku natjecanja fizički moraju ostati na vodociklu do završetka svih disciplina.

Područje rada RWT usko je vezano za tehničku struku (strojarstvo i brodogradnja), ekološki prihvatljive tehnologije i promociju zdravog života studenata. RWT je najstariji studentski tim na Tehničkom fakultetu kroz koji je prošlo više desetaka studenata, danas uspješnih inženjera i uglednih ljudi iz brodograđevne i strojarske struke.

RWT se bavi projektiranjem i izradom vodocikala. To je inovativno i ekološki prihvatljivo plovilo pokretano snagom ljudskih mišića najviše dvoje natjecatelja. Studenti moraju projektirati i izraditi plovilo na fakultetu uz rukovođenje mentora i voditelja tima, počevši od razvitka koncepta vodocikla, preko njegove izrade i naposljetku

RITEH Waterbike Team (RWT) was founded by a group of naval architecture students at the Faculty of Engineering in Rijeka in 1999 to participate in the International Waterbike Regatta (IWR). The first regatta was held in Hannover in 1980. At first, it was a set of students from various German universities and higher schools who sought to complement their companionship with competitions in the fields of science and technology they were best acquainted with. This is where the first competitions of the nautical vessels started from. With the involvement of the Netherlands, the regatta gains an international status, so in 1988, the first regatta was held outside the borders of Germany.

Waterbike
The vessels are driven exclusively by the leg muscular strength of two people. According to the IWR rules, the waterbikes must not be longer than six meters and their width should not be wider than their length, the draught should not exceed 1.5 meters and no electronic aids must be used as their propelling force. The one with the least negative points wins the contest in seven disciplines as follows:

- 100m Sprint,
- 100m Slalom,
- Acceleration (10 m),
- 50m Forward - Stop - Backward,
- Marathon (1 h),
- Bollard Pull Performance is used to measure the mean value of the force that is to be produced by the marine screw of the waterbike for a period of 30 seconds,
- Surprise Race (will not be evaluated and change your overall performance score, except in case of the same number of points)

All parts needed for varios changes are to be corrected and done on board during all races. However, all the parts used at the beginning of the competition have to remain onboard until the end of all disciplines.

The RWT field is closely related to the engineering profession (mechanical engineering and naval architecture), environmentally friendly technologies and the promotion of a healthy student life. RWT is the oldest student team at the Faculty of Engineering where dozens of students have earned their degrees who are nowadays known as successful graduate and post graduate engineers and distinguished people in the field of naval architecture and

samog natjecanja, a sve to uz racionalno korištenje financijskih sredstava te organizaciju cjelokupnog projekta. Ne postoje stroga pravila o izgledu vodocikla, stoga su izvedbe inovativne i ovise o znanju, tehničkim mogućnostima i spremnosti ekipe.

Radeći na projektu vodocikla, studenti praktično primjenjuju teorijska znanja stečena na fakultetu. Kako bi se kvalitetno pristupilo projektu izrade vodocikla, primjenjuju se integralna brodograđevna znanja poput plovnosti i stabiliteta, hidrodinamike i konstrukcije plovila. Rad u timu isključivo je volonterskog karaktera, a sredstva za rad studenti prikupljaju samostalno, traženjem sponzorstava i donacija. Pored toga, studenti se uče vještinama organizacije, financija, marketinga, logistike i timskog rada, važnih pri budućem zapošljavanju.

mechanical engineering.
RWT is involved in designing and manufacturing watercrafts which are innovative and environmentally friendly vessels powered only by the muscular strength of two competitors. Vessels are to be designed and built at the faculty by students but guided by expert mentors and team leaders, the process of which starts from the development of the concept of a water bike, and its creation to the very competition, all being supported by the rational use of financial resources and organization of the entire project. There are no strict requirements for the appearance of water bikes, therefore, the performances are innovative and depend on knowledge, technical capabilities and team's readiness.
By designing the watercraft project, students put into practice their theoretical knowledge

RITEH Waterbike Team u Poljskoj
/ RITEH Waterbike Team in Poland

Kroz povijest su izgrađena četiri vodocikla: Esmeralda, Zvizda, Kajzer i Šijun. Posljednji je ostvario najznačajnije rezultate kroz kratku povijest tima. U nastavku je prikazan razvoj i napredak vodocikala kroz povijest.

Vodocikl - Šijun (tornado, pijavica)
Godina gradnje: 2013.
Trupovi: karbon – aramid, staklena vlakna.
Konstrukcija: aluminijska konstrukcija s nosačima.
Pogon i propulzija: azipodni propulzor (pedale i lanci za bicikle - prijenos na poluosovine, ulaz u multiplikator - mehanički prijenosnik - kardan.
Duljina: 5,10 m / Širina: 2,10 m / Masa: 35 kg / Gaz: 0,12 m.
Maksimalna brzina: 9 čvorova.
Najbolji plasman : 2016. IWR Vienna, 4. mjesto.

Vodocikl - Kajzer (car, imperator)
Godina gradnje: 2010.
Trupovi: dvotrupac - karbonska vlakna, drvo, poliuretanska pjena
Konstrukcija: aluminijska konstrukcija s uzdužnim i poprečnim nosačima.
Pogon i propulzija: pedale i lanci za bicikle – prijenos na poluosovine, multiplikator - mehanički prijenosnik, vratilo s osloncem u skroku pod kutem od 23 stupnjeva – brodski vijak
Duljina: 5,20 m / Širina: 1,85 m / Masa: 75 kg / Gaz: 0,1 m.
Brzina: 6 čvorova.
Najbolji plasman: 2013. IWR Duisburg, 12. mjesto.

Vodocikl – Zvizda
Godina gradnje: 2009.
Trupovi: dvotrupac – stakloplastika (preinaka kajaka jednosjeda).
Konstrukcija: aluminijska konstrukcija s poprečnim nosačima.
Pogon: pedale i lanci za bicikle – prijenos na poluosovine, multiplikator - mehanički prijenosnik, kutni prijenosnik – brodski vijak.
Duljina: 5,10 m / Širina: 1,60 m / Masa: 83 kg / Gaz: 0,12 m Brzina: 5 čvorova.
Najbolji plasman: 2010. IWR Szczecin, 11. mjesto.

Vodocikl – Esmeralda
Godina gradnje: 1998.
Trupovi: jednotrupac – stakloplastika.
Konstrukcija: stakloplastika .
Pogon: pedale i lanci za bicikl, multiplikator - vratilo pod kutem spojeno na skrok – brodski vijak.
Duljina: 4,9 m / Širina: 1,2 m / Masa: 90 kg / Gaz: 0,2 m
Brzina: 6 čvorova.

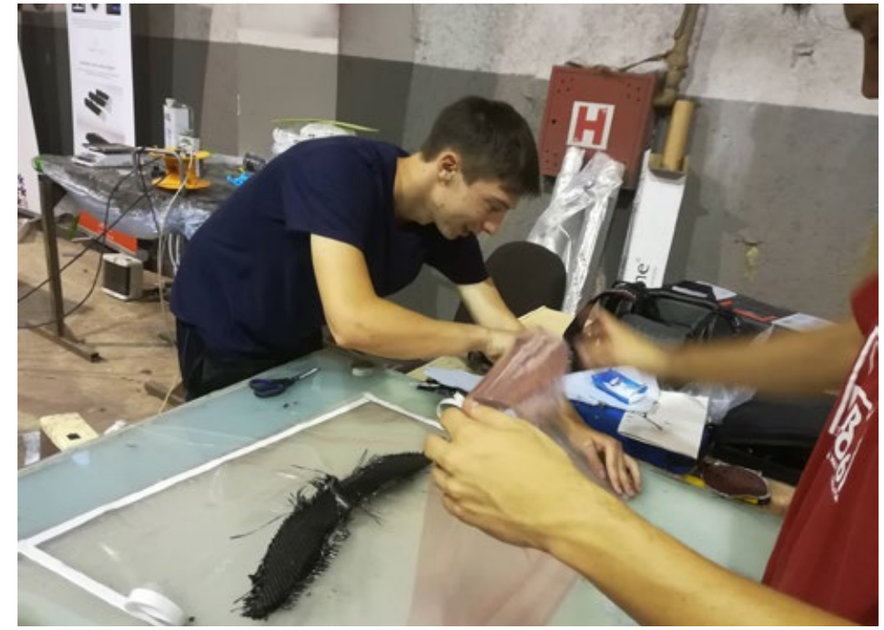
acquired at the faculty. In order to have a qualitative approach to the waterbike project, integral parts of shipbuilding and naval architectural knowledge are employed, such as seaworthiness, stability, hydrodynamics and the construction of the vessel. Teamworks are solely undertaken on a volunteer basis, and funds for the work are raised by students independently, by seeking sponsorships and donations. In addition, students are taught the skills of organization, finance, marketing, logistics and teamwork, which are important for future employment.

So far, four waterbikes have been built: Esmeralda, Zvizda, Kajzer and Šijun. It was the latest vessel which achieved the most significant results in a brief period of time of teamworking. Below is the development and progression of waterbikes through history.

Waterbike - Šijun (tornado, leech)
The year of construction: 2013.
Hulls: Carbon Aramid, Glass Fiber.
Construction: Aluminum structure with support girders.
Drive and propulsion: azymuth propulsion (pedals and chains for bicycles – shaft transmission, input to multiplier - mechanical gearbox - cardan.
Length: 5.10 m / Width: 2.10 m / Weight: 35 kg / Draught: 0.12 m.
Maximum speed: 9 knots.
Best Placement: 2016. IWR Vienna, 4th place.

Waterbike - Kaiser (car, imperator)
The year of construction: 2010.
Hulls: two hulled - carbon fiber plastic, wood, polyurethane foam.
Construction: aluminum construction with longitudinal and transverse girders.
Driveshaft angle and propulsion: pedals and bicycle chains – semi – shaft transmission , multiplier - mechanical gearbox, a 23 degree strut shaft - boat screw.
Length: 5.20 m / Width: 1.85 m / Weight: 75 kg / Draught: 0.1 m.
Speed: 6 knots.
Best Placement: 2013. IWR Duisburg, 12th place.

Waterbike – Zvizda
The year of construction: 2009.
Hulls: two hulled - fiberglass (a modification of the single seat kayak).
Construction: aluminum construction with transverse support girders.
Drive: pedals and bicycle chains, semi – shaft transmission, multiplier - mechanical gearbox, angle gear - screw.



Laminiranje seta brodskih propulzora (vijaka)
/ Marine Propulsion (Screw) Set Lamination

Testiranje vijaka (Lokvarsko jezero)
/ Screw Testing (Lokve Lake)

7.6 riteh waterbike team

Ovogodišnja regata, 38. po redu, održana je u Ilawi od 25. do 27. svibnja. U Poljskoj se natjecalo preko 270 članova posada uglednih europskih sveučilišta sa 36 različitih vodocikala. RWT se, zbog tehničkih problema, morao zadovoljiti s osvojenim 23. mjestom od 36 plovila u ukupnom poretku.

- sprint 100 m - 27. mjesto
- slalom 100 m - 25. mjesto
- ubrzanje 10 m – 22. mjesto
- naprijed – stop - natrag 50 m - 20. mjesto
- maraton - 19. mjesto
- vuča o stup - 20. mjesto
- utrka iznenađenja - nismo nastupili zbog tehničkih problema

Završetkom regate tim je krenuo s projektiranjem novoga plovila. Uz projektiranje i pripremu projekta izrade jednotrupca, izrađen je set od 6 vijaka tehnologijom 3D printanja, te naknadnim presvlačenjem karbonom. Svaki vijak je prilagođen vožnji pojedine discipline.
Ove godine u tim je bilo aktivno uključeno 10 studenata Tehničkog fakulteta sa svih studijskih smjerova (brodogradnja 6, strojarstvo 3, elektrotehnika 1). RITEH Waterbike Team činili su Luka Bertetić, Darin Majnarić, Ivor Majnarić, Helena Mičetić, Davor Penava, Abdulah Suljić, Mihovil Tomašić, Petar Topljak, Filip Teremski i Vjekoslav Žiković. Radili su pod mentorstvom prof. dr. sc. Roka Dejhalle.

Medijska vidljivost projekta:

Službena web stranica:
http://ritehwaterbike.uniri.hr/
Facebook stranice:
facebook.com/RitehWaterbikeTeam/
facebook.com/studirajbrodogradnjuurijeci/
Twitter: twitter.com/ritehwaterbike
Youtube kanal: youtube.com/channel/
UCf2jkY0kpoakgUogCIjvH4A

Length: 5.10 m / Width: 1.60 m / Weight: 83 kg / Draught: 0.12 m. Speed: 5 knots.
Best Placement: 2010 IWR Szczecin, 11th Place.

Waterbike - Esmeralda
The year of construction: 1998.
Hulls: monohull - fiberglass.
Construction: fiberglass.
Drive: pedals and chains for bicycles, multiplier – right angle strut shaft - screw.
Length: 4,9 m / Width: 1,2 m / Weight: 90 kg / Draughtt: 0,2 m Speed: 6 knots.

The 38th annual regatta was held in Ilawi from 25 to 27 May. Over 270 members of eminent European universities competed with their 36 various waterbikes in Poland. Due to technical problems, RWT had to be pleased with the 23rd place out of 36 vessels in overall placement by rank.

- 100m Sprint - 27th place,
- 100m Slalom - 25th place,
- Acceleration (10 m) – 22nd place
- 50m Forward - Stop – Backward - 20th place
- Marathon - 19th place
- Bollard Pull Performance - 20th place
- the race of surprises - we did not participate due to technical problems

After finishing 38th regatta, the team started designing a new vessel. Apart from designing and projecting the monohull , a set of 6 screws was manufactured using 3D printing technology followed by carbon coating. Each screw is adapted to a particular discipline race.
10 students of the Faculty of Engineering from all study courses (6 from naval architecture, 3 from mechanical engineering , 1 from electrical engineering) have been actively involved in this year's team. RITEH Waterbike Team consists of Luka Bertetić, Darin Majnarić, Ivor Majnarić, Helena Mičetić, Davor Penava, Abdulah Suljić, Mihovil Tomašić, Petar Topljak, Filip Teremski and Vjekoslav Žiković. They have worked under the mentorship of Prof. Roko Dejhalla, D. Sc..

Media Visibility of the Project:

Official website:
http://ritehwaterbike.uniri.hr/
Facebook pages:
facebook.com/RitehWaterbikeTeam/
facebook.com/studirajbrodogradnjuurijeci/
Twitter: twitter.com/ritehwaterbike
Youtube kanal: youtube.com/channel/
UCf2jkY0kpoakgUogCIjvH4A

IWR Ilawa Poljska
/ IWR Ilawa Poland

RWT priprema za utrku akceleracije
/ RWT Preparing for the acceleration race

7.7 adria hydrofoil team

Adria Hydrofoil Team (AHT) čine skupina studenata Tehničkog i Pomorskog fakulteta u Rijeci. Projekt je pokrenut u listopadu 2015. godine na inicijativu dijela studenata iz RITEH Waterbike tima. Primarni cilj tima je projektiranje, gradnja i istraživanje hidrokrilnih i inovativnih formi plovila kao i razvitak novih tehnologija prijevoza putnika i dobara za potrebe međunarodnog natjecanja inovacija “HydroContest”.

Prema koncepciji natjecanja, stavljen je naglasak na inovativnost pri razvoju novih tehnologija u brodogradnji i pomorstvu, poput primjene električne propulzije i hidrokrilne tehnologije, a samim time u središtu je i zaštita okoliša smanjenjem emisija CO2 te ostalih stakleničkih plinova. Natjecanje se izvodi u tri discipline od kojih svaka predstavlja potencijalni način usavršavanja budućeg prijevoza: prijevoz lakog i teškog tereta koji simuliraju prijevoz putnika i dobara te jednosatna utrka izdržljivosti čime se provjerava projektna brzina i doplov s obzirom na ograničeni kapacitet baterije. Prema pravilima natjecanja, plovilo mora biti pogonjeno električnom propulzijom i upravljivo pomoću radio prijemnika -predajnika, s postavljenim dimenzijskim ograničenjem 2,5mx2,5mx2m. AHT je od svog osnutka do danas uspješno sagradio dva takva plovila koja su sudjelovala na međunarodnim natjecanjima.

Sudjelovanjem u ovom projektu studenti stječu prva iskustva u struci jer prolaze sve faze: od osmišljanja i projektiranja do konačne realizacije projekta. Rad na ovom projektu omogućuje studentima stjecanje konkretnih znanja i vještina na područjima tehničkih i ekonomskih znanosti kao i primjenu teorijskih znanja stečenih na fakultetu. Za potrebe ovogodišnjeg natjecanja održanog u francuskom St. Tropezu izgrađeno je novo hidrokrilno plovilo “IHC”, a na prošlogodišnjem su plovilu izvršene određene modifikacije i dorade kako bi plovilo bilo pogodno za sudjelovanje u svim disciplinama natjecanja. Prezentacija novog plovila “IHC” popraćena je velikom podrškom organizatora, ponajprije zbog svojeg dizajna i forme, s kojima je znatno odstupalo od ostalih plovila.

Na natjecanju u rujnu 2017. prijavljena su 23 sveučilišta iz cijelog svijeta sa 45 plovila. Adria Hydrofoil je sa plovilom “AITAC” u ukupnom poretku zauzeo 8. mjesto u kategoriji prijevoza teškog i 9. mjesto u prijevozu lakog tereta, dok je u najzahtijevnijoj kategoriji, utrci izdržljivosti, zauzeo 7. mjesto. Jedini smo tim koji je uspio napraviti plovilo za sve tri discipline.

The Adria Hydrofoil Team (AHT) is a team of students of the Faculty of Engineering and Maritime Faculty in Rijeka. The project was launched in October 2015 on the initiative of some students from the RITEH Waterbike Team. The primary objective of the team is to project, build and research hydrofoil and innovative forms of vessels as well as the development of new passenger and goods transport technologies for the needs of the international competition in innovation "HydroContest".

According to the concept of the competition, the emphasis is on innovation in the development of new technologies in shipbuilding and maritime affairs, such as the application of electric propulsion and hydrofoil technology, as well as environmental protection by reducing CO2 emissions and other greenhouse gases. The competition is performed in three disciplines, each of which represents a potential way of improving future transportation: the transportation of light and heavy load that simulates passenger and goods transport, and one-hour endurance race, which checks the project speed and streaming due to the limited battery capacity. According to the rules of the competition, the vessel must be driven by electric propulsion and navigated by a radio receiver - transmitter, with the dimension limitation of 2.5m x 2.5m x 2m. Since its beginnings, AHT has successfully built two vessels that have participated in international competitions. By participating in this project, students gain their first experience in the profession as they pass all stages: from designing and projecting to the final realisation of the project. Working on this project enables students to acquire specific knowledge and skills in the areas of technical and economic sciences as well as the application of theoretical knowledge acquired at the faculty.

For this year's competition held in St. Tropez, a new hydrofoil vessel “IHC” was built, and some modifications and refinements were made on the last year's vessel to make it suitable for the participation in all competition disciplines. The presentation of the new vessel "IHC" was accompanied by a great support from the organizers, primarily because of its design and form, with which it significantly deviated from other vessels. At the competition in September 2017, 23 universities from all over the world with 45 vessels were registered. With its “AITAC” vessel, Adria Hydrofoil took the 8th place in the category transportation of heavy loads and the 9th place in the category transportation of light loads, while

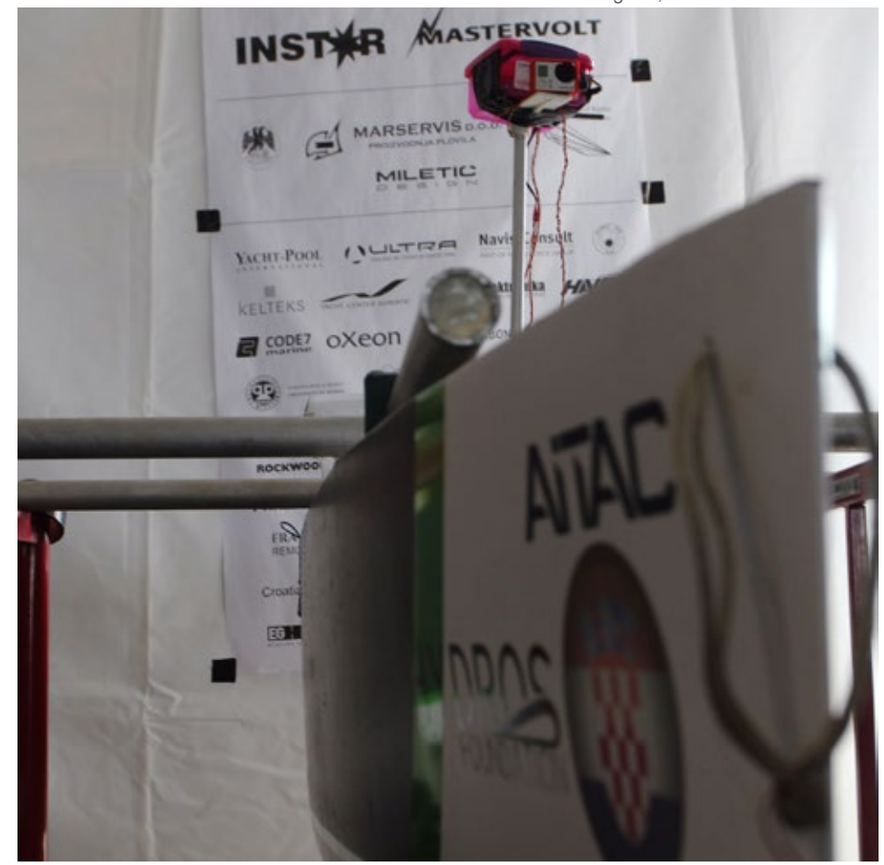
Izvrstan rad Adria Hydrofoil tima i ove godine su prepoznali i podržali Tehnički fakultet Sveučilišta u Rijeci, Studentski zbor Sveučilišta u Rijeci i mnogobrojni sponzori poput IHC Engineering Croatia, AITAC-a, Instar proizvodnja i Mastervolta, bez kojih se projekt ne bi mogao realizirati. Prostor za izradu novog plovila ustupila nam je riječka razvojna agencija - PORIN.

Adria Hydrofoil Team i u sljedećoj akademskoj godini nastavlja s radom kojega možete pratiti na službenoj stranici tima (http://adriahydrofoil.uniri.hr) ili društvenim mrežama poput Facebooka i Instagrama itd.

in the most demanding category, the endurance race, it took the 7th place. We are the only team that has managed to make a vessel for all three disciplines.

The excellent work of the Adria Hydrofoil team was again this year recognized and supported by the Faculty of Engineering of the University of Rijeka, the student committee of the University of Rijeka and numerous sponsors such as IHC Engineering Croatia, AITAC, Instar Production and Mastervolt, without whom the project could not be realized. The space for the construction of the new vessel was handed to us by the Rijeka Development Agency - PORIN.

The Adria Hydrofoil Team will continue with its work in the next academic year which you can follow on the team's official website (http://adriahydrofoil.uniri.hr) or social networks such as Facebook and Instagram, etc.



7.7 adria hydrofoil team

TAROT

7.8 riteh drone team

Riteh Drone Team je studentski projekt koji djeluje pod mentorstvom izv. prof. Kristijana Lenca i asistenta Diega Sušnja te već drugu godinu zaredom radi na ostvarenju projekata vezanih za bespilotne letjelice. Riteh Drone Team osnovali su krajem lipnja 2016. godine tri studenta: Domagoj Poljančić, Gordan Nekić i Franko Hržić.

Rad Riteh Drone Teama fokusira se na istraživanje i razvoj tehnologija vezanih za procesiranje i prikupljanje podataka pomoću bespilotnih letjelica, razna snimanja te praćenje trenutnih zakonskih regulativa vezanih za bespilotne letjelice u Hrvatskoj. Kako je ovaj tim još relativno nov i u začecima, kroz ovu smo se godinu posvetili ponajviše snimanju i suradnji s ostalim timovima na fakultetu te proučavanju zakonskih akata i normi.

Posebna suradnja ostvarena je s Riteh Racing timom za koji je snimljeno dosta videosadržaja u svrhu promocije njihovog rada i zajedničke suradnje timova na Fakultetu. U suradnji s ostalim zavodima na Fakultetu, uspješno smo pomogli u realizaciji nabave bespilotne letjelice, a svoju smo letačku opremu obogatili za još jedan dron, DJI Inspire, s mnogo dodatne opreme.

Kako bi ostali u toku s najnovijim zbivanjima, tehnologijama i zakonskim regulativama, neki od naših članova posjetili su „Drone Fest“, održan sredinom ožujka u Zagrebu. Sve prikupljene informacije, posebice o zakonskim regulativama, bile su vrlo korisne za rad samog tima gdje su dobivene smjernice što se može očekivati u budućnosti bespilotnih letjelica.

Trenutno se radi na nekoliko studentskih projekata i regrutiranju novih članova te realizaciji i sakupljanju svih potrebnih dozvola kako bi tim i dalje mogao bezbrižno funkcionirati i raditi.

Riteh Drone Team is a student project that works under the mentorship of Assoc. Prof. Kristijan Lenac and Assistant Diego Sušanj, and for the second year in a row it is working on the realization of projects related to unmanned aerial vehicles. Riteh Drone Team was founded by three students at the end of June 2016: Domagoj Poljančić, Gordan Nekić and Franko Hržić

Riteh Drone Team's work focuses on the research and development of technologies related to processing and collecting data using unmanned aerial vehicles, various recordings and monitoring current legal regulations related to unmanned aerial vehicles in Croatia. As this team is still relatively new and in its beginnings, through this year we dedicated ourselves to mainly record and collaborate with other teams from the faculty and to study legal acts and norms.

A special co-operation was achieved with the Riteh Racing team for which a lot of video content was recorded with the purpose of promoting their work and team collaboration at the Faculty. In cooperation with other departments at the Faculty, we have successfully assisted in the realization of the purchase of an unmanned aerial vehicle and our flight equipment was enriched by another drone, DJI Inspire, with many accessories.

To keep up with the latest happenings, technologies and legal regulations, some of our members visited the Drone Fest, held in the middle of March in Zagreb. All gathered information, especially about legal regulations, was very useful for the work of the team itself, where guidelines were given about what to expect in the future of unmanned aerial vehicles.

Currently we are working on several student projects, recruitment of new members and realization and compilation of all required permits so that the team can function and work successfully.

7.9 akademski sport - uspjesi sportaša
academic sport - achievements of athletes

Tehnički fakultet je tijekom akademske godine 2016./2017. nastupao u ukupno 13 sportova na Sveučilištu i državnim natjecanjima, u muškoj i ženskoj konkurenciji. U nastavku su izdvojeni najznačajniji uspjesi.

2. mjesto u ukupnom poretku UniSportRI lige 2016./2017.
Tehnički fakultet

Najbolji muški kolektiv UniSportRI lige 2016./2017.
Tehnički fakultet

2. najbolji ženski kolektiv UniSportRI lige 2016./2017.
Tehnički fakultet

Najbolji sportaš UniSportRI lige 2016./2017.
Daniel Ivaničić

Najbolji voditelj UniSportRI lige 2016./2017.
Ljubomir Pozder

UniSport HR
Unisport Finals (Biograd na moru)
Erika Fafanđel, Ana Tomas
1. mjesto (ODBOJKA Ž)

Unisport Finals (Biograd na moru)
Tin Krstić, Paolo Ivanov, Ivan Kučan
2. mjesto (KOŠARKA 3V3 M)
(IZBORNIK: Luka Protić)

Unisport Finals (Biograd na moru)
Noa Poklepović, Anton Vidiović, Dinko Đurđević
2. mjesto (BADMINTON M)

Unisport Finals (Biograd na moru)
Dominik Salma, Luka Šarčević
3. mjesto (STOLNI TENIS M)

Unisport Finals (Biograd na moru)
Kristian Smiljanić, Karlo Čule, Luka Babić, Krešimir Franjić, Dario Čolić, Ivan Simčić
3. mjesto (ODBOJKA M)

Unisport Finals (Biograd na moru)
Romano Šćulac, Marin Sorić, Stjepan Šćulac, Mateo Poniš
3. mjesto (RUKOMET M)

Unisport Finals (Biograd na moru)
Ana Paškvan
3. mjesto (TENIS Ž)
(IZBORNIK: Ljubomir Pozder)