100 Years

UNIVERSITY OF ZAGREB FACULTY OF CIVIL ENGINEERING

12 Computer Rooms	10 Expert Associates	8 Departments	37 Assistants and Young PhD Reserchers	1841 Bachelors in Civil Engineering
20 Softwares	5 Lecturers and Senior Lecturers	5 Laboratories	10 Postdoctoral Researchers	7708 Civil Engineering Graduates
8800 Library Book Titles	5 Laboratory Technicians	21 Chairs	32 Assistant Professors	1509 Masters in Civil Engineering
28 Library journal Titles	Centre for Research and Development of a Safe and Sustainable Built Environment	36 Administrators	12 Associate Professors	292 Doctors of Science (PhD)
PUBLISHED AND EDITED BY University of Zagreb Faculty of Civil Engineering LAYOUT, TYPESETTING AND DESIGN Modulor PROOFREADING	PRINTED IN ZAGREB, CROATIA BY Tiskara Zelina d.d., 2019 COPIES 1000 ISBN ISBN 978-953-8168-37-6	100 Years	27 Full Professors	560 Masters of Science
Zoran Vulelija A CIP catalogue record for this book is available in the Online Catalogue of the National and University Library in Zagreb as 01041260.	https://doi.org/10.5592/RP/ GF.2019.01 Reproduction or transmission of content of this booklet is allowed only with written permission of the Publisher.		5 Professors Emeriti	42 Specialists in Civil Engineering

Contents

2 ABOUT US

2 In brief

4 Our Vision

6 EDUCATION

- 8 Bachelor Programme Undergraduate
- 10 Master Programme Graduate
- 14 Postgraduate Doctoral Study Programme
- 15 Postgraduate Specialist Study Programme
- 16 Academic Mobility & Exchanges

18 RESEARCH & DEVELOPMENT

- 20 National Projects
- 22 International Projects
- 28 PhD Events
- 29 International Conferences & Workshops
- 30 Journals & Books
- 32 Eminent Associates
- 34 Awards

36 DEPARTMENTS

- 38 Department of Construction Management and Economics
- 40 Department of Engineering Mechanics
- 42 Department of Geotechnics
- 44 Department of Hydroscience and Engineering
- 46 Department of Materials
- 48 Department of Structural Engineering
- 50 Department of Transportation Engineering
- 52 Department of Mathematics
- 53 Independent Chair for Buildings

54 LABORATORIES AND EQUIPMENT

- 57 Geotechnical Laboratory
- 58 Hydrology and Hydraulics Laboratory
- 59 Laboratory for Materials
- 60 Structural Testing Laboratory
- 61 Laboratory for Transportation

62 INDUSTRY & OUTREACH

- 64 Professional Activities & Consultancy
- 68 Professional Associations
- 69 Lifelong Learning
- 70 Alumni Relations
- 71 Student Recruitment & Successes

About Us In brief

The **Faculty of Civil Engineering of the University of Zagreb** is the oldest civil engineering faculty in Croatia. It offers university education at an undergraduate (>750), graduate (>400) and postgraduate (>50 students) levels in all branches of civil engineering. It continually develops and advances higher education, scientific research activities and overall education, and actively participates in the development of the profession and in implementation of new technologies. It has a valid ASIIN international accreditation and, furthermore, it has an extensive experience in the work on research, educational and networking projects such are HORIZON 2020, FP7, FP6, TEMPUS, COST, EUREKA, LIFE, LLP, CIP ECO INNOVATION, CIP-IEE-INTELIGENT ENERGY EUROPE, ERASMUS + and ERASMUS MUNDUS.



University of Zagreb, Faculty of Civil Engineering

 Large auditorium accommodates more than 300 people

Our Vision

- to retain and strengthen the leading position as a civil engineering faculty and scientificresearch centre in the country, covering all branches and disciplines of civil engineering
- to achieve international recognition by developing a culture of exemplary quality higher education and research work by implementing best European and worldwide practices, promoting the mobility of students and researchers, and by becoming a regional centre of excellence in its varied disciplines, as well as a "cooperation bridge" for countries of the European Union and the region
- to retain and strengthen cooperation with business sector in high-expertise areas and on development projects, specialised life-long higher education programmes, and in the development of an alumni network for mutually beneficial support and progress



Library offers more than 8800 titles



⁻ Organizational Structure of the Faculty of Civil Engineering

EDUCATION Bachelor Programme - Undergraduate Master Programme - Graduate Postgraduate Doctoral Study Programme Postgraduate Specialist Study Programme Academic Mobility & Exchanges

Graduation ceremony for Master Programme students in Faculty Auditorium

Bachelor Programme - Undergraduate

ENROLMENT, PROGRAMME AND ACHIEVEMENTS

- · Requirement: all secondary school programmes lasting 4 years, secondary school exit exam
- · Duration and credits: full time study, 3 years, 6 semesters, 180 ECTS credits
- · Academic title: Bachelor (M: baccalaureus / F: baccalaurea) of Civil Engineering
- · Diploma with academic title + supplement certifying the exams, grades and ECTS

LEARNING OUTCOMES

ACQUIRING KNOWLEDGE AND UNDERSTANDING

- ability to recognize and describe engineering issues, interaction between design, construction, marketing, clients' demands and demolition of structures
- understanding impact of civil engineering on the society and environment

APPLYING KNOWLEDGE AND UNDERSTANDING

- application of varied knowledge and expertise acquired in mathematics, science and technology
- ability to prepare and carry out experiments, and analyse and interpret their results
- application of current computer tools to perform calculations and simulations
- · basic structure design capability and dimensioning of medium-sized building structures

MAKING INFORMED JUDGEMENTS AND CHOICES

 critical assessment of arguments, hypotheses, abstract concepts and data for making competent decisions, and finding creative solutions to engineering issues

COMMUNICATING KNOWLEDGE AND UNDERSTANDING, TEAM WORK

- participation in the planning, design, realisation, supervision and maintenance of large-scale construction works and supervision of small-scale construction works
- · exchange of information and ideas with experts and non-experts, adjustment to work environment
- · application of current computer tools to produce documents, presentations and internet pages

CAPACITIES TO CONTINUE LEARNING, ETHICS

- application of acquired knowledge and skills in further professional and academic education
- ability to adapt to changes in technology and work methods in the process of lifelong learning
- ethical attitude to finding solutions to engineering issues



- Schematic view of Bachelor Programme

Master Programme - Graduate

ENROLMENT, PROGRAMME AND ACHIEVEMENTS

- Requirement: completed undergraduate university studies in civil engineering, with additional conditions completed undergraduate university study in related technical sciences or a completed professional study in civil engineering
- · Duration and credits: full time study, 2 years, 4 semesters, 120 ECTS credits
- · Academic title: Master of Civil Engineering (abbrev. mag. ing. aedif.)
- Diploma with academic title + supplement certifying the exams, grades and ECTS

LEARNING OUTCOMES

ACQUIRING KNOWLEDGE AND UNDERSTANDING

- comprehensively understand phenomena and problems in their area of specialisation
- demonstrate a high level of professional knowledge and aptitude in civil engineering

APPLYING KNOWLEDGE AND UNDERSTANDING

- apply knowledge and skills in the planning, design, construction, supervision and maintenance of complex building structures, and in interventions especially with regard to the issues of stability, safety, occupancy, environmental protection, and costs
- apply knowledge and skills obtained during studies in recognizing, formulating and analysing problems and in finding one or more acceptable solutions in their field of specialisation
- adopt an analytical approach to work, based on extensive knowledge of science acquired during studies
- plan, supervise and realize professional, development and research projects

MAKING INFORMED JUDGEMENTS AND CHOICES

- interpret social aspects and social context of construction projects
- manage companies and research institutions and contribute to innovation work
- · develop civil engineering profession taking into account development of other scientific disciplines

COMMUNICATING KNOWLEDGE AND UNDERSTANDING, TEAM WORK

- explain their ideas and projects to associates
- find solutions to technical and personal problems in working environment
- creatively apply knowledge obtained during studies in high-level decision making situations
- work in international settings, taking into account various cultural, linguistic, social and economic influences

CAPACITIES TO CONTINUE LEARNING, ETHICS

- · continuously gain knowledge about innovations and make professional improvement efforts
- accept responsibility for decisions made and be ready to take part in interdisciplinary activities



- Schematic view of Master Programme - Students at field excursions

 European
 Accreditation of Engineering Programmes
 EUIR-ACE®

This is to certify that the engineering degree programme

Bachelor of Science Civil Engineering

provided by University of Zagreb

accredited by ASIIN e.V.

on 28. September 2018

until 30. September 2024

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satisfies the criteria for Bachelor degree programmes specified in the EUR-ACE® Framework Standards for the Accreditation of Engineering Programmes, and therefore for the above period of accreditation is designated as a

EUROPEAN-ACCREDITED ENGINEERING BACHELOR DEGREE PROGRAMME.



The President

Mr. Damien OWENS

amin alexan

Brussels, October 14th 2019

For the European Network for Accreditation of Engineering Education (ENAEE)



The Chairman of the Accreditation Commission Prof. Dr. Kathrin Lehmann

R. Lelunann

Düsseldorf, October 14th 2019

International ASIIN accreditation of the Bachelor degree programme

A graduate of this programme may define him/herself "EUR-ACE® Bachelor/Master" as appropriate.

12

European Accreditation of Engineering Programmes EUR-ACE®

This is to certify that the engineering degree programme

Master of Science Civil Engineering

> provided by University of Zagreb

> > accredited by ASIIN e.V.

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satisfies the criteria for Master degree programmes specified in the EUR-ACE® Framework Standards for the Accreditation of Engineering Programmes, and therefore for the above period of accreditation is designated as a

EUROPEAN-ACCREDITED ENGINEERING MASTER DEGREE PROGRAMME.



For the European Network for Accreditation of Engineering Education (ENAEE)

The President Mr. Damien OWENS

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Brussels, October 14th 2019



For ASIIN

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The Chairman of the Accreditation Commission Prof. Dr. Kathrin Lehmann

R. lelunami

Düsseldorf, October 14th 2019

 International ASIIN accreditation of the Master degree programme

Postgraduate Doctoral Study Programme

PROGRAMME AND ACHIEVEMENTS

- · Outcome: academic title of doctor of science in the field of technical sciences, area civil engineering
- · several areas of research in the field of civil engineering and fundamental technical sciences
- 3 years (full time studies) or 4-year studies involving extended duration of research work (part time studies)

ELIGIBILITY FOR ENROLMENT

- completed graduate university studies, or master's degree in civil engineering or technical sciences that are related to civil engineering
- 60 ECTS credits gained in courses that belong to the field of civil engineering
- proficiency in written and spoken English language
- a minimum average grade of 3.5 (if the average grade is lower, additional recommendations from two lecturers + paper presented at a congress/conference or published in a journal)
- prospective mentor recommendation + general description or working title of a wider area of research to be covered by doctoral thesis

TUITION FEE

- HRK 60,000 (€ 8,000) for full time studies (studies lasting 3 years)
- HRK 80,000 (€ 10,500) for part time studies (4-year studies with an extended duration of research work)



Postgraduate Specialist Study Programme

PROGRAMME AND ACHIEVEMENTS

- Outcome: academic title of specialist in several fields: Numerical and experimental structural analysis;
 Bridges; Fire Engineering; Organization and Management in Civil Engineering; Hydraulics; Structures
- 1-year part time studies

ELIGIBILITY FOR ENROLMENT

- completed graduate university studies with 60 ECTS credits gained in courses that belong to the field
 of civil engineering
- for Fire Engineering and Organization and Management in Civil Engineering: completed graduate university studies with 60 ETCS credits gained in courses that belong to the field of technical sciences
- proficiency in written and spoken English language

TUITION FEE

HRK 30,000.00 (4,000.00 EUR)



Academic Mobility & Exchanges

In the scope of this activity, the Faculty of Civil Engineering signs Memorandums of Understanding (MoUs) and Agreements with partner higher-education institutions or associations in order to achieve various forms of cooperation, such as work on common themes and projects, exchange of teachers and students, joint publications, exchange of information, and other activities aimed at enhancing academic cooperation.

ERASMUS +

- Student mobility for study purposes: 3-12 months
- Professional training of students: 2-12 months
- Teaching staff mobility: at least 8 hours of teaching, spread over 5 days in the case of teaching engagement
- Non-teaching staff mobility: 2 days up to 2 months

Inter-institutional agreements

Recep Tayyip Erdogan University (Turkey) Universita degli studi di Napolo Federico II (Italy) Istanbul University Eskisehir (Turkey) Istanbul University – Cerrahpasa (Turkey) Technische Universität Wien (Austria) Vysoké Ucení Technické v Brne (Czech Republic) Hochschule RheinMain (Germany) Technische Universität Dortmund (Germany) Ss. Cyril and Methodius (Macedonia) Akademia Górniczo-Hutnicza (Poland) Universidade de Aveiro (Portugal) Technische Universität Graz (Austria) Univeristat Politecnica de Catalunya (Spain) Hochschule Trier (Germany) Università degli Studi di Salerno (Italy) Universidade do Minho (Portugal) Universidad de Granada (Spain) L'université d'Orléans (France) Roma Tre University (Italy) Ostbayerische Technische Hochschule Regensburg (Germany)

Professional training of students

ALTEN Sverige AB (Sweden) Arcadis (Germany) BPR Dr. Schäpertöns Consult (Germany) Confederación Hidrográfica del Júcar (Spain) Ed. Züblin AG Berlin (Germany) f2k ingenieure (Germany) Hauraton (Germany) Tiring d.o.o. (Slovenia) Institut für Betonbau, TU Graz (Austria) Osnabrück University (Germany) Universidade de Aveiro (Portugal) Università di Bologna (Italy) Wasserverband Kinzig (Germany) GRADIS, BP MARIBOR d.o.o. (Slovenia) IMM Industriemontage GmbH (Germany) KEMO GmbH (Germany) Technische Universität Graz (Austria) Zavod za gradbeništvo Slovenije (Slovenia)

BILATERAL AGREEMENTS

Signed MoUs with academic institutions:

Cyprus University of Technology (Cypar) University College Cork (Ireland) Fachochschule Wiesbaden (Germany) Faculty of Civil Eng., Mostar (B&H) Faculty of Civil Eng., TU Košice (Slovakia) Faculty of Civil Eng., Brno UT (Czech Republic) Faculty of Civil Eng., TU Prague (Czech Republic) Cracow University od Technology (Poland) Faculty of Civil Eng., Skopje (North Macedonia) Rutgers University, New Jersey (USA)

Signed MoUs with professional institutions:

Blackrock Expert services (England) China Road and Bridge Coorporation (China) Holcim Croatia (part of the Lafarge Holcim Group)

ACADEMIC MOBILITY PROGRAMME

Under the auspices of University, Faculty realizes:

- outgoing mobility towards strategic partners depending of the national aspirations
- mobility towards higher education institutions throughout the world
- mobility of doctoral students of the University of Zagreb (conference invitations)
- announcement of incoming mobility based on bilateral inter-university agreements, and incoming mobility aimed at concluding new agreements and initiating new forms of cooperation



Mobility in Europe

RESEARCH &	National Projects
DEVELOPMENT	International Projects
	PhD Events
	International Conferences & Workshops
	Journals & Books
	Eminent Associates
	Awards



National Projects

Project title	Financing program	Leading Partner (Country)	Duration
CONSTRUCTION MANAGEMENT AND ECO	VOMICS		
CPD4GB Continuous Professional Development for Green Building *coordinated at the Department of Materials www.cpd4gb.com.hr	European Social Fund (ESF)	HIS Hrvatski inženjerski savez (Croatian Engineering Association)	2018-2020
ENGINEERING MECHANICS			
Novel, Efficient Iterative Procedure for the Structural Analysis - Generalisation of Modern Methods	Croatian Science Foundation Research Project	Faculty of Civil Engineering, University of Zagrob	2015-2019
www.hrzz.hr		Zagreb	
HYDROSCIENCE AND ENGINEERING			
Use of pipe culverts to improve quality of seawater in ports/marinas	Croatian Science Foundation Research Proiect	Faculty of Civil Engineering, University of	2015-2019
nttp://gradjevinskifakultet.wixsite.com/ekomarina	, =	Zagreb	
Reuse of sewage sludge in concrete industry – from microstructure to innovative construction products	Croatian Science Foundation Research Project	Faculty of Civil Engineering, University of	2014-2017
http://www.grad.hr/rescue/		Zagreb	
STRUCTURES			
Prototype of multipurpose timber - structural glass composite panel	Croatian Science Foundation Research	Faculty of Civil Engineering,	2017-2020
www.grad.unizg.hr/vetrolignum	Project	Zagreb	
Influence of concrete damage on reinforcement corrosion – computer simulation and in service performance of bridges: CODEbridges www.grad.unizg.hr/codebridges	Unity Through Knowledge (UKF), My First Collaboration Grant	Faculty of Civil Engineering, University of Zagreb	2017-2019

(Country)	Duration
Faculty of Civil Engineering, University of Zagreb	2019-2024
Faculty of Civil Engineering, University of Zagreb	2016-2021
Speculum Ltd, Croatia	2018-2019
Beton-Lučko RBG Ltd, Croatia	2019-2023
HIS Hrvatski inženjerski savez (Croatian Engineering Association)	2018-2020
	HIS Hrvatski inženjerski savez (Croatian Engineering Association)

Development of DIV elastic fastening system www.divgroup.eu	Competitiveness and Cohesion 2020, Ministry of Economy, Entrepreneurship and Crafts	DIV d.o.o.	2018-2022
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International Projects

Project title	Financing program	Leading Partner (Country)	Duration
GEOTECHNICS			
DESTinationRAIL (Decision Support Tool for Rail Infrastructure Managers) www.destinationrail.eu	European Commission Innovation and Networks Executive Agency, EU Framework Programme Horizon 2020	Gavin and Doherty Geosolutions LTD, Ireland	2015-2018
GoSAFE (Global Safety Management Framework for RAIL Operations) www.gosaferail.eu	European commission Innovation and Networks Executive Agency, EU Framework Programme Horizon 2020, Shift2Rail Programme	Gavin and Doherty Geosolutions LTD, Ireland	2016-2019
SAFE-10-T (Safety of Transport Infrastructure on the TEN-T) www.safe10tproject.eu	European Commission Innovation and Networks Executive Agency, EU Framework Programme Horizon 2020	Gavin and Doherty Geosolutions LTD, Ireland	2017-2020
Action TU1405 European network for shallow geothermal energy applications in buildings and infrastructures (GABI) www.foundationgeotherm.org	European Cooperation in Science and Technology (COST), EU Framework Programme Horizon 2020	IFSTTAR, France	2015-2019
HYDROSCIENCE AND ENGINEERING			
Intelligent Bridge Assessment Maintenance and Management System (BRIDGE SMS) www.bridgesms.eu	European commission - Research Executive Agency, FP7 Programme (Marie Curie)	University College Cork, Ireland	2015-2018
Integrated Approach to Management of Groundwater Quality in Functional Urban Areas (AMIIGA) www.interreg-central.eu/Content.Node/AMIIGA.html	EU European Regional Development Fund, Interreg Central Europe	Central Mining Institute, Poland	2016-2019
Future proofing strategies FOr RESilient transport networks against Extreme Events (FORESEE) https://cordis.europa.eu/project/rcn/217615/ factsheet/en	EU Framework Programme Horizon 2020	Fundacion Tecnalia Research & Innovation, Spain	2018-2022

Project title	Financing program	Leading Partner (Country)	Duration
STRUCTURES			
INCEPTION (Inclusive Cultural Heritage in Europe through 3D semantic modelling) http://www.inception-project.eu/	European commission Innovation and Networks Executive Agency, EU Framework Programme Horizon 2020	Universita degli studi di Ferrara, Italy	2015-2019
Valorisation of Knowledge for Sustainable Steel- Composite Bridges in Built Environment (SBRIplus)	European Commission, The Research Fund for Coal & Steel (RFCS)	ArcelorMittal (AMBD), Luxembourg	2016-2018
www.grad.unizg.hr/sbriplus			
Action TU1402: Quantifying the value of structural health monitoring	European Cooperation in Science and Technology (COST) ELL Framowork	Technical University of Denmark, Donmark	2014-2019
www.cost-tu1402.eu	Programme Horizon 2020	Denindik	
Action TU 1406: Quality specifications for road bridges, standardisation at a European level (BridgeSpec)	European Cooperation in Science and Technology (COST), EU Framework	University of Minho, Portugal	2014-2019
www.tu1406.eu	Programme Horizon 2020		
Action FP1402: Basis of structural timber design - from research to standards	European Cooperation in Science and Technology	Technical University of Munich,	2014-2018
www.costfp1402.tum.de/	Programme Horizon 2020	Germany	
Action TU1403: Adaptive: Adaptive Facades Network	European Cooperation in Science and Technology	Lucerne University of Applied	2014-2018
www.tu1403.eu/	(COST), EU Framework Programme Horizon 2020	Science and Arts, Switzerland	
Action CA16114 RESTORE, REthinking Sustainability Towards a Regenerative Economy	European Cooperation in Science and Technology	Eurac Research, Italy	2017-2021
www.eurestore.eu/	(COST), EU Framework Programme Horizon 2020		
Action CA 18120–BOND: Reliable roadmap for certification of bonded primary structures	European Cooperation in Science and Technology	Delft University of Technology, the	2019-2023
https://www.cost.eu/actions/CA18120	(COST), EU Framework Programme Horizon 2020	Netherlands	
Seismic behaviour of multi-storey buildings	Unity through	Partner	2019
http://www.grad.unizg.hr/earthquake	Knowledge Fund, My First Collaboration Grant	institution: Innorenew CoE, Izola, Slovenia	
Investigations on spot welded built-up cold- formed steel beams	Unity through Knowledge Fund, My First Collaboration Grant	Partner institution: Politehnica University Timisoara, Romania	2019

Project title	Financing program	Leading Partner (Country)	Duration
MATERIALS			
Innovative training schemes for retrofitting to nZEB-levels (Fit-to-nZEB) www.fit-to-nzeb.com	European Commission Innovation and Networks Executive Agency, EU Framework Programme Horizon 2020	Energy Efficiency Centre, Bulgaria	2017-2019
PhD Training Network on Durable, Reliable and Sustainable Structures with Alkali-Activated Materials (DuRSAAM) www.cordis.europa.eu/project/rcn/218502_en	European Commission, EU Framework Programme Horizon 2020, Marie Curie Innovative Training Networks	Ghent University, Belgium	2018-2022
Phenomenological Modelling of Carbonation- Induced Corrosion of Radioactive Waste Disposal Structures (PHENEMICS) https://www.grad.unizg.hr/corrosion	European Commission Marie Skłodowska Curie FP7-PEOPLE-2011- COFUND program	Faculty of Civil Engineering, University of Zagreb; Commissariat à l'énergie atomique et aux énergies alternatives CEA, Saclay	2014-2017
Innovative Use of all Tyre Components in Concrete (Anagennisi) www.anagennisi.org	European Commission Innovation and Networks Executive Agency, FP7	University of Sheffield, UK	2014-2017
Prominent MED - Public pROcureMent of INnovation boosting greEN growTh in MED area https://prominent-med.interreg-med.eu/	European Regional Development Fund - Interreg Mediterranean	SVILUPPUMBRIA – Società Regionale per lo sviluppo economico dell'Umbria. Italy	2016-2019
Concerted Action EPBD IV www.epbd-ca.eu/	European Commission's Executive Agency for Small and Medium- sized Enterprises (EASME), EU Framework Programme Horizon 2020	Energistyrelsen DEA, Denmark	2015-2018

Project title	Financing program	Leading Partner (Country)	Duration
Education for Zero Energy Buildings using Building Modelling Information – BIMzeED http://bimzeed.eu/	ERASMUS + programme	Limerick Institute of Technology, Ireland	2019-2021
Net-UBEP Network for Using BIM to Increase the Energy Performance www.net-ubiep.eu/hr	EU Framework Programme Horizon 2020	ENEA, Italy	2017-2020
Action TU1404 Towards the next generation of standards for service life of cement-based materials and structures www.tu1404.eu	European Cooperation in Science and Technology (COST), EU Framework Programme Horizon 2020	University of Minho, Portugal	2014-2018
Action FP1404: Fire safe use of bio-based building products http://www.costfp1404.com/	European Cooperation in Science and Technology (COST), EU Framework Programme Horizon 2020	ETH Zurich, Switzerland	2014-2018
In-situ 3D monitoring in real time cracking of concrete based on sustainable binders (IMCRAC)	Hubert Curien "Cogito" programme, France- Croatia cooperation	Faculty of Civil Engineering, University of Zagreb	2017-2018
Advanced Low CO2 Cementitious Materials, ACT	Croatian-Swiss Research Programme, Swiss Science Foundation NSF, Croatian Science Foundation HRZZ	École Polytechnique Fédérale de Lausanne, Switzerland; Faculty of Civil Engineering, University of Zagreb	2019-2021

Project title	Financing program	Leading Partner (Country)	Duration
CONSTRUCTION MANAGEMENT AND EC	ONOMICS		
Net-UBEP Network for Using BIM to Increase the Energy Performance www.net-ubiep.eu/hr	EU Framework Programme Horizon 2020	ENEA, Italy	2017-2020
IPMA Organisation Competence Baseline v 2.0. standard development www.ipma.world	International Project Management Association (IPMA)	IPMA, the Netherlands	2018-2021
Educational Lab – Big Machine https://paginas.fe.up.pt/~elbigmac/project/	Erasmus + Cooperation for innovation and the exchange of good practices	University of Porto, Portugal	2016-2019
IPMA Individual Competence Baseline 4.0. Agile, Consultant, Coaches & Trainers standard development *coordinated at the Department of Materials www.ipma.world	International Project Management Association (IPMA)	IPMA, the Netherlands	2015-2019
TRANSPORTATION ENGINEERING			
COST Action CA15125 Designs for noise reducing materials and structures (DENORMS) www.denorms.eu	European Cooperation in Science and Technology (COST), EU Framework Programme Horizon 2020	Le Mans University, France	2016-2020
MATHEMATICS			
Graph-theoretical methods for nanostructures and nanomaterials	Croatian-Chinese Scientific and Technological Cooperation	Faculty of Civil Engineering, University of Zagreb & School of Mathematics and Statistics, Lanzhou University, China	2016-2018

ECO-SANDWICH® innovative product developed within the project Energy Efficient, Recycled Concrete Sandwich Facade Panel

PhD Events

In order to meet modern-day challenges, the Faculty has established a new form of doctoral studies in civil engineering in 2014. Outstanding research work has to be the foundation of doctoral studies as it opens new challenges, but also enables progress of the economy and sustainable development of the society, which is today a top priority.

Therefore, each year in September, under the auspices of the Board for Research & Development, the Faculty organises a PhD Symposium in order to provide the PhD students with the possibility to present their research activities, and to obtain guidance and advice from elder colleagues, postgraduates, mentors, and experts through keynote lectures, workshops, and discussion panels. The objective is to upscale this event for young researchers and bring it to an international level.

http://master.grad.hr/phd-simpozij/2019/



PhD symposium for young researchers organised each September

International Conferences & Workshops

Faculty members join and organise scientific committees of numerous conferences around the world. In addition, the Faculty organises diverse international events in Croatia such as:

- RILEM Conference on sustainable materials, systems and structures RILEM, http://grad.hr/rilem.smss/
- Future Trends in Civil Engineering FTCE, http://www.grad.hr/ftce/indexEN.php
- International Conference on Road and Rail Infrastructure CETRA, www.grad.unizg.hr/cetra
- International Conference on Construction Materials for Sustainable Future CoMS, http://www.grad.hr/coms/ocs/index.php/coms/coms2017
- International Conference Organization Technology and Management in Construction OTMC, http://www.otmc-conference.com/
- International Symposium on Water Management and Hydraulic Engineering WMHE, http://www.grad.hr/wmhe2017/
- International Conference on Applications of Structural Fire Engineering ASFE'15, http://www.grad.unizg.hr/asfe2015
- Conferences, Workshops and Training Schools related to various European projects and Actions, https://www.grad.unizg.hr/joint-zagreb-workshop
- Eastern European IWA YWP Conference IWA YWP, https://iwa-network.org/events/10th-eastern-european-iwa-ywp-conference/



Participants of the RILEM Conference on sustainable materials, systems and structures, held in March 2019 in Rovinj

Journals & Books

The Faculty-owned Journals:

 Organization, Technology and Management in Construction Journal – an International open access Journal/ Publisher: University of Zagreb, Faculty of Civil Engineering / Mladen Vukomanović, Editor in Chief, Anita Cerić & Ivica Završki, Editors

Internationally published books:

- Composite Structures according to Eurocode 4: Worked Examples / Wilhelm Ernst & Sohn, A Wiley Company, Berlin, 2015. / Dujmović, D., Androić, B., Lukačević, I.
- Trust in Construction Projects / Oxon: Routledge, Taylor&Francis Group, 2016 / Cerić Anita

• ...

Editing International Journals:

- Civil Engineer (Gradevinar), Journal of the Croatian Association of Civil Engineers / Publisher: Croatian Association of Civil Engineers;
 Stjepan Lakušić, Editor in Chief
- Structural Engineering International, Journal of the International Association for Bridge and Structural Engineering IABSE / Publisher: Taylor&Francis; Ana Mandić Ivanković. Editorial Board Vice Chair
- **Technical Gazette**, University J. J. Strossmayer in Osijek; Ivica Džeba, Council of Experts Member
- International Journal of Structural Glass and Advanced Materials Research / Science publications / Vlatka Rajčić, Editorial Board Member
- Traffic & Transportation (Promet) / Publisher: University of Zagreb, Faculty of Transport and Traffic Sciences;
 Vesna Dragčević Scientific Committee Member
- Building Research Journal / Publisher: Institute of Construction and Architecture, Slovak Academy of Sciences;

Dubravka Bjegović, Member of the Editorial Board

- Building Materials and Structures / Publisher: Society for Materials and Structures Testing of Serbia;
 Dubravka Bjegović, member of the Editorial Board
- Frontiers in Built Environment / Frontiers, Lausanne Switzerland; Marija Kušter Marić, Member of the Editorial Board
- The Engineering Project Organization Journal / Publisher: Taylor and Francis;
 Anita Cerić, Editorial Board member
- International Journal of Project Management / Publisher: Elsevier; Mladen Vukomanović, Editorial Board member



- We are internationaly published...

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Awards

Faculty members have been awarded with numerous international recognitions for their research activities and outstanding results. Some of the most prestigious ones are presented below.

Innovative product RUCONBAR - Rubberised Concrete Noise Barriers, developed by the Faculty of Civil Engineering in cooperation with companies Beton Lučko and Gumiimpex (www.ruconbar.com):

- Gold medal at the 65th Brusseles International Exhibition of Innovation, Research and New Technologies, INNOVA 2016
- Golden medal at the 44th Geneva International Exhibition of Inventions 2016
- Crystal Globe at the 2018 International Road Federation IRF Global Road Achievements Awards in the category "Research"
- RailTech Innovation Award in category "Infrastructure" at the RailTech Europe 2019 Conference & Exhibition

Innovative product ECO-SANDWICH® - prefabricated wall panels, developed by the Faculty of Civil Engineering and Faculty of Architecture in cooperation with companies Beton Lučko, Eurco and Knauf Insulation (http://www.eco-sandwich.hr):

- Gold medal at the 63rd Brussels International Exhibition of Innovation, Research and New Technologies INNOVA 2014
- Gold medal at the 38th Zagreb International Exhibition of Innovations INOVA 2013

Innovative solution Zagreb 21-CTT: Tram track fastening system for vibration attenuation and enhanced stray current resistance, developed by prof. Stjepan Lakušić

· Gold medal at the 14th International Exhibition of Inventions ARCA 2016

BRIDGE SMS project: Inteligent solution for inspection and management of bridge scour risk and Innovative solution for weather monitoring WILD (Weather Information Logging Device) unit, developed by the faculty of Civil Engineering and BRIDGE SMS consortium (http://www.bridgesms.eu/):

• Silver medal at the 14th international exhibition of inventions ARCA 2016

Innovative solution Zagreb 21-STT: Slab tram track with high impact energy absorption, developed by prof. Stjepan Lakušić

Silver medal at the 13th International Exhibition of Inventions ARCA 2015


 Crystal Globe won for RUCONBAR noise barriers in 2018

DEPARTMENTS

Department of Construction Management and Economics Department of Engineering Mechanics Department of Geotechnics Department of Hydroscience and Engineering Department of Materials Department of Structural Engineering Department of Transportation Engineering Department of Mathematics Independent Chair for Buildings

DEPARTMENTS

DEPARTMENT OF CONSTRUCTION MANAGEMENT AND ECONOMICS

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Chair for Organization of Construction Chair for Management in Construction Chair for Construction Technology

DEPARTMENT OF HYDROSCIENCE AND ENGINEERING

Prof. Živko Vuković, PhD

Chair for Fundamental Research in Hydroscience Chair for Hydraulic Engineering Chair for Sanitary and Environmental Engineering Hydrology and Hydraulics Laboratory

DEPARTMENT OF TRANSPORTATION ENGINEERING

Prof. Vesna Dragčević, PhD

Chair for Roads Chair for Railways Laboratory for Transportation

DEPARTMENT OF ENGINEERING MECHANICS

Prof. Mladen Meštrović, PhD

Chair for Statics, Dynamics and Stability of Structures

Chair for Mechanics of Materials and Testing of Structures

Structural Testing Laboratory

DEPARTMENT OF MATERIALS

DEPARTMENT OF

Prof. Alan Filipin, PhD

Chair for Mathematics

Chair for Geometry and Physics

MATHEMATICS

Prof. Ivana Banjad Pečur, PhD

Chair for Materials Research Chair for Materials Technology Laboratory for Materials

DEPARTMENT OF GEOTECHNICS

Prof. Meho Saša Kovačević, PhD

Chair for Soil and Rock Mechanics Chair for Geotechnical Engineering Geotechnical Laboratory

DEPARTMENT OF STRUCTURAL ENGINEERING

Prof. Vlatka Rajčić, PhD

Chair for Concrete and Masonry Structures Chair for Metal Structures Chair for Timber Structures Chair for Bridges

INDEPENDENT CHAIR FOR BUILDINGS

Assist. Prof. Silvio Bašić, PhD

DEPARTMENT OF CONSTRUCTION MANAGEMENT AND ECONOMICS

Chair for Organization of Construction Chair for Management in Construction Chair for Construction Technology

EDUCATION

- 9 courses for undergraduate students; 21 courses for graduate students; 11 courses for postgraduate students;
- 17 courses for masters of business administration; 10 courses for university specialists in organization of construction

RESEARCH TOPICS

- Asset Management
- Automation and Robotisation
- Building Information Modelling
- Construction Economics
- Construction Management
- Digitization and Development of Construction Industry
- Human Resources
- Legal Aspect of Construction
- Project Management
- Establishment of the international Web of Science indexed journal: Organization, Technology and Management in Construction: An International Journal (ISSN 1847-5450).

- Building Information Modelling
- Construction and Project Management Services
- Facility and Asset Management
- Feasibility Studies and Construction Organization Design
- Human Resources Management
- ICT systems for Construction
- Construction Supervision
- Construction Technology Design
- Involvement in activities of major global societies, such as the Academy of Management, American Society of Civil Engineers, CIB, Engineering Project Organization Society, IPMA, PMI, etc.



Understanding challenges in applying different building technologies

111

DEPARTMENT OF ENGINEERING MECHANICS

Chair for Statics, Dynamics and Stability of Structures Chair for Mechanics of Materials and Testing of Structures Structural Testing Laboratory

EDUCATION

 8 courses for undergraduate students; 19 courses for graduate students; 15 courses for postgraduate students

RESEARCH TOPICS

- seismic risk mitigation in urban areas and seismic assessment, earthquake engineering
- · fracture mechanics, shear in plain concrete and FRC structural elements
- structural stability of complex structures and components
- numerical modelling of complex dynamic problems
- fast iterative methods for structural analysis
- form finding procedures for prestressed cable nets
- · damage detection and assessment of structures, historical buildings

- design and consulting activities
- structural design and seismic assessment of structures
- · dynamic and stability analysis of structures affected by wind and earthquake action
- base isolation and isolation of vibration
- design of tensegrity structures and structures made of ropes, cables and fabrics
- structural analysis and reconstruction design of historical buildings
- numerical simulation of contact problems and fatigue of structural elements
- structural/material testing activities, determination of mechanical properties of materials
- laboratory testing of structural elements
- load bearing capacity testing of structural elements
- non-destructive tests on structures
- static and dynamic load testing of large infrastructural structures, structural health monitoring (SHM)



DEPARTMENT OF GEOTECHNICS

Chair for Soil and Rock Mechanics Chair for Geotechnical Engineering Geotechnical laboratory

EDUCATION

- 3 courses for undergraduate students; 16 courses for graduate students; 8 courses for postgraduate students
- students are learning about different aspects of geotechnics: from basic principles of soil mechanics, rock mechanics and geology to applied aspects including investigation works in the laboratory and in the field
- courses cover: engineering geology and hydrogeology, geotechnical monitoring, numerical modelling in geotechnics, foundations, soil and rock improvement, retaining structures, rockfall and landslide stabilization, embankments, tunnels, etc.

RESEARCH TOPICS

- implementation of novel techniques for increasing safety of geotechnical aspects of railways and roads
- · predicting and observing behaviour of structures in soil and rock with the focus on interactive design
- · effective soil and rock improvement methods
- · behaviour of granular materials
- application of field testing methods for classification of soil using neural networks
- · possibilities of exploitation of shallow geothermal energy by energy geo-structures
- engineering-geological aspects of karst
- · determination of rock bolt grouting quality by analysis of its natural frequencies

- · conduct of field and laboratory investigation works
- · development of preliminary, main and detailed designs of various geotechnical structures
- monitoring and observing behaviour of geotechnical structures during construction and us
- expertise and counselling related to various problems in the design and construction of geotechnical structures
- auditing design of various geotechnical structures



DEPARTMENT OF HYDROSCIENCE AND ENGINEERING

Chair for Fundamental Research in Hydroscience Chair for Hydraulic Engineering Chair for Sanitary and Environmental Engineering Hydrology and Hydraulics Laboratory

EDUCATION

- 6 courses for undergraduate students; 22 courses for graduate students; 13 courses for postgraduate students; 6 specialised courses
- department is nurturing active involvement of students in scientific research, performing lifelong learning on infrared thermography and energy audits of buildings

RESEARCH TOPICS

- research and analysis of fluid flow, particularly water and air
- transport phenomena in river basins; ground water, watercourses and sea
- hydrological modelling and extreme analysis, flood forecasting
- hydraulics of open channel and coastal areas
- sediment transport processes and morphodynamics
- · large water management systems and their facilities
- water supply, sewerage and wastewater treatment systems
- water quality modelling
- multi-criteria analysis, risk assessments and cost-benefit analysis in flood management, water engineering, wastewater engineering and water ecosystems
- water loss management

- analysis of the existing and design river basin system;
- laboratory testing of various hydraulic and engineering structures;
- preliminary, main and detailed design of water resources and environmental engineering structures;
- expertise related to the waterborne transport systems;
- · project review related to water resources and environmental engineering structures;
- studies on the environmental impact assessment

Pressurised water supply network elements

-20-

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DEPARTMENT OF MATERIALS

Chair for Materials Research Chair for Materials Technology Laboratory for Materials

EDUCATION

· 3 courses for undergraduate; 14 for graduate; 7 for postgraduate students; 10 specialised courses

RESEARCH TOPICS

- development and research of sustainable materials and systems
- · development of tailored construction products based on locally available by-products
- performance-based design of concrete durability
- · innovative materials, products and approaches for durable and sustainable structures
- energy efficiency and nearly-zero energy building research
- mass (heat, vapour) transfer in sustainable materials and systems
- integration of BIM in design of nZEB
- fire engineering and research of fire-resistant materials and systems
- · innovative and non-destructive testing methods for materials and systems

- · inspection, condition assessment and repair projects of construction facilities
- thermal calculation and testing
- infrared thermography inspection of thermal properties of buildings; Inspection of airtightness with Blower door
- · corrosion monitoring and condition assessment of reinforcement
- · subsequent quality assessment of built-in materials by using destructive and non-destructive methods
- quality control of materials production and placing
- supervision of construction works during execution or rehabilitation
- · design of evacuation in fire

Fire fasade testing



DEPARTMENT OF STRUCTURAL ENGINEERING

Chair for Concrete and Masonry Structures Chair for Metal Structures Chair for Timber Structures Chair for Bridges

EDUCATION

- 5 courses for undergraduate students; 17 courses for graduate students; 15 courses for postgraduate students
- a substantial part of the courses is appropriately covered by relevant textbooks and manuals, some of which have been issued abroad

RESEARCH TOPICS

- sustainable steel-composite bridges
- assessment & management of existing bridges
- quantifying the value of structural health monitoring
- · innovative connectors and the use of the new wood base materials in timber design
- adaptive facades
- hybrid timber-structural glass systems
- assessment and retrofitting of the existing timber, concrete, and masonry structures
- influence of concrete damage on reinforcement corrosion
- rethinking sustainability towards a regenerative economy
- over the last two decades, significant publication activities of teachers have been noted

- preliminary, main and detailed design of various types of concrete, steel, aluminium, and timber structures
- assessment of bridge structures
- structural health monitoring
- licenced experts state required proof reviews for the design of bridges, concrete structures, steel s tructures, and timber structures
- assessment by UAV and non-destructive testing aimed at forming the cultural heritage building documentation





DEPARTMENT OF TRANSPORTATION ENGINEERING

Chair for Roads Chair for Railways Laboratory for Transportation

EDUCATION

- 2 courses for undergraduate students, 19 courses for graduate students, and 11 courses for postgraduate students
- In the scope of these courses students are learning about road, railway, and airport infrastructure planning, design, construction, and maintenance.

RESEARCH TOPICS

- · application of recycled materials in pavement and track structures, and noise barrier design
- field investigations of rail track fastening systems
- investigation of road vehicle movement geometry
- predicting pavement and track performance, and implementation of novel techniques for the assessment of their condition
- analysis of various parameters that influence propagation of traffic noise

- preliminary, main, and detailed designs of road and rail structures
- pavement and track design, maintenance and rehabilitation projects
- noise barrier design, noise monitoring and preparation of noise protection reports
- technical supervision and review of road and railway projects
- · laboratory testing of various geosynthetic materials
- tramway infrastructure condition assessment and asset management
- railway noise and vibration monitoring and assessment
- design and testing of rail track structures and fastening systems
- · expertise and counselling related to various problems in the design and construction of transport structures



DEPARTMENT OF MATHEMATICS

Chair for Geometry and Physics Chair for Mathematics

EDUCATION

• 7 courses for undergraduate students; 6 courses for graduate students; 4 courses for postgraduate students

RESEARCH TOPICS

- discrete mathematics and graph theory
- number theory; Diophantine equations and related problems
- descriptive geometry
- theory of inequalities and its integration in the fields of real, functional and numerical analysis
- applications of probabilistic and statistical methods, and stochastic modelling
- many-body physics; cold quantum gases; light-atom interactions
- representation theory of Lie groups and Lie algebras



We take our students to the limits...

INDEPENDENT CHAIR FOR BUILDINGS

EDUCATION

- undergraduate level courses: Building Construction and History of Building
- graduate level course: *Traffic Buildings*

RESEARCH TOPICS

- architecture: architectural programming, methodological approach in dwelling / public building design
- urbanism: sustainable development, spatial capacities of urban areas
- · cooperation in research regarding utilisation of new technologies and materials in buildings

- architectural design of buildings, public spaces, etc.
- urban planning
- urban and architectural studies
- supervision of building works



⁻ Urban planning of the small town Molat

ABORATORIES	Geotechnical Laboratory
AND	Hydrology and Hydraulics Laboratory
EQUIPMENT	Laboratory for Materials
	Structural Testing Laboratory
	Laboratory for Transportation



View of modern machines for dynamic and static testing

Less than one year after foundation of the Higher Technical School in Zagreb in 1920, the Laboratory within the Materials Testing Department was established as the predecessor of the current Structural Testing Laboratory at the Department of Engineering Mechanics. The founder of the lab and the first head of the Materials Testing Department was a well-known scientist, professor of technical mechanics, PhD. Stjepan Prokofijevič Tymoshenko. UNIVERSITY OF ZAGREB FACULTY OF CIVIL ENGINEERING

Laboratories are used for student education, research and commercial purposes. They are open to students according to the curriculum and laboratory practicum timetables. Students requiring services of the laboratory for their doctoral, master and graduation theses have the right of access upon approval by the laboratory head and their supervisors. Additional access can be agreed upon with the laboratory head and, in such cases, visitors will be accompanied by laboratory staff. Most laboratories have no obstacles or access restrictions for people with disabilities.



research and professional activities

GEOTECHNICAL LABORATORY

- · Laboratory is conducting tests according to a wide range of laboratory and field investigation methods
- Laboratory equipment includes equipment for soil classification (liquid limits, grain size distribution, aerometry), equipment for soil / rock strength characterization (fall cone test, direct shear apparatus, triaxial apparatus, direct shear apparatus for soil – geosynthetic interface strength, rock strength index apparatus, semiautomatic compression apparatus), equipment for soil / rock deformability characterization (six classical oedometers, a hydraulic oedometer, triaxial apparatus, semiautomatic compression apparatus), equipment for testing density of compacted soil with Proctor and other laboratory equipment (determination of carbonate content, ultrasonic pulse velocity tester, slake durability apparatus)
- Geodesy equipment includes total station, digital level, GPS, and two UAVs
- Field geotechnical equipment includes CPT/CPTU/SCPT machine for static penetration and drilling machine for drilling in both soil and rock (including the Standard Penetration Test)
- Geophysical equipment includes Seismic Refraction and Seismic Reflection, MASW, SASW, CSWS and GPR (with 100, 280, 400, and 1000 MHz antennas)
- Equipment for geotechnical monitoring includes inclinometer, deformeter, micrometer, clinometers, piezometers
- Equipment for testing geotechnical structural elements includes vibration measurement equipment, PIT testing of pile equipment, and ground anchors pull-out equipment.



A partial view of the geotechnical laboratory

HYDROLOGY AND HYDRAULICS LABORATORY

- Small glass tube for the Reynolds experiment
- · Small pool for demonstrating local erosion of piers submerged into water
- Models: for observing outflow of liquid from small and large openings; for demonstrating local losses in pressure pipe systems; for demonstrating outflow under water control gates and hydraulic jump; demonstration of water seepage under dams; radial flow towards the well; of water hammer; of water masses oscillation
- Wind tunnel for measuring the forces on scaled engineering structures and structures shape resistance
- Wave channel equipped with a wave generator for observing the influence of waves on port and harbour constructions
- · Electrocoagulation pilot device (EPD) for advanced water treatment technologies
- Weather Information Logging Device WILD (sensors: rain, temperature, humidity)
- Bridge Information Recording Device BIRD (sensors: water level, scour)
- General purpose flow flume
- Pressurised pipe system



General purpose flow flume - 15 m long and 1 m wide with a normal water depth of 1 m, equipped with ADV velocimeter and sediment transport facility

LABORATORY FOR MATERIALS

- Hydraulic testing machine with the capacity of 3000kN (compression frame) and 200kN (bending frame), capable of performing force or deformation-controlled loading of samples (compressive strength, modulus of elasticity, flexural tensile strength, splitting tensile strength, toughness)
- Differential calorimeter for measuring heat liberation process in concrete and isothermal calorimeter
 for cementitious materials
- Chamber for simulation of freezing and thawing (-32 °C to 45 °C)
- · System for measuring air void characteristics of hardened concrete
- Salt spray chamber
- Chamber for exposing materials to temperatures of up to 1400 °C
- · Multichannel potentiostat device for testing accelerated corrosion behaviour of steel
- Infrared (IR) camera (640x480, temperature span: -40 °C to 1400 °C)
- Blower-door (80 do 7200 m³/h)
- Acoustic emission monitoring system (8 channel)
- · Air jet sieving machine for determination of particle size distribution for fine particles
- · Concrete rheometer CTPT for determination of flow properties of fresh concrete
- Instrument for evaluation of in-situ permeability of concrete cover
- · Wireless corrosion rate measurement device
- · Impact-echo testing instrument for evaluating defects in concrete structures
- Thermal gravimetric analysis (TGA) for microstructural analysis



Hydraulic testing machine

Fresh state properties of self-compacting concrete

STRUCTURAL TESTING LABORATORY

- Universal static testing machine, Z600E Zwick, is a universal tension-compression electro-mechanical testing machine with the capacity of 600 kN
- Multi-test console for dynamic and static testing of structural elements or structure models with 2 hydraulic actuators, with the load capacity of 600 kN and 250 kN (compression or tension), and with the maximum stroke of ±125 mm
- HBM MGCplus high resolution DAQ system with more than 60 channels (DC, SG bridges, piezoelectric) which enable measurement of force, displacement, acceleration, strain, temperature, resistance, and current; appropriate for static and dynamic measurements (up to 20 kHz); equipped with CATMAN software
- National instruments high resolution DAQ system with various modules (DC, SG bridges, piezoelectric) which enable measurement of force, displacement, acceleration, strain, temperature, resistance and current; for static and dynamic measurements; equipped with LabVIEW software
- Bruel&Kjaer3560C DAQ system with 5 channels, suitable for the analysis and measurement of noise and vibration; the platform allows determination of modal shapes and natural frequencies by applying the Operational (OMA) and Experimental (EMA) modal analysis
- Electronic sensors and converters for measuring displacement, strain, force, acceleration, temperature, humidity, pressure, etc



Four-point bending test of Recycled Steel Fibre Reinforced Concrete beam

LABORATORY FOR TRANSPORTATION

- Universal Testing Machine for tensile and static puncture (CBR) tests of various geosynthetic materials (width of hydraulic grips: 250 mm; large grips Fmax = 100 kN, small grips Fmax = 5 kN; accuracy: 0.02 mm)
- GPR System with 1.0 and 2.0 GHz Horn Antennas used for pavement thickness measurement and road condition assessment (depth range: 1 GHz antenna up to 0.9 m, 2 GHz antenna up to 0.75 m)
- Transmissivity Equipment for transmissivity tests (in-plane water flow) of geosynthetic drainage materials (various gradients and loads)
- CEN/ISO Permittivity Equipment for permittivity tests (normal to plane water flow) of geotextile (with
 or without load)
- Dynamic Puncture Tester (Cone drop test) used to evaluate resistance of geosynthetics to damage during installation
- · ATLAS SC600 Solar Simulator used to evaluate weathering resistance of geosynthetics (UV)
- Vibratory Sieve Shaker AS200 Control used for determination of geotextile apparent opening size (measuring range: 20 μm to 25 mm; amplitude: 0.2 to 3 mm)
- Analytical Balance AG204 used for determination of sample weight (accuracy: 0.1 mg; measuring range: up to 210 g)
- Halogen Moisture Analyser HR83 used for determination of moisture content on the thermogravimetric principle
- Geosynthetic Thickness Devices used for determining thickness of geosynthetic materials (accuracy: 1 μm)



 Universal Testing Machine for testing of various geosynthetic materials



GPR System used for pavement thickness measurement and road condition assessment

Professional Activities & Consultancy
Professional Associations
Lifelong Learning
Alumni Relations
Student Recruitment & Successes

First Croatian cable-stayed bridge at the entrance of Dubrovnik

Professional Activities & Consultancy

Faculty members offer professional expertise and counselling with regard to various problems in the design, execution, maintenance, strengthening, and repair of structures commissioned by the civil engineering industry. Main industry partners are Croatian Railways, Croatian Waters, Croatian Roads, Croatian Highways, City of Zagreb.

DESIGN, STUDIES AND STATE REQUIRED PROOF REVIEWS

- · development and review of preliminary, main and detailed designs of various structures
- residential buildings, administrative buildings, industrial facilities, educational buildings, sports halls, garages, bus stations
- beam, frame, cable-stayed, suspension and movable bridges and, in particular, arch bridges of very long spans
- roads, urban roads, road intersections, railways and tram tracks
- agriculture drainage and irrigation systems, small hydro power-plants, river and sea ports, quays and marinas
- inland waterways, flood protection systems, water and wastewater treatment plants
- tensegrity structures, lightweight large span roof structures, airport building roofs
- chimney reconstruction at thermal power plants and circularly prestressed liquefied natural gas storage tanks
-

ASSESSMENT, MONITORING AND RETROFIT

- condition assessment for various structures
- reinforcement corrosion monitoring
- · long-term monitoring systems on historic buildings, bridges and roof structures
- · vibration of bridges, high industrial chimneys, high towers, large area caused by wind activity
- design of various types of damping devices
- historical constructions and appropriate restoration materials and techniques
- · rehabilitation of earthquake- or war-damaged buildings and bridges
- environmental impact assessment
- ...

EXPERT COMMITTEES AND BODIES

- activities in the field of standard control (national and international level)
- active participation in the implementation of the new generation of Eurocodes
-

INSPECTION, MEASUREMENTS AND TESTING

- · laboratory testing of different basic and composite materials, soil, geosynthetic materials
- thermal calculation and testing
- on site visual inspection, non-destructive and destructive methods
- measuring vibration of road vehicles, trams and trains
- ...

CONSTRUCTION MANAGEMENT

- Building Information Modelling
- Building technology studies
- Court expertise and arbitration
- Facility Management and Maintenance Services
- ICT systems for construction management
- Project and Construction Management Services
- Project engineering studies
- Project Management Studies
- Project Management trainings IPMA certification
- Risk management



SHM system and operational modal analysis of St. Jacobs Cathedral in Šibenik





67

International Project Management Association (IPMA) https://www.ipma.world/ International Association for Bridge and Structural Engineering (IABSE) http://www. iabse.org European Convention for Constructional Steelwork (ECCS) https://www. steelconstruct.com/ European Committee for Standardization https://standards.cen. eu/ International Association for Experimental Structural Engineering (IAESE) http:// www.iaese.com/ European Construction Technology Platform http://www.ectp.org/ International Association for Bridge Maintenance and Safety (IABMAS) http://www. iabmas.org/ Croatian Standards Institute www.hzn.hr International Geothermal Centre http://www.geothermie-zentrum.de/en.html Croatian Academy of Engineering (HATZ) https://www.hatz.hr/en/ International Association of Hydraulic Engineering and Research (IAHR) https://www.iahr.org/ European asphalt pavement association (EAPA) https://eapa.org/ International Association of Hydrological Sciences (IAHS) https:// iahs.info/ Croatian Society of Non-Destructive Testing http://www.hdkbr.hr/en/

Professional Associations

Croatian Society for Geometry and Graphics http://master.grad.hr/hdgg/index-en.html Croatian Association for Construction Management https://www.huog.hr Croatian Association for Project Management http://capm.hr Croatian Association of Civil Engineers (HSGI) http://hsgi.org/hr/index.asp Croatian Chamber of Civil Engineers (HKIG) http://www.hkig.hr/ Thematic Innovation Councils of the Ministry of Economy: Entrepreneurship and Crafts, Traffic and Mobility, Energy and Sustainable Environment International Geosynthetic Society (IGS) https://www.geosyntheticssociety.org/ Association mondiale de la route/ World Road Association (PIARC) https://www.piarc. org/en/ American Society of Civil Engineers (ASCE) https://www.asce.org/ Institute of Electronical and Electronics Engineers (IEEE) https://www.ieee.org/ International Society for Asphalt Pavements (ISAP) http://asphalt.org/ The International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM) https://www.rilem.net/ Forum of European National Highway Research Laboratories (FEHRL) http://www.fehrl.org/ ...

Lifelong Learning

Continuing professional education, based on a long-standing tradition, is organised and operated after formal education. The program provides continuous education in the civil engineering profession, and involves compliance with and delivery of internationally recognized certificates, and further strengthening of competences and expertise. Through professional education, Faculty acquires better visibility and recognition, which results in successful cooperation with the industry on engineering and scientific projects. The implementation of educational activities, workshops, training sessions and various events, is characterized by high quality transfer of knowledge, experience and modern techniques, including provision of practical solutions by eminent professors and lecturers in line with new technologies and innovations in the field of training and education.

Further development and maintenance of professional education programs is planned in three directions:

- upgrading of existing well recognized professional training seminars (Transportation Days, Sanitary Hydrotechnics Days, BIM Summer School etc.)
- diploma seminars during which attendants are trained to carry out some professional activities (Project Managers, Infrared Thermography Experts (Level 1 i Level 2) etc.)
- seminars with highly specialized topics, validated by the Ministry of Construction and Physical Planning.

Continuous improvement in:

- using advanced technological solutions
- cooperation with foreign lecturers
- cooperation with industry
- implementation of highly specialized events.



 Days of Sanitary Engineering: Education: introducing the functionality and operation of each segment of water supply system



 Workshop on Condition Assessment, Repair and Strengthening of Concrete Structures organised with Croatian and foreign lecturers

Alumni Relations

The AMCA-FA Association brings together the alumni of the Faculty of Civil Engineering and maintains contacts with them after graduation. The alumni gather together in the scope of various activities and events that are announced through the AMCA-FA's website, journal, and newsletter. Lectures, workshops, courses, excursions, and jubilee gatherings are regularly organised for the alumni. The AMCA-FA Association has been monitoring recruitment of young engineers over the past several years. Statistics show that many of them gain employment within three months after graduation. In fact, as many as 85% of these young graduates find employment six months after graduation. Very few students decide to work abroad immediately after the graduation.

The alumni of the Faculty of Civil Engineering are held in high esteem not only in Croatia but also throughout the world, and have therefore no difficulty in obtaining job positions in large and well-known international companies. Some of them pursue their academic careers at different universities around the world.



- AMCA-FA journal promotes alumni relations



Excursion to new-terminal construction site at Franjo Tudman Airport organized by AMCA-FA



 Annual career day is organised to present major construction-industry employers
Student Recruitment & Successes

The Faculty of Civil Engineering has been actively helping students in their future career development. The Faculty therefore organizes the annual career day, when major employers in the construction industry have the chance to present their business case, showcase their major achievements and call students to apply for either scholarships or job position. At the annual event organised in 2018 more than 20 companies presented their career opportunities to the graduates. The companies came from different branches of construction sector. Although the majority traditionally offer design and construction services, an increased presence of manufactures of prefabricated systems and business consultants was noted. The Faculty will continue to nurture the close relationship with the economy in order to provide students

with a softer landing into the professional world.

Students are highly active outside the traditional curriculum:

- winning awards at many University sports competitions
- conquering knowledge competitions in Turkey and Estonia dedicated to steel bridges
- editing Student Association Journal dealing with different aspects of civil engineering from the learners' and teachers' perspective
- conquering knowledge competitions in Bulgaria dedicated to transportation infrastructure



Student Association Journal InfoGrad



 Volleyball team won the 2nd place at the Zagreb University League 2016/2017 and the 1st place at the Civil Engineering Faculties League in Bulgaria 2018



 Knowledge competitions on the design and assembly of steel bridges show the importance of proper organisation and teamwork gained through the study

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