U N I V E R S I T Y   O F   S P L I T

FACULTY OF ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE

DETAILED PROPOSAL OF THE STUDY PROGRAMME

UNDERGRADUATE UNIVERSITY STUDY IN MECHANICAL ENGINEERING

SPLIT, July 2017

CONTENTS

GENERAL INFORMATION OF HIGHER EDUCATION INSTITUTION

Name of higher education institution	FACULTY OF ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE
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GENERAL INFORMATION OF THE STUDY PROGRAMME

Name of the study programme	MECHANICAL ENGINEERING		
Provider of the study programme	FACULTY OF ELECTRICAL ENGINEERING, MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE		
Other participants			
Type of study programme	Vocational study programme ☐	University study programme ☒	
Level of study programme	Undergraduate ☒	Graduate ☐	Integrated ☐
	Postgraduate ☐	Postgraduate specialist ☐	Graduate specialist ☐
Academic/vocational title earned at completion of study	University Bachelor in Mechanical Engineering; univ. bacc. ing. mech.		

1. INTRODUCTION

1.1. Reasons for starting the study programme

Mechanical Engineering is one of the fundamental areas of engineering sciences, which greatly contributes to creating surplus value and the increase of national income. In present times, mechanical engineering developed into a wide and interdisciplinary area, and there is virtually no human activity in which mechanical engineering does not play an important part, contributing to its development. Mechanical engineering encompasses a wide range of various engineering systems developed in machine engineering and applied in nearly all industrial sectors, including agriculture, construction engineering, chemical and processing industry, as well as medical sciences and a number of other economic activities.

Continuous and rapid developments in the modern world, resulting in new findings and achievements, necessarily require corresponding educational processes. Highly educated professionals are an essential prerequisite for advancement of society and keeping pace with the developed countries. Only through high quality education it is possible to successfully meet the challenges of rapid development and adapt to future technological challenges. Current advancements in mechanical engineering require from the experts to carry out less routine work and be more creative. What is expected of these professionals is to be capable to show competence in following the technological developments during their careers and to lead the technological development in their professional areas, using the intellectual abilities and the scope of their fundamental and professional education.

Such wide scope of necessary knowledge necessitates detailed research in corresponding basic disciplines in the fields of mathematics and natural sciences, branches of physics such as solid mechanics, mechanics of deformable bodies, fluid mechanics and thermodynamics, followed by a series of related disciplines such as electrical engineering and computer science, as well as social sciences (economics, management).

The area of activities of an expert with up-to-date education in the field of mechanical engineering encompasses all the stages of product life-cycle: construction (concept design), production and use, as well as recycling of the outphased product with the use of materials or product renewal and return to service. Environment protection is a special responsibility of a mechanical engineering expert. Reasonable use of physical and energy resources and special consideration for environment protection are necessary to fulfil the requirements of sustainable development.

The goal of the proposed study programme in Mechanical Engineering is to educate professional staff in the area of mechanical engineering to meet the demands of the industry, higher education institutions, governmental and public institutions.

1.2. Relationship with the local community (economy, entrepreneurship, civil society, etc.)

One of the basic tasks of the Faculty is the education of young professionals who will use their knowledge, skills and abilities to become stakeholders in the economic and general development of local and wider community. Having been training leading professionals for more than 55 years, the Faculty successfully accomplished its task, providing necessary staff to participate in the development of economy sectors based on different branches of engineering. The Faculty trained professionals who significantly contributed to economic development in the region, thus supporting the region to initiate and successfully develop high-tech based production activities with its own human resources potential.

Fulfilling the purpose of the study programme in Mechanical Engineering is manifested in the number of students who successfully complete their studies and start their careers in almost all sectors of economy. Following the completion of studies, the acquired knowledge enables the students to find employment in various sectors, e.g. processing, chemical or service industries. This is especially relevant in this moment, with social and economic changes driving the development of new, small and medium technologically advanced enterprises that could serve as the new driving force for economic development.

1.3. Compatibility with requirements of professional organizations

The study programme is compatible with the requirements of the Croatian chamber of mechanical engineers.

1.4. Name possible partners outside the higher education system that expressed interest in the study programme

FESB is a signatory to a number of cooperation agreements with the aim of promoting academic and educational activities, concluded with private enterprises and public organisations, e.g. Ericsson Nikola Tesla, Hrvatska elektroprivreda (national power company), Split-Dalmatia County, Ministry of Defence, Energy institute “Hrvoje Požar”, Croatian academic and research network - CARNet, Brodosplit, Siemens, Microsoft Croatia, HSTec, Solvis, Adria Winch, Odašiljači i veze, Manas, etc. Also, it is important to note that the Croatian Armed Forces expressed a special interest in cooperation, since prospective officers are trained at the Faculty.

1.5. Financing

The study programme is financed by the Ministry of Science, Education and Sports.

1.6. Comparability of the study programme with other accredited programmes in higher education institutions in the Republic of Croatia and EU countries

System of educating experts in the field of mechanical engineering differs a lot in the world and in Europe. During the implementation of teaching activities at the mechanical engineering programme, we continually observe the development of the higher education in the world, and especially in Europe. One of the documents used to draft the curriculum was a monograph produced within the framework of the ERASMUS project titled "Towards the Harmonisation of Electrical and Information Engineering Education in Europe" (http://www.eaeeie.org/theiere/). Although this document represents an overview of study programmes in electrical engineering at 87 European universities, it can be effectively applied to the studies in Mechanical Engineering. When developing the curriculum for the study programme, SEFI recommendations were taken into consideration and special attention was directed at comparability with the curricula of other distinguished European higher education institutions. The study programme in Mechanical Engineering at FESB, in addition to traditional subject area of mechanical engineering, also includes materials science, production engineering and production management. These features are present in a number of other national and European study programmes in mechanical engineering (Zagreb, Rijeka, Slavonski Brod, Maribor, Ljubljana, Munich, Vienna, Budapest,…). In this manner, the mechanical engineering study programme at FESB provides education to experts who will work on development, design, construction, use and maintenance of facilities, machines, tools, devices and other equipment. The experts will also be involved in designing, modelling and simulation of functioning of thermal, power generation and production processes. Other competences include work in the following fields: material sciences, automatization, robotics, process management, quality assurance, measurement; management and advancement of production and production engineering. In the studies, special emphasis is placed on contemporary methods and computer aided technologies.

With regard to curriculum and programme organisation, the undergraduate university study programme in Mechanical Engineering is highly comparable with related study programmes at renowned national and European universities, such as:

- Fakultet za strojništvo, Univerza v Ljubljani, Slovenia (University of Ljubljana, Faculty of Mechanical Engineering)
  http://www.fs.uni-lj.si/studijska_dejavnost/studijski_programi/
- Technische Univerzität München, Germany (Technical University of Munich)
  http://portal.mytum.de/studium/studiengaenge_en/maschinenwesen_bachelor

1.7. Openness of the study programme to student mobility (horizontal, vertical in the Republic of Croatia, and international)

Undergraduate university study programme in Mechanical Engineering enables vertical and horizontal mobility of students. In terms of vertical mobility, undergraduate university study programme in Mechanical Engineering can primarily be followed by the graduate study programme in Mechanical Engineering. For students who enrol this graduate programme after the undergraduate programme, these two cycles represent integral five-year educational programme which provides a comprehensive quality education in the professional field of mechanical engineering. Vertical mobility is enabled also for other graduate study programme. In terms of horizontal mobility, the undergraduate university study in Mechanical Engineering is open for mobility of students of related studies at all Croatian universities, including the Faculty of Mechanical Engineering and Naval Architecture in Zagreb, Faculty of Engineering in Rijeka and Faculty of Mechanical Engineering in Slavonski Brod. Students have the opportunity to complete a part of the study programme at a similar institution in Croatia or abroad. The comparability of the study programme with similar study programmes enables the students to fulfil a part of their course requirements at other higher education institutions in Croatia or abroad.

1.8. Compatibility of the study programme with the University mission and the strategy of the proposer, as well as with the strategy statement of the network of higher education institutions

Undergraduate university study programme in Mechanical Engineering conforms with the Strategy of the University of Split 2015-2020. In addition to mission and vision of the University of Split, in the process of defining strategic goals, the following strategic documents were taken into account as guidelines:

- EUROPA 2020 strategy for smart, sustainable and inclusive growth,
- Strategic documents of the European Research Area (ERA),
- Strategic documents of the European Higher Education Area (EHEA),
- Strategy of Education, Science and Technology of the Republic of Croatia.

Preparation of the study programme was done in line with the mission, vision and goals which are partly derived from the Scientific Strategy of the University of Split 2009 – 2014, document which promotes creation of internal development plans at the level of University constituents.

Undergraduate university study programme in Mechanical Engineering conforms with the development guidelines of the Faculty, as well as mission, vision and strategic goals defined in the FESB Development Strategy for the period 2012 – 2016, and is the only programme of this type at the University of Split and the wider region.

The proposed study programme conforms with the strategic document Network of Higher Education Institutions and Study Programmes in the Republic of Croatia, which encourages launching new study programmes in STEM area, as mechanical engineering is one of STEM disciplinary program areas.

1.9. Current experiences in equivalent or similar study programmes

FESB has extensive experience in delivering courses at similar programmes. As a response to growing demand for highly educated professionals in the fields of mechanical engineering and naval architecture, in 1960 the Centre for part-time studies was established in Split, as one of the constituent colleges of the Faculty of Mechanical Engineering and Naval Architecture in Zagreb. The Centre for part-time study in mechanical engineering was closed in 1965 and replaced by the Mechanical Technology Department, which was founded at the Faculty of Electrical Engineering in Split, providing the two first years of study in Mechanical Engineering. The study programme provided an opportunity for continuing the study programme in Zagreb after the fourth semester. Integration of the studies in electrical engineering, mechanical engineering and naval architecture in 1971 resulted in founding of the Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture – FESB, constituent of the University of Split since 1974. The four-year undergraduate study in Mechanical Engineering, with its own curriculum, was finally completed in 1976. The Faculty has implemented professional studies (level VI in former qualifications system) since 1979 until today, with hiatus during the period 1998-2001. In collaboration with the Faculty of Mechanical Engineering and Naval Architecture in Zagreb the Faculty implemented the postgraduate study programme in mechanical engineering during the 1970s, with short interruptions. Permanent postgraduate study programme in Mechanical Engineering at FESB was established in 1998 and has been continually implemented since then. To this date, the academic degree of graduate engineer at the Faculty university undergraduate study in Mechanical Engineering was awarded to 654 students, and the vocational degree of mechanical engineer at the vocational study was awarded to 438 students.

At the end of 2004, the activities within the framework of the Bologna Process and harmonisation of the higher education system in Europe become more intensive. Within the Bologna Process, in 2005 the Faculty introduced new study programmes at undergraduate and graduate levels. New study programmes are developed in accordance with the recommendations of the European accreditation agencies. Undergraduate study programme in Mechanical Engineering was established, as well as graduate study programme in Mechanical Engineering with the following fields of study: Structures and Energy Technology, Computer-Aided Design and Engineering and Production Mechanical Engineering. Professional study programme in Mechanical Engineering was also established as a part of the Bologna Process, and in 2006 the postgraduate university study programme in Mechanical Engineering was established.

To this date, the university degree of Bachelor of Mechanical Engineering was awarded to 194 students, the degree of Master of Mechanical Engineering was awarded to 113 students, the degree of Vocational Associate in Mechanical Engineering was awarded to 47 students, the vocational degree of Bachelor of Mechanical Engineering was awarded to 36 students, the academic title of Master of Science in the academic field of mechanical engineering was awarded to 13 students and the academic title of the Doctor of Science in the scientific field of mechanical engineering and the scientific field of basic engineering sciences was awarded to 35 students.

Quality of education at FESB is confirmed by success and excellence of FESB graduates in the Croatian labour market, but also in the highly developed countries of the world. However, the most important is the fact that professionals trained at FESB represent a foundation of highly educated engineering labour force in the region.

2. DESCRIPTION OF THE STUDY PROGRAMME

2.1. General information

Scientific/artistic area of the study programme	Engineering sciences
Duration of the study programme	3 years
The minimum number of ECTS required for completion of study	180
Enrolment requirements and admission procedure	Completed 4-year high school programme and state graduation exam. Rankings are formed based on the average grade point average achieved in high school and the state exam results in the fields of mathematics and physics. Students of related undergraduate studies may also be admitted, with at least 30 ECTS credit recognition.

2.2. Learning outcomes of the study programme

The learning outcomes of the study programme are directly related to the learning outcomes of an individual course and represent learning outcomes to be achieved by each student who completes the undergraduate university study programme in Mechanical Engineering. The learning outcomes are aligned with the Croatian Qualification Framework Act and are listed in the areas of knowledge, skills and related fields of independence and responsibility.

KNOWLEDGE

1. To select and apply appropriate scientific principles, mathematical methods and computer aids in the analysis in the fields of mechanical engineering and engineering technology.
2. To apply fundamental engineering principles in solving engineering problems in the field of mechanical engineering.
3. To consolidate the theoretical knowledge and practical skills in solving problems in the field of mechanical engineering.
4. To analyse different assumptions, approaches and procedures related to practical problems in the field of mechanical engineering.
5. To select appropriate analytical methods, modelling procedures and computer equipment in the analysis of systems with expected independent and purposeful functioning.
6. To recognise the possibilities and limitations of applied techniques and methods.

SKILLS

7. To apply the techniques, skills and advanced engineering tools necessary in the engineering work.
8. To design experiments by applying scientific principles in the field of mechanical engineering.
9. To conduct experiments and measurements and analyse and interpret collected data and measurement results.
10. To reach conclusions based on experimental research and substantiate those conclusions.
11. To apply the methods, skills and contemporary engineering tools to effectively resolve the engineering problems, both independently and as a part of team.
12. To prepare design documents and technical reports, using modern technologies.
13. To use the literature, databases and other sources of information.
14. To present project results in writing and orally, in Croatian and English language.

INDEPENDENCE

15. To actively participate in and manage projects in the area of engineering, from the preparation stage to completion.
16. To continuously acquire knowledge of new methods and technologies.

RESPONSIBILITY

17. To demonstrate awareness of the influences of engineering processes on the individual, society and environment.
18. To demonstrate professional and ethical responsibility in unforeseen conditions.
19. To demonstrate awareness on health, safety and legal issues related to the individuals and social groups.
20. To recognise the need for participating in life-long learning and acquiring the knowledge about new technologies.

2.3. Employment possibilities

Split is the economic and university hub of the entire Dalmatian region, as well as one part of the neighbouring region of Bosnia and Herzegovina. FESB is the only higher education institution in the region of south Croatia which delivers the university study programmes in Mechanical Engineering. To respond to the demands of the development in the region, already in 1965 first two years of the study programme in Mechanical Engineering were established, with the purpose of educating professionals that would participate in the development of economy sectors based on mechanical engineering. Fulfilling the purpose of the study programme in Mechanical Engineering is manifested in the number of students who successfully complete their studies and start their careers in almost all sectors of economy. Following the completions of studies, the acquired knowledge enables the students to find employment in various sectors, e.g. processing, chemical or service industries. This is especially relevant in this moment, with social and economic changes driving the development of new, small and medium technologically advanced enterprises that could serve as the new driving force for economic development. Following the completion of studies, the students acquire an appropriate level of knowledge and skills that enable them to perform professional tasks and provide them with skills necessary for participating in working processes in the field of mechanical engineering.

The special importance of this study programme, with regard to the labour market, is that it represents the first stage of the comprehensive two-cycle educational process which results in producing a fully educated expert capable of solving the most complex engineering tasks and participating in scientific research. The demand for experts with these learning outcomes considerably exceeds the available number of educated experts in the region, Croatia and the world.

2.4. Possibilities of continuing studies at a higher level

After completing the undergraduate university study programme in Mechanical Engineering, graduates may continue their studies at the graduate study programme in Mechanical Engineering or any other related study programme in accordance with the admission requirements of that study programme.

2.5. Name lover level studies of the proposer or other institutions that qualify for admission to the proposed study

2.6. Structure of the study

The study programme is structured per semesters, lasting 6 semesters, two in each academic year. Each semester corresponds to 30 ECTS credits. During the first two years of the studies, the students acquire fundamental knowledge in mathematics and natural sciences and fundamental knowledge in mechanical engineering. In the final part of the studies, through expert courses, the completeness of the studies is achieved by preparing the students of the undergraduate university study programme in Mechanical Engineering both for independent professional work and continuation of studies at the graduate level. In the third year of studies, in addition to mandatory courses, the students select two elective courses. The final component of the study programme is preparing and defending the final paper. The conditions for enrolling a course are listed in the course table. Lectures are delivered in groups up to 100 students, auditory exercises and seminars in groups of 30 students, laboratory exercises in groups of 10 students and design exercises in groups of 6 students.

2.7. Guiding and tutoring through the study system

During the course of study programme activities, students have access to all the Faculty services. For the purpose of timely and effective communication, notifications and information are provided to students through the e-learning portal.

2.8. List of courses that the student can take in other study programmes

Students may enrol courses from other study programmes only as elective courses which are not included in the standard workload of 30 ECTS credits per semester.

2.9. List of courses offered in a foreign language as well

Course tables for individual courses list the option of teaching a course in a foreign language.

2.10. Criteria and conditions for transferring the ECTS credits

Transfer or recognition of ECTS credits between related undergraduate university study programmes is allowed. The criteria and conditions for transferring the ECTS credits are regulated by the *Regulations on Studies and Study System at the University of Split*.

2.11. Completion of study

Final requirement for completion of study	Final thesis ☒ Diploma thesis ☐	Final exam ☐ Diploma exam ☐
Requirements for final/diploma thesis or final/diploma/exam	The requirement for applying for the final paper is acquired 120 ECTS credits.	
Procedure of evaluation of final/diploma exam and evaluation and defence of final/diploma thesis	The final paper is evaluated by the mentor (supervisor) and the defence of the final paper is conducted orally, in the presence of the mentor and students who also defend their paper with the same mentor.	

2.12. List of mandatory and elective courses

List of courses									
Year of study: 1.									
Semester: I.									
STATUS	CODE	COURSE	HOURS IN SEMESTER					ECTS
			L	S	AE	LE	DE	
Mandatory	FEMX01	Mathematics 1	45	0	45	0	0	7
	FESC02	Mechanics 1	45	0	45	0	0	7
	FETC01	Materials 1	45	0	0	30	0	6
	FEMC03	Physics	45	0	0	0	0	4
	FESC19	Engineering Graphics 1	15	0	0	0	30	4
	FEOC02	English Language 1	0	30	0	0	0	2
	Total		195	30	90	30	30	30
	L = Lectures, S = Seminar, AE = Auditory Exercises, LE = Laboratory Exercises, DE = Design Exercises							
	There are no elective courses.							

List of courses								
Year of study: 1.								
Semester: II.								
STATUS	CODE	COURSE	HOURS IN SEMESTER					ECTS
			L	S	AE	LE	DE	
Mandatory	FEMX02	Mathematics 2	45	0	45	0	0	7
	FESC05	Mechanics of Materials 1	45	0	30	0	0	6
	FETC02	Materials 2	30	0	0	30	0	5
	FESC21	Mechanics 2	30	0	30	0	0	5
	FESC20	Engineering Graphics 2	30	0	0	0	30	4
	FEOC03	English Language 2	0	30	0	0	0	3
	Total		180	30	105	30	30	30
	L = Lectures, S = Seminar, AE = Auditory Exercises, LE = Laboratory Exercises, DE = Design Exercises							
	There are no elective courses.							

List of courses									
Year of study: 2.									
Semester: III.									
STATUS	CODE	COURSE	HOURS IN SEMESTER					ECTS
			L	S	AE	LE	DE	
Mandatory	FESC04	Mechanics 3	45	0	15	15	0	7
	FESC06	Thermodynamics 1	45	0	30	0	0	7
	FEMC02	Mathematics 3	30	0	30	0	0	6
	FESC22	Computer- Aided Analysis	30	0	0	30	0	5
	FESC08	Mechanics of Materials 2	30	0	30	0	0	5
	Total		180	0	105	45	0	30
	L = Lectures, S = Seminar, AE = Auditory Exercises, LE = Laboratory Exercises, DE = Design Exercises							
	There are no elective courses.							

List of courses								
Year of study: 2.								
Semester: IV.								
STATUS	CODE	COURSE	HOURS IN SEMESTER					ECTS
			L	S	AE	LE	DE	
Mandatory	FESC10	Machine Elements 1	45	0	15	0	30	7
	FESC11	Fluid Mechanics 1	45	0	30	15	0	7
	FESC09	Thermodynamics 2	45	0	30	0	0	7
	FETC03	Technology 1	60	0	0	30	0	6
	FETC05	Economics and Organization	30	0	15	0	0	3
	Total		225	0	90	45	30	30
	L = Lectures, S = Seminar, AE = Auditory Exercises, LE = Laboratory Exercises, DE = Design Exercises							
	There are no elective courses.							

List of courses									
Year of study: 3.									
Semester: V.									
STATUS	CODE	COURSE	HOURS IN SEMESTER					ECTS
			L	S	AE	LE	DE	
Mandatory	FESC12	Machine Elements 2	45	0	15	0	30	7
	FESC13	Hydraulic Machines	45	0	15	15	0	7
	FETC04	Technology 2	60	0	0	30	0	6
	FESC14	Thermal Machines	45	0	15	15	0	6
	FENC01	Electrical Engineering and Electronics	30	0	15	15	0	4
	Total		225	0	60	75	30	30
	L = Lectures, S = Seminar, AE = Auditory Exercises, LE = Laboratory Exercises, DE = Design Exercises							
	There are no elective courses.							

List of courses								
Year of study: 3.								
Semester: VI.								
STATUS	CODE	COURSE	HOURS IN SEMESTER					ECTS
			L	S	AE	LE	DE	
Mandatory	FETC06	Industry Processes Automatic Control	30	0	0	30	0	5
	FETC13	Theory and Technique Of Measurement	45	0	0	15	0	5
		Elective Course 1						
		Elective Course 2						
	FEXX01	Final Thesis						12
	Total		75	0	0	45	0	22
Elective	FESC15	Marine Machinery and Devices	30	0	30	0	0	4
	FESC18	Design of Industrial Products	30	0	0	0	30	4
	FETC12	Design for Manufacturing	30	0	0	0	30	4
	FETC14	Quality Control	30	0	15	0	0	4
	FESC24	Metal Structures Design	30	0	0	0	30	4
	FEOC04	Introduction to Public Speaking	30	0	0	0	0	4
	FETC11	Tribology	30	0	30	0	0	4
	FEOC05	Communication Skills in English	30	0	0	0	0	4
	FESR16	Noise and Vibration Control	30	0	15	15	0	4
	FEXX06	Professional Training						5
	L = Lectures, S = Seminar, AE = Auditory Exercises, LE = Laboratory Exercises, DE = Design Exercises							
	Two elective courses are chosen.							

2.13. Course description

NAME OF THE COURSE	COMMUNICATION SKILLS IN ENGLISH						
Code	FEOC05	Year of study	3.				
Course teacher	Mirjana M. Kovač, Ph.D., Assistant Professor Nina Sirković, Ph.D., Assistant Professor	Credits (ECTS)	4				
Associate teachers	-	Type of instruction (number of hours)	L	S	AE	LE	DE
			0	30	0	0	0
Status of the course	Optional	Percentage of application of e-learning	0				

COURSE DESCRIPTION

Course objectives	Training students for: - Development of students' oral and written communication skills in English - Leading of formal and informal communication as well as team communication - Improving general English language knowledge
Course enrolment requirements and entry competences required for the course	None
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Prepare and hold a professional presentation in English - Implement rules for writing professional papers as well as for formal writing in general - Use phrasal expressions to improve English language knowledge - Lead a formal professional conversation - Actively participate in an international team as well as in formal meetings

Course content broken down in detail by weekly class schedule (syllabus)

Course content	S hours	AE hours
Course introduction: presentation skills, written and interpersonal communication	2	
Presentation planning: mind maps and the pyramid principle	2	
Presentation structure, verbal, vocal and nonverbal presentation skills	2	
Technical presentation: organisation and performance	2	
Presentations: peer assessment	6	
First midterm exam		
Written communication: writing seminar, final, professional and scientific paper	2	
Technical paper structure	2	
Scientific style used in technical writing	2	
Business communication skills: socialisation and interpersonal communication	2	
Formal and informal communication	2	
Team communication	2	
Second midterm exam		

Format of instruction	☐ lectures	☒ independent assignments

<table>
<tr><td></td><td colspan="4">☒ seminars and workshops
☐ exercises
☐ *on line* in entirety
☐ partial e-learning
☐ field work</td><td colspan="2">☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required exercises.</td></tr>
<tr><td rowspan="5">Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*</td><td>Class attendance</td><td></td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>1</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>Presentation</td><td>1</td></tr>
<tr><td>Tests</td><td>2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">There are two midterms and a final exam. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. Students who do not pass both midterm exams have to take the final exam containing learning materials from both midterm exams.

Grade (in percentage) is formed according to the score:

88-100% - excellent (5)

75-87% - very good (4)

62-74% - good (3)

50-61% - sufficient (2).

Midterm and final exams are carried out according to the academic year calendar.</td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td colspan="4">**Title**</td><td>**Number of copies in the library**</td><td>**Availability via other media**</td></tr>
<tr><td colspan="4">Kovač M. M., Sirković, N. (2014). Presentation, Writing and Interpersonal Communication Skills. Split. FESB.</td><td>10</td><td></td></tr>
<tr><td colspan="4">Barker, A. (2010). Improve your communication skills. London and Philadelphia. Kogan page.</td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Master, Peter (2004). English Grammar and Technical Writing. Washington: US Department of State, Office of English Language Programs.

Mc Carthy, Michael; O'Dell, Felicity. (2008). Academic Vocabulary in Use. Cambridge: Cambridge University Press.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">Evaluation of results in accordance with the above learning outcomes
Feedback from students via surveys
Self-evaluation of teachers</td></tr>
<tr><td>Other (as the</td><td colspan="6"></td></tr>
</table>

proposer wishes to add)	

NAME OF THE COURSE	**COMPUTER- AIDED ANALYSIS**							
Code	FESC22	Year of study	2					
Course teacher	Damir Vučina, Ph.D.,Full Professor	Credits (ECTS)	5					
Associate teachers	Igor Pehnec, Ph.D., Asistant Professor Ivo Marinić- Kragić, Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE	
			30	0	0	30	0	
Status of the course	Obligatory	Percentage of application of e-learning	0					
COURSE DESCRIPTION								
Course objectives	Acquiring theoretical know-how in basic numerical methods in engineering. Developing competences in modeling engineering problems for numerical methods. Developing practical skills in developing C and Matlab code for engineering problems.							
Course enrolment requirements and entry competences required for the course	Competences acquired in courses Mathematics I, Mechanics I							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	After completing the course, students will be able to: • Explain the basic setup of computers, • Describe the procedure of developing programs, • C language: characterize the properties of syntax elements • Categorize the properties of numerical procedures • Develop flowcharts for simpler problems • Numerically model simpler engineering problems • Create and apply basic methods of numerical analysis for: solving linear systems, nonlinear equations, integration, differentiation, interpolation, approximation • Develop and test own programs in C							

	Course content	L hours	AE hours
Course content broken down in detail by weekly class schedule (syllabus)	Introduction to computers, binary system, logic functions. Introduction to computer-aided analysis.	2	
	Basics of numerical procedures and analysis, simple algorithms.	2	
	C-language programming part 1	2	
	C-language programming part 2	2	
	Developing flowcharts and pseudo-code, part 1	2	
	Developing flowcharts and pseudo-code, part 2	2	
	Elementary numerical procedures and engineering applications (mechanics, fluid mechanics, thermodynamics)	2	
	Engineering application of numerical methods: Solving linear systems	2	
	Engineering application of numerical methods: Solving nonlinear equations and systems.	2	
	Engineering application of numerical methods: Interpolation by polinomials and piecewise polynomials	2	
	First midterm exam		
	Engineering application of numerical methods: Approximation using polinomials.	2	
	Engineering application of numerical methods: Numerical	2	

	differentiation and integration. Search and optimization-basics.		
	Examples of setting up physical and mathematical models for different engineering problems. Development of corresponding algorithms and computer programs in C-language and MATLAB.	2	
	Second midterm exam		
	List of laboratory exercises		LE hours
	Visual studio, workspace, compiler, linker. Basic terms of C, Types, operators, expressions. printf().		2
	Declaring variables, formatted output, data input. scanf().		2
	Conditional expresions. Branching, if, if-else, if-else if-...-else		2
	Loops, while(), do-while(), for().		2
	Files, fopen(), fprintf(), fscanf(), feof().		2
	Arrays, 1D, 2D		2
	Functions, declaration, definition, passing arguments		2
	Pointers. Passing by value and by reference		2
	Introduction to numerical methods. Interpolation		2
	Introduction to numerical methods. Non-linear equations, successive halving and Newton's method		2
	Introduction to numerical methods. Integration, trapezoid quadrature, Simpson's method.		2
	Basics of MATLAB. Differences to C. Basic syntax.		2
	Numerical methods in MATLAB		2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	3	Research		Practical training	
	Experimental work		Report		Individual work	2
	Essay		Seminar essay		Laboratory exercises	
	Tests		Oral exam		Preparation for laboratory exercises	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. Each midterm test consists of respective theoretical questions and numerical problems. The final tests consist of overall theoretical questions and numerical problems. In the final exams, students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests. The requirement for passing grade is the positive assessment of laboratory exercises and 50 % points on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula: Grade(%) = 0,5 (M1 + M2) the activities in percentage: • M1, M2 – test results.

Required literature (available in the	**Title**	**Number of copies in**	**Availability via other media**

library and via other media)		**the library**	
	D. Vučina, "Primjena računala u inženjerskoj analizi", Sveučilište u Splitu, FESB, Split, 2007		
	I. Pehnec, materijali za vježbe		
Optional literature (at the time of submission of study programme proposal)	Željan Lozina, 'Uvod u programiranje', Sveučilište u Splitu, 2005 S. C. Chapra, R.P. Canale, "Numerical Methods for Engineers", McGraw-Hill 2006 G. Lindfield, J. Penny, "Numerical Methods using MATLAB ", Ellis Horwood 1995 W.Cheney, D. Kincaid, 'Numerical mathematics and computing', Brooks/Cole 2008		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

NAME OF THE COURSE	**DESIGN FOR MANUFACTURING**							
Code	FETC12	Year of study	3					
Course teacher	Nikola Gjeldum, Ph.D., Assistant Professor	Credits (ECTS)	4					
Associate teachers	Marina Crnjac, Teaching assistant Ivan Peko, Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE	
			30	0	0	0	30	
Status of the course	Elective	Percentage of application of e-learning	0 %					
COURSE DESCRIPTION								
Course objectives	Objectives: – Understanding and application of Design for Manufacturing basic principles – Teach students to design a product in Siemens NX CAD software – Teach student to design a product taking into account a costs, raw material shapes availability and available manufacturing equipment – Teach student to analyze a product and distinguish elements where it is possible to make improvements							
Course enrolment requirements and entry competences required for the course	None							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: – Design a product according to Design for Manufacturing guidelines – Design a product in Siemens NX CAD software – Generate designed product drawings – Combine application of different raw materials and technological processes during product design phase – Compare different product elements according to Design for Manufacturing criteria – Adapt product elements design aiming to cheaper and faster production process							
Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours						
	Introduction and historical view of Design for Manufacturing development	2						
	Basic concepts of Design for Manufacturing	2						
	Economical choice of production process	2						
	Economical choice of raw material shape	2						
	General principles and guidelines of Design for Manufacturing	4						
	Lean manufacturing methods	2						
	First midterm exam	2						
	Product design for machining processes	2						
	Product design for deforming processes. Product design for casting processes	2						
	Product design for polymer materials production processes	1						
	Product design for surface treatment processes	2						

	Product design for transport and logistic	2
	Product design modifications	2
	Basics of Design for Assembly	1
	Second midterm exam	2
	List of design exercises	DE hours
	Introduction in Siemens NX CAD software	2
	Part design in Siemens NX	10
	Product design modifications in Siemens NX	8
	Generating product drawings in Siemens NX	6

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures and exercises in the amount of at least 70 % of the times scheduled.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research		Practical training	0,5
	Experimental work		Report		Individual work	2,2
	Essay		Seminar essay		(Other)	
	Tests	0,2	Oral exam		(Other)	
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	During semester there are two midterm exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the first two final exams students that did not pass at least one of the midterm exams take part. In the third and fourth final exams students take the whole exam regardless results of midterm exams. The requirements for passing grade are positive assessment of individual project and positive assessment in exam. Positive assessment represents minimal 50% points on each midterm exam or minimal 50% points on final exam. Final exams are conducted in written form. Midterm exams and final exams consist of theoretical questions and numerical problems. Grade (%) = (D + E) / 2 D – Individual project grade (%) E – average points achieved on midterm exams expressed as a percentage or number of points achieved on the final exam expressed as a percentage. E = (M1 + M2)/2 M1, M2 – average points achieved on midterm exams expressed as a percentage. Grade (%): Final mark: 50% - 61% sufficient (2) 62% - 74% good (3) 75% - 87% very good (4) 88% - 100% excellent (5)

Required literature (available in the	**Title**	**Number of copies in**	**Availability via other media**

library and via other media)		**the library**	
	Gjeldum, N.: "Dizajn za proizvodnju", lectures on e-learning, FESB Split		Internet (e-learning)
	Marinescu, I., Boothroyd, G.: "Product design for manufacture and assembly", Marcel Dekker, New York, 2002.	1	
	Corrado P.: "Design for Manufacturing: A Structured Approach, 1st Edition", Butterworth-Heinemann, Woburn, 2001.	1	
Optional literature (at the time of submission of study programme proposal)	1. A.J.D.Lambert Surendra M. Gupta: "Disassembly Modeling for Assembly, Maintenance, Reuse, and Recycling", CRC Press, 2000. 2. Molloy, O., Tilley, S., Warman, E.: "Design for manufacturing and assembly – Concepts, architectures and implementation, Springer Science + Bussines Media, 1998. 3. WEB publications on DFM		
Quality assurance methods that ensure the acquisition of exit competences	– keeping records of the attendance of students – annual evaluation of teachers – periodical evaluation of individual project advancement – feedback from students via surveys – self-evaluation of teachers – institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

NAME OF THE COURSE	DESIGN OF INDUSTRIAL PRODUCTS						
Code	FESC18	Year of study	3				
Course teacher	Željko Domazet, Ph. D., Full Professor, Lovre Krstulović-Opara, Ph. D., Full Professor	Credits (ECTS)	4				
Associate teachers		Type of instruction (number of hours)	L	S	AE	LE	DE
			30	0	0	0	30
Status of the course	Obligatory	Percentage of application of e-learning	40%				

COURSE DESCRIPTION

Course objectives	Training students for: - Acquiring basic terminology and methodologies of product design and development with goal to optimise applicability, shape and appearance of industrial products. - Acquiring knowledge about fundaments, methods and technologies for designing industrial products. The course covers product development process from market and concept researches to the product ramp up. - Using CAD program SolidWorks and 3D scanner to create prototypes.
Course enrolment requirements and entry competences required for the course	None
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Name main epochs of industrial design. - Name main designers and design schools. - Explain basic of ergonomics, aesthetics and gestalt theory. - Explain generalised product development process. - Describe advanced methods of rapid prototyping and 3D scanning - Design and create simple industrial product by using SolidWorks package.

Course content broken down in detail by weekly class schedule (syllabus)

Course content	L or S hours	AE hours
Introduction to DIP and generalized product developement.	2	
Product planning.	2	
Identifying customer needs.	2	
Product specifications.	2	
Concept generation and selection.	2	
Product Architecture.	2	
Industrial design.	2	
Design for manufacturing.	2	
Prototyping.	2	
History of industrial design	2	
Aesthetics.	2	
Ergonomy.	2	
Gestalt theory.	2	

List of laboratory or design exercises	DE hours
CAD modelling in software package SolidWorks	6
3D scanning	1
Product development from the market research to the CAD prototype.	13
Preparing final report and product presentation.	8

<table>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☒ seminars and workshops
☐ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ independent assignments
☒ multimedia
☐ laboratory
☐ work with mentor
☒ Group work- product developement</td></tr>
<tr><td>Student responsibilities</td><td colspan="6"></td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>2</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>1</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td>1</td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">Evaluation of gained knowledge in form of two colloquiums.
Maximal score is 100 points, while minimum is passing of exam is with 50 points.
Exam: individual, theoretical.
Mode of exam: written form.</td></tr>
<tr><td rowspan="6">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">Design of industrial products (in Croatian)</td><td></td><td>E-learning</td></tr>
<tr><td colspan="4">Additional course materials</td><td></td><td>E-learning</td></tr>
<tr><td colspan="4"></td><td></td><td></td></tr>
<tr><td colspan="4"></td><td></td><td></td></tr>
<tr><td colspan="4"></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Otto, K. N., Wood K. L., Product Design, Prentice Hall, New York, 2001.
Quarante D. Osnove industrijskog dizajna, Sveučilišna naklada Zagreb, 1991.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">- Student evaluations
- Registering student’s attendance to course</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

NAME OF THE COURSE	**ECONOMICS AND ORGANIZATION**						
Code	FETC05	Year of study	2.				
Course teacher	Ivica Veža, Ph. D. Full Professor	Credits (ECTS)	3				
Associate teachers	Marko Mladineo, Ph. D., Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE
			30	0	15	0	0
Status of the course	Obligatory	Percentage of application of e-learning	0				
COURSE DESCRIPTION							
Course objectives	Training students for: - understanding basic knowledge of production organization theory, and new organization structures - solving problem of profitability (based on income and cost) and equilibrium point (based on supply and demand)						
Course enrolment requirements and entry competences required for the course	None						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. define the difference between classic and neoclassic organization theories 2. define the modern theories of organization 3. define outer and inner factors that affect the selection of organization structure 4. calculate fixed and variable costs 5. calculate equilibrium point						

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L or S hours	AE hours
	Introduction. Organization basics.	2	
	Theory of organization (classic, neoclassic, modern). Modelling of organization structures.	2	
	Types of organization structures.	2	
	Modern trends in organization modelling.	2	
	Lean Management (VS,5S, kaizen)	2	
	Toyota Production System.	2	
	Parallel engineering, fractal factory.	2	
	Networked factory (virtual factory), business process reengineering, agile manufacturing.	2	
	Organization of material factors. Organization of human resources.	2	
	Organization of control and management. Organization dynamics.	2	
	Enterprise, entrepreneurship, entrepreneur. Legal entities of enterprise. Types of integration of enterprise.	2	
	Organization of business functions.	2	
	Theory of production and costs. Theory of production. Optimal combination of production factors. Production costs.	2	
	Macroeconomic basics.		2
	Microeconomic basics.		2
	Break-even point (BEP)		2
	Introduction to inventory management		2
	EOQ and ROP method		2
	Models based on probability and safety stocks		2
	JIT method		1

<table>
<tr><td rowspan="8"></td><td colspan="5">List of laboratory or design exercises</td><td colspan="2">LE or DE hours</td></tr>
<tr><td colspan="5"></td><td colspan="2"></td></tr>
<tr><td colspan="5"></td><td colspan="2"></td></tr>
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<tr><td colspan="5"></td><td colspan="2"></td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☒ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6"></td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,0</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work (Other)</td><td>2,0</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>0</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. Each midterm test consists of 5 theoretical questions and lasts for 45 minutes. The midterm and final exams are carried out as written tests. The requirement for passing grade is the positive grade of AE test (exercise on inventory management at the end of semester) 40 % points on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula:
Grade(%) = 0,20 AE + 0,4 (M1 + M2)
the activities in percentage:
- AE – grade of AE test,
- M1, M2 – test results.
Final grade is calculated after the second final exam based on the ECTS relative grade system in accordance to Regulations of studies and studying system of University of Split. Students that passed the exam are divided into the four groups: 15% best ones are given grade excellent, next 35% are given grade very good, next 35% grade good, and last 15% grade sufficient. Students that didn't pass the exam after second final exam write correction exam on the autumn and maximum grade they can get is sufficient. Correction exam is test of the whole curriculum of the course. It is a written test consisting of 10 theoretical questions and lasts for 45 minutes.</td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">Dulčić, Ž.; Pavić, I.; Rovan, M.; Veža, I.: Proizvodni menedžment. Fakultet elektrotehnike, strojarstva i brodogradnje – Ekonomski fakultet, Split, 1996.</td><td>5</td><td></td></tr>
<tr><td colspan="4">Sikavica P.; Novak, M.: Poslovna organizacija,</td><td>5</td><td></td></tr>
</table>

	informator, Zagreb, 2011.		
Optional literature (at the time of submission of study programme proposal)	- Schroeder, R.G.: Upravljanje proizvodnjom, Mate, Zagreb, 2000		
Quality assurance methods that ensure the acquisition of exit competences	- Assessment of students presence on lectures - Annual institutional evaluation of students success on exams - Feedback from students via surveys - Self-evaluation of teachers		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">ELECTRICAL ENGINEERING AND ELECTRONICS</td></tr>
<tr><td>Code</td><td>FENC01</td><td>Year of study</td><td colspan="5">3.</td></tr>
<tr><td>Course teacher</td><td>Ivan Marinović, Ph.D., Full Professor
Ivica Jurić-Grgić, Ph.D., Associate Professor</td><td>Credits (ECTS)</td><td colspan="5">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Duje Čoko,Ph.D,, Teaching assistant
Nedjeljka Grulović–Plavljanić, Teaching assistant
Ivan Krolo, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>30</td><td>0</td><td>15</td><td>15</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- application of basic principles and laws of electrical engineering,
- setting up and solving simple electrical circuits,
- permanent adoption of basic knowledge in the field of electrical machines,
- thorough understanding of physical principles within semiconductors
- basic digital and analog circuit analysis
- application of Boolean algebra
- understanding the basic functions of microcontroller systems</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- definethe fundamental phenomena, the quantities and the laws of electrical engineering,
- apply fundamental laws of electrical engineering for the calculation of electromagnetic quantities,
- analyse simple electrical networks,
- measure basic electrical values (current, voltage, resistance).
- describe basic principles of electrical machines.
- recognize basic analog and digital electronic circuits
- DC and AC analysis of basic circuits incorporating diodes and transistors
- solve Boolean algebra problems
- understand the basic microcontroller system functions</td></tr>
<tr><td rowspan="4">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Electrostatics:electricity and physical property of matter;Coulomb's law;electric field; electric flux density, electrical work, electrostatic voltage,electrostatic potential, capacitance, capacitors, static electricity.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">DC currents: Electric circuits; electrical property of matter; Electrical conductivity and electrical resistance; voltage and current sources;Ohm's law; temperature dependence of electrical resistance; series, parallel and combination circuits; Kirchhoff's Laws; power and energy of DC current; circuit analysis techniques; electrolysis and chemical sources of electric current.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Magnetism:Basics of magnetism; natural magnet and</td><td>2</td><td>1</td></tr>
</table>

	electromagnet; magnetic flux; Faraday's law; magnetic forces on moving charges and on a current-carrying wire; magnetic force between two parallel current-carrying wires; Ampere's Law; toroidal solenoid. Mutual and self inductance; leakage of magnetic flux; ferromagnetism; magnetic hysteresis; magnetic circuit; magnetic energy;magnetic force.		
	AC currents: Current and voltage sinusoidal waveform;form and crest factor; generation of a voltage sinusoidal waveform;Euler's formula for complex numbers;phase relationships in AC Circuits; Ohm's law in complex form;resistive and reactive impedance in AC Circuits; series, parallel and combination AC circuits; circuit analysis techniques using complex numbers; power and energy of AC current;three-phase AC circuits.	2	2
	Transformers and synchronous machines	2	0
	Induction motors	2	0
	DC motors; universal motors.	2	0
	Semiconductors: diodes, transistors, thyristors	2	2
	Analog electronic circuits	2	2
	Digital electronic circuits	2	2
	Microprocessors	2	0
	Sensors and actuators	2	0
	Microprocessor-assisted control of processes and machines	2	0
	List of laboratory exercises		LE hours
	Series, parallel and combination DC circuits		2
	Resistive and reactive impedance in AC Circuits		2
	Power of AC current		2
	Open circuit test on transformer		2
	Basic diode circuits		2
	Basic transistor amplifiers		2
	Operational amplifier		2
	Logic gates, multiplexer, demultiplexer		1

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐*on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Studentresponsibilities	The presence on lectures in the amount of at least 70% of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for eachactivity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research		Practical training	
	Experimental work		Report		Individual work	2
	Essay		Seminar essay		Laboratory exercises	0,5
	Tests	0,2	Oral exam		Preparation for laboratory exercises	0,2
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester there will be two midterm tests. The first test will be at the eighth week of classes, the second at the first week of the exam period. Student can pass the entire exam by midterm tests. At the two final exams, students take parts of the curriculum that did not pass by midterm tests. If at the first final exam student passes one of the two parts of

<table>
<tr><td></td><td colspan="3">curriculum that part of curriculum the student does not have to take on another final exam.

Students who did not pass the exam after two final exams can pass the exam at the last week of August or the first week of September. Last chance to take the exam in this school year is a so-called commission exam. So-called commission exam consist of two separated tests. First test dealing with electrical engineering consist 10 theoretical questions and 2 numerical problems while second one dealing with electronics consists of 6 theoretical questions and 2 numerical problems.

The condition for positive assessment is that the student has at least 50% of each part of the curriculum at the midterm tests or at the final exams. The final grade (in percent) is formed on the basis of all activities according to the formula:

Rating (%) = 0.1 * LV + 0.45 * (G1 + G2)

wherein the activity is expressed in percentage according to:

LV - percentage obtained by laboratory exercises,
G1, G2 - percentage obtained by midterm tests or final exams of the parts of curriculum given in lectures.

The final grade is determined as follows:

Rating Grade
50% to 61% sufficient (2)
62% to 74% good (3)
75% to 87% very good (4)
88% 100% excellent (5)</td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>I. Jurić-Grgić: Lectures, FESB</td><td></td><td>e-learning portal</td></tr>
<tr><td>I. Marinović: Lectures, FESB</td><td></td><td>e-learning portal</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">A. Maletić: Osnove elektrotehnike, ELMAP, Split, 1993.
R. Wolf: Osnove električnih strojeva, Školska knjiga, Zagreb, 1985.
J. Grilec, D. Zorc: Osnove elektronike, Školska knjiga, Zagreb, 2002.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">– Evaluation of students presence on lectures
– Evaluation of results in accordance with the above learning outcomes
– Feedback from students via surveys
– Self-evaluation of teachers
– Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">ENGINEERING GRAPHICS 1</td></tr>
<tr><td>Code</td><td>FESR19</td><td>Year of study</td><td colspan="5">1</td></tr>
<tr><td>Course teacher</td><td>Željko Domazet, Ph.D., Full Professor</td><td>Credits (ECTS)</td><td colspan="5">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Miro Bugarin, Ph.D., Assistant Professor, Ivan Špar, Teaching assistant Dejan Bobić, Teaching assistant, Joško Kunac, Teaching assistant, Petra Bagavac, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>15</td><td>0</td><td>0</td><td>0</td><td>30</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">40%</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- Reading and making technical drawings
- Getting knowlage of descriptive geometry
- Solving metrics tasks, cross sections and intersections of geometrical bodies</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
1. Create 2D and 3D techical drawings
2. understand any technical drawing
3. apply general laws of descriptive geometry
4. precisely draw any cross section or intersection of geometrical bodies</td></tr>
<tr><td rowspan="15">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Introduction and general terms</td><td>1</td><td></td></tr>
<tr><td colspan="5">Ortogonal projection on 2 or 3 planes</td><td>1</td><td></td></tr>
<tr><td colspan="5">Mutual position between point, line and plane</td><td>1</td><td></td></tr>
<tr><td colspan="5">Metrics tasks</td><td>2</td><td></td></tr>
<tr><td colspan="5">Projections of a geom. body</td><td>2</td><td></td></tr>
<tr><td colspan="5">I. colloquium</td><td>2</td><td></td></tr>
<tr><td colspan="5">Cross sections of different geometrical bodies</td><td>2</td><td></td></tr>
<tr><td colspan="5">Intersections of different geometrical bodies</td><td>2</td><td></td></tr>
<tr><td colspan="5">II. colloquium</td><td>2</td><td></td></tr>
<tr><td colspan="6">List of constructive exercises</td><td>hours</td></tr>
<tr><td colspan="6">Metrics tasks</td><td>8</td></tr>
<tr><td colspan="6">Mutual position between point, line and plane</td><td>6</td></tr>
<tr><td colspan="6">Cross sections of different geometrical bodies</td><td>8</td></tr>
<tr><td colspan="6">Intersections of different geometrical bodies</td><td>8</td></tr>
<tr><td>Format of instruction</td><td colspan="2">☒ lectures
☒ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="5">☒ independent assignments
☐ multimedia
☒ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student</td><td colspan="7">Lectures 70%, Exercises 100%</td></tr>
</table>

responsibilities						
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research		Practical training	
	Experimental work		Report		Individual work	1
	Essay		Seminar essay	2	Constructive tasks	1
	Tests	0.5	Oral exam		(Other)	
	Written exam	**0.5**	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Evaluation of gained knowledge in form of two colloquiums. Maximal score is 100 points, while minimum is passing of exam is with 50 points. Exam: individual,practical. Mode of exam: written form.					

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Ž. Domazet, M. Bugarin „INŽENJERSKA GRAFIKA“-materials of lectures, FESB.		E-learning
	Ksenija Horvatić-Baldasar, Ivanka Babić „NACRTNA GEOMETRIJA“, SAND d.o.o. Zagreb	5	Library FESB

Optional literature (at the time of submission of study programme proposal)	- M. Opalić, M. Kljajin, S. Sebastijanović „TEHNIČKO CRTANJE“ Zrinski d.d. Zagreb - Ivan Prebil „OPISNA GEOMETRIJA“ fakulteta za strojništvo, Ljubljana
Quality assurance methods that ensure the acquisition of exit competences	- Student evaluations - Registering student’s attendance to course
Other (as the proposer wishes to add)	

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="8">ENGINEERING GRAPHICS 2</td></tr>
<tr><td>Code</td><td>FESC20</td><td>Year of study</td><td colspan="6">1</td></tr>
<tr><td>Course teacher</td><td>Tonči Piršić, Ph.D., Associate Professor</td><td>Credits (ECTS)</td><td colspan="6">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Petra Bagavac, Teaching assistant
Miro Bugarin, Ph.D. Assistant Professor
Ivan Špar, Teaching assistant
Joško Kunac, Teaching assistant
Dejan Bobić, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td colspan="2">DE</td></tr>
<tr><td>30</td><td>0</td><td>0</td><td>0</td><td colspan="2">30</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="6">40%</td></tr>
<tr><td colspan="9">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="8">Training students for:
-</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="8">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="8">Students will be able to:
Ability of drawing technical drawings both by hand and by using the computer.
Understanding of basis principles of engineering design.</td></tr>
<tr><td rowspan="13">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="6">Types of drawings. Drawing formats.</td><td>2</td><td>2</td></tr>
<tr><td colspan="6">Part lists. Scales. Line types and purposes. Layers. Prospective views. Isometric view. Orthogonal view.</td><td>4</td><td>4</td></tr>
<tr><td colspan="6">Cross-sections. Hatching. Reducing the number of views. Simplifications in drawings.</td><td>4</td><td>4</td></tr>
<tr><td colspan="6">Drawing of screw threads. Schematic representation of threads. Dimensioning: line, radius, diameter, arc.</td><td>4</td><td>4</td></tr>
<tr><td colspan="6">Dimensioning of cone and inclination. Dimensioning styles. Surface roughness. Parameters of surface roughness, symbols and application.</td><td>4</td><td>4</td></tr>
<tr><td colspan="6">Blocks and their properties. Using the blocks. Attributes. Prototype drawing. Tolerances and fits. Fit types.</td><td>6</td><td>4</td></tr>
<tr><td colspan="6">ISO system of fits. Geometric tolerances. Basic of AutoCAD.</td><td>2</td><td>6</td></tr>
<tr><td colspan="6"></td><td></td><td></td></tr>
<tr><td colspan="7">List of laboratory or design exercises</td><td>LE or DE hours</td></tr>
<tr><td colspan="7"></td><td></td></tr>
<tr><td colspan="7"></td><td></td></tr>
<tr><td colspan="7"></td><td></td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒exercises</td><td colspan="5">☐ independent assignments
☐ multimedia
☐ laboratory</td></tr>
</table>

<table>
<tr><td></td><td colspan="3">☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>1</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td>2</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks.</td></tr>
<tr><td rowspan="6">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">1. T. Piršić: "Tehničko crtanje", FESB - Split, 2010.</td><td></td><td></td></tr>
<tr><td colspan="4">2. T. Piršić: "AutoCAD u strojarstvu", FESB - Split, 2010.</td><td></td><td></td></tr>
<tr><td colspan="4">3. Grupa autora: Inženjerski Priručnik, IP1 – Temelji inženjerskih znanja (Chapter) “Inženjerska grafika”), Školska knjiga, Zagreb, 1999.</td><td></td><td></td></tr>
<tr><td colspan="4">4. M. Opalić, M. Kljajin, S. Sebastijanović: “Tehničko crtanje”, Zrinski d. d. Čakovec, 2003.</td><td></td><td></td></tr>
<tr><td colspan="4"></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Ć. Koludrović: “Tehničko crtanje u slici”, Naučna knjiga, Beograd, 1985.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">– Lectures responsible for the same subject area collaborate closely and monitor each other's work. Occassional class observations and appraisal by Head of Department</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

NAME OF THE COURSE	ENGLISH LANGUAGE 1		
Code	FEOC02	Year of study	1
Course teacher	Nina Sirković, Ph.D., Assistant Professor	Credits (ECTS)	2
Associate teachers	-	Type of instruction (number of hours)	L: 0, S: 30, AE: 0, LE: 0, DE: 0
Status of the course	Mandatory	Percentage of application of e-learning	0

	L	S	AE	LE	DE
Type of instruction (number of hours)	0	30	0	0	0

COURSE DESCRIPTION

Course objectives	Training students for: - understanding and application of technical vocabulary concerning mechanical engineering - development of students' oral and written communication skills in English - improving general English language knowledge
Course enrolment requirements and entry competences required for the course	None
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. Explain basic notions of technical sciences and their branches as well as differences between theoretical and applied sciences 2. Count and explain mechanical and physical properties of materials 3. Comment on differences between engineering materials and their uses 4. Correctly read numbers, units, equations and other mathematical expressions used in engineering 5. Translate independently less complicated professional texts and interpret tables, diagrams and charts 6. Use relevant grammar structures (passive, reduced relative clauses, cause and effect clauses, irregular plurals, MLU-s) 7. Use phrasal expressions to improve English language knowledge

Course content broken down in detail by weekly class schedule (syllabus)

Course content	S hours	AE hours
Introduction to the course, U 1 - Engineering profession	2	
Study section 1 – passive voice	2	
U 2 – Engineering mechanics	2	
Study section 2 – reduced relative clauses	2	
U 3 – Numbers and mathematics	2	
Study section 3 – mathematical expressions in engineering	2	
U 4 - Mathematics	2	
First midterm exam		
U 5 – mechanical properties of metals	2	
Study section 5 – compound nouns	2	
U 6 – Stress and strain	2	
Study section 6 –irregular plurals	2	
U 7 – Design stresses and a factor of safety	2	
Study section 7- modifiers	2	
Second midterm exam		

Format of instruction		
	☐ lectures	☒ independent assignments
	☒ seminars and workshops	☐ multimedia
	☐ exercises	☐ laboratory

	☐ *on line* in entirety ☐ partial e-learning ☒ field work			☐ work with mentor ☐ (other)		
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required exercises.					
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research		Practical training	
	Experimental work		Report		Individual work	0,5
	Essay		Seminar essay		(Other)	
	Tests	1,5	Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	There are two midterms and a final exam. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. Students who do not pass both midterm exams have to take the final exam containing learning materials from both midterm exams. 50 % of the test should be solved to have a passing grade. The grade is formed according to the score: 15 % of best solved tests - excellent (5) 35 % of second best solved test - very good (4) 35 % next solved tests - good (3) 15 % of lowest passing tests- sufficient (2). Students who pass the final test in the third term can get only sufficient grade (2). Midterm and final exams are carried out according to the academic year calendar.					

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Pilković, Mara (1987). English for Students of Mechanical Engineering. Split: FESB.		
	Morgan, David; Regan, Nicholas (2008). Take-Off. Technical English for Engineering. Reading: Garnet Education.		
	Cunningham, Sarah; Peter Moor (2000). Cutting Edge. Longman		

Optional literature (at the time of submission of study programme proposal)	Newby, David. (1996). Grammar for Communication. Zagreb: Školska knjiga. Glendinng, Eric H.; Glendinning, Norman (2001). Oxford English for Electrical and Mechanical Engineering. Oxford: Oxford University Press. Master, Peter (2004). English Grammar and Technical Writing. Washington: US Department of State, Office of English Language Programs. Mc Carthy, Michael; O'Dell, Felicity. (2008). Academic Vocabulary in Use. Cambridge: Cambridge University Press.

Quality assurance methods that ensure the acquisition of exit competences	Evaluation of results in accordance with the above learning outcomes Feedback from students via surveys Self-evaluation of teachers
Other (as the proposer wishes to add)	

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="8">ENGLISH LANGUAGE 2</td></tr>
<tr><td>Code</td><td>FEOC03</td><td>Year of study</td><td colspan="6">1</td></tr>
<tr><td>Course teacher</td><td>Nina Sirković, Ph.D., Assistant Professor</td><td>Credits (ECTS)</td><td colspan="6">3</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">-</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td colspan="2">DE</td></tr>
<tr><td>0</td><td>30</td><td>0</td><td>0</td><td colspan="2"></td></tr>
<tr><td>Status of the course</td><td>Mandatory</td><td>Percentage of application of e-learning</td><td colspan="6">0</td></tr>
<tr><td colspan="9">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="8">Training students for:
- understanding and application of technical vocabulary concerning mechanical engineering
- development of students' oral and written communication skills in English
- improving general English language knowledge</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="8">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="8">Students will be able to:
1. Count types of beams and explain their usage in constructions
2. Describe mechanical and physical properties of materials
3. Count and describe various types of welding
4. Translate independently less complicated professional texts and interpret tables, diagrams and charts
5. Use relevant grammar structures (passive, reduced relative clauses, cause and effect clauses, irregular plurals, MLU-s)
6. Use phrasal expressions to improve English language knowledge</td></tr>
<tr><td rowspan="16">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Course content</td><td>S hours</td><td>AE hours</td></tr>
<tr><td colspan="6">U 8 - Beams</td><td>2</td><td></td></tr>
<tr><td colspan="6">Study section 8 – relation between two variables</td><td>2</td><td></td></tr>
<tr><td colspan="6">U 9 – Iron</td><td>2</td><td></td></tr>
<tr><td colspan="6">Study section 9 – expressions of purpose</td><td>2</td><td></td></tr>
<tr><td colspan="6">U 10 – Steels</td><td>2</td><td></td></tr>
<tr><td colspan="6">Study section 10 – results and consequences</td><td>2</td><td></td></tr>
<tr><td colspan="6">U 11 - Welding</td><td>2</td><td></td></tr>
<tr><td colspan="6">First midterm exam</td><td></td><td></td></tr>
<tr><td colspan="6">Study section 11 – instructions and advice</td><td>2</td><td></td></tr>
<tr><td colspan="6">Study section 11 – descriptions and reports</td><td>2</td><td></td></tr>
<tr><td colspan="6">U 12 – Aluminium</td><td>2</td><td></td></tr>
<tr><td colspan="6">Study section 12 – conditionals</td><td>2</td><td></td></tr>
<tr><td colspan="6">U 13 – Corrosion</td><td>2</td><td></td></tr>
<tr><td colspan="6">Study section 13- prefixes</td><td>2</td><td></td></tr>
<tr><td colspan="6">Second midterm exam</td><td></td><td></td></tr>
<tr><td>Format of instruction</td><td colspan="3">☐ lectures
☒ seminars and workshops
☐ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="5">☒ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
</table>

<table>
<tr><td>Student responsibilities</td><td colspan="6">The presence on lectures in the amount of at least 70 % of the times scheduled.
Performed all required exercises.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td></td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>1</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td></td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">There are two midterms and a final exam. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. Students who do not pass both midterm exams have to take the final exam containing learning materials from both midterm exams. 50 % of the test should be solved to have a passing grade. The grade is formed according to the score:

15 % of best solved tests - excellent (5)

35 % of second best solved test - very good (4)

35 % next solved tests - good (3)

15 % of lowest passing tests- sufficient (2).

Students who pass the final test in the third term can get only sufficient grade (2).

Midterm and final exams are carried out according to the academic year calendar.</td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">1. Pilković, Mara (1987). English for Students of Mechanical Engineering. Split: FESB.</td><td></td><td></td></tr>
<tr><td colspan="4">2. Morgan, David; Regan, Nicholas (2008). Take-Off. Technical English for Engineering. Reading: Garnet Education.</td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">Newby, David. (1996). Grammar for Communication. Zagreb: Školska knjiga.
Glendinng, Eric H.; Glendinning, Norman (2001). Oxford English for Electrical and Mechanical Engineering. Oxford: Oxford University Press.
Master, Peter (2004). English Grammar and Technical Writing. Washington: US Department of State, Office of English Language Programs.
Mc Carthy, Michael; O'Dell, Felicity. (2008). Academic Vocabulary in Use. Cambridge: Cambridge University Press.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">Evaluation of results in accordance with the above learning outcomes
Feedback from students via surveys
Self-evaluation of teachers</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

NAME OF THE COURSE	**FINAL THESIS**						
Code	FEXX01	Year of study	3				
Course teacher		Credits (ECTS)	12				
Associate teachers		Type of instruction (number of hours)	L	S	AE	LE	DE
Status of the course	Mandatory	Percentage of application of e-learning					

COURSE DESCRIPTION

Course objectives	Training students for: - consolidating theoretical knowledge and practical skills in solving highly complex engineering problems - being independent in solving problems under the given conditions - writing and presenting the project results
Course enrolment requirements and entry competences required for the course	Acquired 120 ECTS credits
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. consolidate theoretical knowledge and practical skills in solving problems 2. use literature, databases and other sources of information 3. select appropriate methods and procedures for solving practical problems 4. apply technical knowledge and skills to effectively solve engineering problems 5. give public presentation, to prepare written report and present project results
Course content broken down in detail by weekly class schedule (syllabus)	Final thesis is the independent work of the student produced according to the task and instructions given by the supervisor
Format of instruction	☐ lectures ☐ seminars and workshops ☐ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work ☐ independent assignments ☐ multimedia ☐ laboratory ☒ work with mentor ☐ (other)
Student responsibilities	Independent work

Screening student work (*name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance		Research		Practical training	
	Experimental work		Report		Individual work	10
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	Final thesis is evaluated by the supervisor based on the student's achievements during the process of the final thesis production and on written and oral presentation.

Required literature (available in the library and via other	**Title**	**Number of copies in the library**	**Availability via other media**

media)	Literature depends on the given problem. The literature list may be given by the supervisor or the student should find the appropriate literature to help solve the problem.		
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	- Self-evaluation of teachers - Student survey of the whole study programme		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">FLUID MECHANICS 1</td></tr>
<tr><td>Code</td><td>FESC 11</td><td>Year of study</td><td colspan="5">2</td></tr>
<tr><td>Course teacher</td><td>Prof. Zoran Milas, PhD</td><td>Credits (ECTS)</td><td colspan="5">7</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>3</td><td></td><td>2</td><td>1</td><td></td></tr>
<tr><td>Status of the course</td><td>Compulsory</td><td>Percentage of application of e-learning</td><td colspan="5"></td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- solving the problems of engineering fluid mechanics by using the basic equations of fluid motion and developing student awareness of the solution limitations due to simplifications introduced
- interpreting the fluid flow characteristics.
- understanding of the Euler description of fluid motion
using the control volume approach for fluid mechanics problems.
- interpreting the effects of turbulence on fluid flow.
- understanding of the basic principles of fluid flow similarity and dimensional analysis.
- using the concept of hydraulic losses in viscous fluid flow analysis.
-</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Mathemetics1, Mathematics 2, Mechanics 2</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
– calculate the pressure distribution in fluid (at rest) of constant and variable density
– determine the pressure forces on flat and curved surfaces and the pressure center,
– use the continuity and Bernoulli eq. for solving various flow problems of incompressible and compressible fluid (in stationary frame and rotating frame)
– critically apply the momentum equation and the moment of momentum equation
– interpret the results of model tests in order to predict the prototype flow characteristics
– derive the non-dimensional groups by applying simple methods of dimensional analysis.
– use the modified Bernoulli eq. for viscous pipe flow analysis and evaluate the effect of Reynolds number and pipe roughness on pipe friction coefficient
– analyze the flow distribution in moderately complex pipe grid</td></tr>
<tr><td rowspan="4">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="5"><u>Introduction</u>: Forces and stress in fluids. Fluid properties: density, coeff. of thermal expansion, bulk modulus. Newton viscosity law, dynamic and kinematic viscosity, non-Newtonian fluids.</td><td>3</td><td>1</td></tr>
<tr><td colspan="5">Comparison of rigid and fluid body deformation. Surface tension and contact angle, Laplace-Young eq..
Statics: Pascal law, Euler eq. for fluid at rest, pressure distribution in fluid of constant and variable density.</td><td>3</td><td>1</td></tr>
<tr><td colspan="5">Pressure forces on flat and curved surfaces, pressure center. Buoyancy.</td><td>3</td><td>1</td></tr>
</table>

	Kinematics of fluid flow. Euler description of fluid motion, Convective component of acceleration, streamline, stream tube and stream filament. Volume and mass flow rate.	3	1
	Dynamics: Continuity equation, differential and integral form, simplified continuity equation. Deformable control volume.	3	1
	Euler equation for inviscid fluid flow, Bernoull eq. Coriolis coefficient for stream tube flow, Application of Bernoulli eq.	3	1
	Bernoulli eq. for rotating reference frame. Compressible fluid flow. Isentropic flow, speed of sound, Hugoniot eqs. Flow in open canals.	3	1
	Momentum eq. and moment of momentum eq. in inertial and non-inertial frame. Reynolds transport theorem.	3	1
	Similarity theory, Re, Fr, Eu, Ma, We, Gr numbers. Incomplete similarity. Dimensional analysis.	3	1
	Viscous fluid flow. Loss of specific mechanical energy in developed fluid flow- modified Bernoulli eq.. Shear stress distribution in developed pipe-canal flow.	3	1
	Laminar and turbulent flow, critical Re number, turbulence, turbulence intensity. Velocity profile for laminar and turbulent pipe flow.	3	1
	Major and minor losses in pipe flow. Darcy-Weissbach eq., hydraulic radius, Pipe friction coefficient, Nikuradse and Moody chart, complex piping.	3	1
	Minor loss coefficients. Non-stationary effects.	3	1
	List of laboratory or design exercises		LE or DE hours
	Fluid density		2
	Viscosity		2
	Surface tension		2
	Presurre and pressure measurements. Pressure forces on flat and curved surfaces.		2
	Discharge coefficient, contraction coefficient		2
	Reynolds experiment		1
	Pipe friction coefficient		2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☒ field work	☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Classroom attendance min. 70 % . All required laboratory exercises and reports completed.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	3,0	Research		Practical training	
	Experimental work		Report		Individual work (prep. for tests-exam)	3,3
	Essay		Seminar essay		Laboratory exercises reports	0,4
	Tests	0,2	Oral exam		(Other)	
	Written exam	0,1	Project		(Other)	

Grading and evaluating student	There are two midterm tests and final exams. The first midterm test takes place after 7 weeks of lecturing and the second one 6 weeks later. Each midterm test

<table>
<tr><td>work in class and at the final exam</td><td colspan="3">contains 2-3 numerical problems, 12-16 short questions (incl. multiple choice questions) and 4-6 essay questions Students who did not pass the midterm tests take part in the final exams. The midterm and final exams are carried out as written tests (closed book).
The requirement for passing grade is the positive assessment of laboratory exercises/reports and 50 % points on each midterm test/ final exam and successful completion of final oral exam.
Grade (in percentage) is formed according to the formula:
Grade(%) = 0,4(M1 + M2) +0,2 FOE
the activities in percentage: ·
M1, M2 – test results., FOE-final oral exam</td></tr>
<tr><td rowspan="4">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Milas, Z.: Fluid Mechanics 1, FESB, Split, 2015</td><td>5</td><td>e-learning</td></tr>
<tr><td>Virag, Z.: Mechanics of Fluids, FSB, Zagreb, 2000.</td><td>5</td><td></td></tr>
<tr><td>Pilić-Rabadan, Lj. : Mechanics of Fluids, UNIST, Split, 1995.</td><td>5</td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">- White F.M., Fluid Mechanics, McGraw Hill, 2010.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">-Evaluation of results in accordance with the above learning outcomes
- Feedback from students via surveys
- Self-evaluation of teachers
- Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

NAME OF THE COURSE	**HYDRAULIC MACHINES**							
Code	FESC13	Year of study	3					
Course teacher	Prof. Zoran Milas, PhD	Credits (ECTS)	7					
Associate teachers		Type of instruction (number of hours)	L	S	AE	LE	DE	
			3		1	1		
Status of the course	Compulsory	Percentage of application of e-learning						

COURSE DESCRIPTION

Course objectives	Training students for: -getting knowledge on different types of hydraulic machines, their performance/design and area of application, -understanding of the transformation of energy in hydraulic machines and how it depends on geometry (size and shape) and rotational speed of hydraulic machines - deepening the knowledge on cavitation and conditions for the cavitation-free operation of hydraulic machines
Course enrolment requirements and entry competences required for the course	Fluid Mechanics1, Mechanics 2-
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 6. evaluate the suitability of pump-fan for specific hydraulic system regarding power and cavitation performance 7. assess the effect of fluid properties on the pump performance 8. predict the pump-fan performace at variable speed operation and impeller trimming 9. design the principal dimensions of pump-fan by using the basic turbomachine equations and statistical charts with empirical dimensionless coefficients 10. test the pump-fan power characteristics

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L or S hours	AE hours
	Classification of hydraulic machines, basic performance and design characteristics of pumps, fans, hydraulic turbines and wind turbines,	3	1
	Operating point. Pump operation in parallel and in series. Effect of viscosity on pump performance.	3	1
	Transformation of energy, mechanical, volumetric and hydraulic efficiency. Kinematics of fluid flow in impeller (propeller)	3	1
	Velocity triangles. Euler momentum equation for turbomachines	3	1
	Similarity of turbomachines, dimensionless groups and similarity curves. Specific speed and statistical charts.	3	1
	Trimming of impeller, incomplete similarity and efficiency correction	3	1
	Cavitation, cavitation erosion, pump cavitation characteristics	3	1
	Net positive suction head, cavitation coefficient, suction specific speed.	3	1
	Effect of blade exit angle. Slip coefficient. Degree of reaction.	3	1
	Volumetric and hydraulic losses. Disc friction losses.	3	1
	Axial and radial hydraulic forces on pump-fan impeller. Balancing of axial forces. Shaft sealing.	3	1
	Spiral casing of centrifugal pumps-fans. Pump testing. Hydraulic turbines, design and performance. Turbine diffuser.	3	1

	Wind turbines, actuator disc model, propeller theory	3	1

	List of laboratory or design exercises	LE or DE hours
	Design characteristics of gear, sliding vane , screw and gerotor pump	1,5
	Design charasteristic of peristaltic, membrane and piston pump.	1,5
	Design characteristic of centrifugal pumps	2
	Measurement of head-capacity–power characteristic of centrifugal pump	2
	Similarity curve for variable speed operation	2
	Measurement of pump net positive suction head	2
	Design characteristic of various centrifugal and axial fans.	2
	Testing of centrifugal fan with radial vanes	2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☒ field work	☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Class room attendance min. 70 % . All required laboratory exercises and reports completed.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,9	Research		Practical training	
	Experimental work		Report		Laboratory exercises	0,4
	Essay		Seminar essay		Individual work (prep. for test–exam)	3,4
	Tests	0,2	Oral exam		(Other)	
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterm tests and final exams. The first midterm test takes place after 7 weeks of lecturing and the second one 6 weeks later. Each midterm test contains 2-3 numerical problems, 12-16 short questions (incl. multiple choice questions) and 4-6 essay questions Students who did not pass the midterm tests take part in the final exams. The midterm and final exams are carried out as written tests (closed book). The requirement for passing grade is the positive assessment of laboratory exercises/reports and 50 % points on each midterm test/ final exam and successful completion of final oral exam. Grade (in percentage) is formed according to the formula: Grade(%) = 0,1 LE + 0,35(M1 + M2) +0,2 FOE the activities in percentage: · LV – laboratory assessment, · M1, M2 – test results., FOE-final oral exam

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Pilić-Rabadan Lj., Hydraulic turbines, pumps and wind turbines, University of Split, 2000	10	
	Milas, Z.: Authorized lectures, FESB, Split, 2015		

Optional literature (at the time of submission of study programme proposal)	Gulich J.F. , Centrifugal Pumps, Springer, 2010
Quality assurance	- Evaluation of results in accordance with the above learning outcomes

methods that ensure the acquisition of exit competences	- Feedback from students via surveys - Self-evaluation of teachers - Institutional and non-institutional evaluations
Other (as the proposer wishes to add)	

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">INDUSTRY PROCESSES AUTOMATIC CONTROL</td></tr>
<tr><td>Code</td><td>FETC06</td><td>Year of study</td><td colspan="5">3</td></tr>
<tr><td>Course teacher</td><td>Jadranka Marasović
Jani Barle</td><td>Credits (ECTS)</td><td colspan="5">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Josip Eterović
Ivan Jadrić</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>CE</td></tr>
<tr><td>30</td><td>0</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Students will be able to grasp main concepts and application of the control systems. Upon completion, the student should be able to demonstrate basic knowledge about industrial process control problems, theoretical and practical principles as well as the importance of processes dynamic characteristics and application of automatic sequential control systems. Students will acquire basic knowledge on the use of computers as a support for the process control. Students will be able to transfer acquired skills and attitudes to a work in different fields (technical systems, chemical processes, in economy, medicine etc.).</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
1. Describe the importance of automated systems and define the basic concepts of the control theory.
2. Apply the principles of systems analysis and synthesis in the time and frequency domains.
3. Create and apply mathematical models of different systems and to understand their importance for the automated processes design.
4. Infer the transfer functions of the first and second order systems.
5. Choose the appropriate methods for the synthesis and taking account of the tasks and possibilities of physical performance.
6. Identify system stability and to solve independently complex tasks of system automation.
7. Present and to explain the use of simple mechanical regulators.</td></tr>
<tr><td rowspan="8">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L hours</td><td>LE hours</td></tr>
<tr><td colspan="5">Introduction: automation tasks, problems and practical use. System theory. Control theory. Control loop. Systems modeling and simulation</td><td>2</td><td></td></tr>
<tr><td colspan="5">Mathematical models and analysis in time domain. Step function as standard input function. System time domain response.</td><td>2</td><td></td></tr>
<tr><td colspan="5">How to translate mathematical models in software language MATLAB?</td><td></td><td>3</td></tr>
<tr><td colspan="5">Standard input functions. Time domain system response. Transient function.</td><td>2</td><td></td></tr>
<tr><td colspan="5">Simulation of linear differential equations in MATLAB, using Toolbox Simulink.</td><td></td><td>3</td></tr>
<tr><td colspan="5">Dynamical analogies (mechanical, hydraulic, thermal, electrical). Model linearization.</td><td>2</td><td></td></tr>
<tr><td colspan="5">Integral convolution. Laplace transform. Transfer function.</td><td>2</td><td></td></tr>
</table>

	Transfer function: simulation and analysis.		3
	Transfer function for simple and complex systems. Blocks algebra.	2	
	The complex systems analysis using transfer functions and blocks algebra.		3
	Complex system analysis. Steady state and transient response of the first and second-order systems.	2	
	The analysis of the first order system. The parts of the systems response in time domain: transient part and steady state part.		3
	Stability and performance of feedback control systems. Means for regulator response time improvement.	2	
	The analysis of the second order system. The parts of the systems response in time domain: transient part and steady state part.		3
	Analysis in the frequency domain. Frequency response and the graphic presentation (Bode). The frequency characteristics of basic and complex systems.	2	
	Analysis in the frequency domain. Frequency response and the graphic presentation (Bode).		3
	Control systems structure. Principles and classification of sensing elements.	2	
	Control systems structure. Principles and classification of actuators.	2	
	Systems stability. Control system synthesis. P and PID regulator.		3
	Servomechanism. Proportional and servo valves.	2	
	General functional arrangement of the control system.	2	
	Sequential switching control system simulation. Physical implementations -PLC.		2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☒ individual assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ individual project (other)
Student responsibilities	Minimum of 70 percent lecture attendance. Completing all the required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,0	Research		Practical training	
	Experimental work		Report		Individual work	2,0
	Essay		Seminar essay	0,4	Lab exercises	0,4
	Tests	0,2	Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester there will be two mid-term exams (tests). The first mid-term will be held during class (according to the calendar), and the other colloquium after the end of classes. Individual colloquium will be considered passed if it achieved 40% correct answers or total points achieved that give a positive evaluation must be at least 50% correct. It is necessary during the semester to resolve homework and seminars to be recognized (enrolled) score achieved by tests and exams. The final grade is determined based on the total number of points earned, which is calculated as follows (Including laboratory exercises points, M3) Grade [%] = 0.45 * M1 + 0.45*M2 + 0,1*M3 Percentage 50% to 61% — Grade sufficient (2)

	62% to 74% good (3) 75% to 87% very good (4) 88% to 100% excellent (5) The final exam encompasses the entire course load or selected parts of it that students' did not pass at either of mid-term exams. The correction exam encompasses the entire course load. The requirement for passing the exam is minimum of 50 percent correct answers. The exams are held according to the class schedule.		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	J. Marasović; "Basics Steps of Automatic Control“ (in Croatian: Temeljni postupci u automatici), FESB, Authorized lectures		e-learning portal
	J Božičević J.: "Basics of Automatic Control 1“ (in Croatian: Temelji automatike 1), Školska knjiga, Zagreb, 1990		
Optional literature (at the time of submission of study programme proposal)	T. Šurina: " (in Croatian: Automatska regulacija), Školska knjiga, Zagreb 1987. B. Novaković: " Methods of Technical Systems Control“ (in Croatian: Metode vođenja tehničkih sistema), Školska knjiga, Zagreb. 1990.		
Quality assurance methods that ensure the acquisition of exit competences	- Keeping records on class attendance - Annual analysis of exam results - Student survey on teaching performance - Teacher self-evaluation - Feedback information from graduates regarding course content relevancy		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">INTRODUCTION TO PUBLIC SPEAKING</td></tr>
<tr><td>Code</td><td>FEOC04</td><td>Year of study</td><td colspan="4">3</td></tr>
<tr><td>Course teacher</td><td>Mirjana M. Kovač
Ph.D., Assistant Professor</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>0</td><td>30</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Elective</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">• understand the basic concepts related to verbal and nonverbal communication, as well as the factors that influence these concepts;
• develop the skills of presentation planning, presentation structure, and presentation performance in the Croatian language;
• organize speech information in a chronological order.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">None.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">Students will be able to:
1. organize speech information in a chronological order;
2. use different types of public speaking;
3. give a persuasive presentation of ideas in front of an audience;
4. use notes for communication.</td></tr>
<tr><td rowspan="14">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L/S</td></tr>
<tr><td colspan="5">Definitions of communication; Overview of the theory of communication; Cross-cultural communication</td><td>0/2</td></tr>
<tr><td colspan="5">Verbal and nonverbal communication</td><td>0/2</td></tr>
<tr><td colspan="5">Questioning as a communication skill</td><td>0/2</td></tr>
<tr><td colspan="5">Active listening and Barriers to active listening</td><td>0/2</td></tr>
<tr><td colspan="5">Speech preparation</td><td>0/2</td></tr>
<tr><td colspan="5">Standard language and modal expressions</td><td>0/2</td></tr>
<tr><td colspan="5">Presentation skills</td><td>0/2</td></tr>
<tr><td colspan="5">Rhetorical figures of speech</td><td>0/2</td></tr>
<tr><td colspan="5">Public speaking fear</td><td>0/2</td></tr>
<tr><td colspan="5">Interpretative reading</td><td>0/2</td></tr>
<tr><td colspan="5">Taking notes</td><td>0/2</td></tr>
<tr><td colspan="5">Speech disfluencies</td><td>0/2</td></tr>
<tr><td colspan="5">Pronunciation speech exercises</td><td>0/2</td></tr>
<tr><td>Format of instruction</td><td colspan="2">☐ lectures
☒ seminars and workshops
☐ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="4">☒ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Active participation in all activities: lectures, consultations, searching the literature, individual work.</td></tr>
</table>

<table>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,6</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>1,6</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td>0,5</td><td>(Other)</td><td></td></tr>
<tr><td>Midterm exam</td><td>0,2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td>0,1</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">The final grade is determined as the average of:
• assessment of oral presentation and peer assessment of oral presentation;
• assessment of written communication skills,
written and oral assessment.

There are two midterm exams and two examination periods. The first midterm exam is after 7 weeks of lecturing, and the second one is after the next 6 weeks. The lowest passing point is 50% in each midterm exam. The students who do not pass the midterm exams write the exams. The final grade for the course is calculated as a percentage of points earned. The final grade is determined applying the absolute ECTS grading system in accordance with the Rules of the Studying System of the University of Split.
At the end of the semester the grades are averaged to form a grade Point Average, according to this scale:

50% - 61% - sufficient (2),
62% - 74%- good (3),
75% - 87% - very good (4),
88% - 100% - excellent (5).

Students who fail the two exams in the first examination period take the exam in the autumn final examination period. The final exam consists of the material covered in both midterm exams.</td></tr>
<tr><td rowspan="2">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">Ivo Škarić. Temeljci suvremenog govorništva, Zagreb: Školska knjiga.2000.</td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6"></td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">• Evaluation of results in accordance with the above learning outcomes
• Feedback from students via surveys
• Self-evaluation of teachers
• Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

NAME OF THE COURSE	**MACHINE ELEMENTS 1**						
Code	FESC10	Year of study	2				
Course teacher	Srdjan Podrug, Ph.D. Associate Professor	Credits (ECTS)	7				
Associate teachers	Vjekoslav Tvrdić, Teaching assistant, Filip Grubišić-Čabo, Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE
			45	0	15	0	30
Status of the course	Obligatory	Percentage of application of e-learning	0				

COURSE DESCRIPTION			
Course objectives	Training students for: - understanding of machine elements operation principles and designing basis.		
Course enrolment requirements and entry competences required for the course	Engineering graphics 1 and Engineering graphics 2.		
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Identify the loads imposed on the machine elements. - Evaluate and apply the necessary safety factor. - Select the criteria for sizing and design of machine elements. - Select machine elements based on the criteria. - Design and calculate the fasteners. - Design and calculate springs and shafts.		
Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours	AE hours
Course content broken down in detail by weekly class schedule (syllabus)	Conception and classification of machine elements. Load, stress and strain. Safety factor and allowable stress.	2	
	Static strength. Fatigue strength. S-N (Wohler) diagram.	2	
	Fatigue (Smith) diagram. Influence of the shape, size, surface quality and surface hardening at the dynamic strength of machine parts.	2	
	Safety factor and dynamic strength of machine elements. Strength in the case of variable amplitude stresses.	2	
	Threaded fasteners: conception and classification. Standard thread forms, materials.	2	4
	Design of the threaded fasteners: bolts, nuts, washers, Locking mechanisms.	2	
	Forces and torque acting in bolted joints.	4	
	Strength calculation of the threaded fasteners: axially loaded bolts without preload; tighten bolts with no prestressing, preloaded bolts, hydraulic bolt tensioning, transversely loaded bolts, power screws.	5	
	Pin bolts and dowel pins: shape, strength calculation.	3	
	Keys and feather keys: type, strength calculation; Spline shaft	3	1

	connections.		
	Cylindrical press connections: calculation. Tapered press connections: calculation.	3	3
	Welded joints: conception, procedures, types, labeling, quality, design, calculation.	3	3
	Springs: classification, stiffness and work, calculation of the helical compression and extension springs, leaf springs, belleville springs and rubber springs.	3	2
	Shafts: conception, materials, design, dimensioning, strength calculation, deformation, critical speed.	3	
	List of design exercises		DE hours
	Design of the car jack		13
	Design of the shaft		13
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)	
Student responsibilities	Course attendance and activity (lectures, exercises), machine elements design, studying.		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	4	Research		Practical training	
	Experimental work		Report		Individual work	3
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester, there will be two mid-term exams (tests). The first mid-term, after 7 weeks of classes, and the second after 13 weeks of classes. In the final exams students that did not pass the midterm exams take part. Grade (%) = 0,2K + 0,225M1 + 0,575M2 K - rating from design exercises expressed in percentage, M1 - points of first mid-term exam expressed in percentage, this mid-term exam consists of theoretical questions. M2 - points of second mid-term exam expressed in percentage, this mid-term exam consists of one numerical task (Z) and theoretical questions (T2). Points are formed in a manner: M2 = 0,61Z + 0,39T2. The requirement for a positive evaluation is the positive assessment of design exercises K >= 45%, the first mid-term M1 >= 45%, and the second mid-term Z >= 45% and T2 >= 45%. The final grade is determined as follows: Percentage - Rating 50% to 61% - Sufficient (2) 62% to 74% - Good (3) 75% to 87% - Very good (4) 88% 100% - Excellent (5) Students who do not get positive evaluation through mid-term exams take written numerical and theoretical exam.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Jelaska, D: Machine Elements, I part, University of	10	

	Split, 2007. (in Croatian)		
	Podrug, S.: Machine Elements - Workbook, 2005. (in Croatian)		e-learning portal
	Jelaska, D.: Preloaded Bolts Design (Directions), FESB, Split 2001. (in Croatian)		e-learning portal
	Jelaska, D., Piršić, T., Podrug, S.: Car Jack Design (Directions), FESB, Split 2002. (in Croatian)		e-learning portal
	Jelaska, D., Podrug, S: Design of the Tapered Press Connection and of the Welded Joint (Directions), FESB, Split 2003. (in Croatian)		e-learning portal
	Jelaska, D., Piršić, T., Podrug S.: Shaft Design (Directions), FESB, Split 2007. (in Croatian)		e-learning portal
Optional literature (at the time of submission of study programme proposal)	- Križan, B.: Fundamentals of Calculation and Design of Machine Elements, Školska knjiga, Zagreb, 2008. (in Croatian) - Decker, K.H.: Machine Elements, Tehnička knjiga, Zagreb, 2006. (in Croatian) - G. Niemann: Maschinenelemente I, II, Springer Verlag, 1990. (in German)		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers - Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

NAME OF THE COURSE	**MACHINE ELEMENTS 2**							
Code	FESC12	Year of study	3					
Course teacher	Srdjan Podrug, Ph.D. Associate Professor	Credits (ECTS)	7					
Associate teachers	Milan Perkušić, Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE	
			45	0	15	0	30	
Status of the course	Obligatory	Percentage of application of e-learning	0					

COURSE DESCRIPTION

Course objectives	Basic knowledge of power transmissions with gears as well as their design and calculation. Mastering the problems of shaft bearings. Calculation and construction of sliding and rolling bearings. Mastering the problems of design and calculation of the couplings and clutches.
Course enrolment requirements and entry competences required for the course	Engineering graphics1 and 2, Mechanics of Materials 1 and Mechanics 2
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Compare power transmissions with gears - Explain the geometry of the cylindrical gears - Design and calculate the power transmission with cylindrical gears. - Design and calculate sliding bearings. - Calculate roller bearings. - Compare different types of couplings and clutches.

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours	AE hours
Course content broken down in detail by weekly class schedule (syllabus)	Power transmissions and mechanical drives: classification, transmission ratio, efficiency, multi-step drives.	1	3
	Features and classification of gear drives.	1	
	Geometry of cylindrical gears. Involute and cycloid. Involute of circle.	1	
	Main rule of toothing.	1	
	Sliding speed.	1	
	Involute toothing.	1	
	Manufacturing methods of cylindrical gears. Profile shift.	1	
	Tooth root undercutting.	1	
	Gear dimensions.	1	
	Gear control measures.	1	
	Parameters of a gear pair.	1	
	Contact ratio.	1	
	Helical gears: generation, manufacture, dimensions.	1	4
	Equivalent gear.	1	
	Helical gear overlaps.	1	
	Gear loadings.	1	
	Pitting load capacity.	1	
	Tooth root load capacity.	1	
	Gear dimensioning.	1	

	Scuffing load capacity. Gear drive lubrication.	1	
	Elements of cylindrical gear drive design.	1	
	Bearings. Types and classification. Comparison of sliding and rolling bearings.	1	3
	Friction and lubrication. The theory of hydrodynamic lubrication.	1	
	Journal slider bearings. Pressure distribution. Sommerfeld number.	1	
	The minimum oil film thickness. The temperature of the oil.	1	
	Design of journal slider bearings. Materials for bearings.	1	
	Thrust slider bearings.	1	
	Hydrostatic bearings.	1	
	Roller bearings. Types and labels.	1	
	Dynamic load rating and calculation of roller bearings. Static load rating.	1	
	Reliability of the roller bearings.	1	
	Installation of the roller bearings.	1	
	Couplings and clutches. Classification. Rigid couplings.	1	3
	Compensating couplings.	1	
	Oldham and universal coupling.	1	
	Flexible couplings.	1	
	Clutches. Friction clutches. Dynamics of inclusion.	1	
	Dimensioning of the friction clutches.	1	
	Hydrodynamic clutches. Centrifugal clutches.	1	
	List of laboratory or design exercises		LE or DE hours
	Design of the 1-stage gearbox		13
	Design of the clutch		13

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Course attendance and activity (lectures, exercises), machine elements design, studying.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	4	Research		Practical training	
	Experimental work		Report		Individual work	3
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester, there will be two mid-term exams (tests). The first mid-term, after 7 weeks of classes, and the second after 13 weeks of classes. In the final exams students that did not pass the midterm exams take part. Grade (%) = 0,2K + 0,225M1 + 0,575M2 K - rating from design exercises expressed in percentage, M1 - points of first mid-term exam expressed in percentage, this mid-term exam consists of theoretical questions. M2 - points of second mid-term exam expressed in percentage, this mid-term exam

<table>
<tr><td></td><td colspan="3">consists of one numerical task (Z) and theoretical questions (T2). Points are formed in a manner: M2 = 0,61Z + 0,39T2.
The requirement for a positive evaluation is the positive assessment of design exercises K >= 45%, the first mid-term M1 >= 45%, and the second mid-term Z >= 45% and T2 >= 45%.
The final grade is determined as follows:
Percentage - Rating
50% to 61% - Sufficient (2)
62% to 74% - Good (3)
75% to 87% - Very good (4)
88% 100% - Excellent (5)
Students who do not get positive evaluation through mid-term exams take written numerical and theoretical exam.</td></tr>
<tr><td rowspan="7">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Jelaska, D: Machine Elements, I part, University of Split, 2007. (in Croatian)</td><td>10</td><td></td></tr>
<tr><td>Jelaska, D: Gears and Gear Drives, University of Split, 2011. (in Croatian)</td><td>10</td><td></td></tr>
<tr><td>Podrug, S.: Machine Elements - Workbook, 2005. (in Croatian)</td><td></td><td>e-learning portal</td></tr>
<tr><td>Jelaska, D., Podrug, S.: Friction Clutch Design (Directions), FESB, Split, 2001. (in Croatian)</td><td></td><td>e-learning portal</td></tr>
<tr><td>Jelaska, D., Podrug, S., Radica, D.: Cylindrical Gears Design (Directions), FESB, Split 2010. (in Croatian)</td><td>5</td><td></td></tr>
<tr><td>Jelaska, D.: Journal Slider Bearing Design (Direction), FESB, Split 2003. (in Croatian)</td><td></td><td>e-learning portal</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">- Jelaska, D.: Gears and gear drives, John Wiley & sons Ltd, 2012.
- Decker, K.H.: Machine Elements, Tehnička knjiga, Zagreb, 2006. (in Croatian)
- G. Niemann: Maschinenelemente I, II, Springer Verlag, 1990. (in German)</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">– Evaluation of results in accordance with the above learning outcomes
– Feedback from students via surveys
– Self-evaluation of teachers
- Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MARINE MACHINERY AND DEVICES</td></tr>
<tr><td>Code</td><td>FESC15</td><td>Year of study</td><td colspan="5">3.</td></tr>
<tr><td>Course teacher</td><td>Gojmir Radica, Ph.D., Full Professor</td><td>Credits (ECTS)</td><td colspan="5">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Dario Bezmalinović, Ph.D., Teaching assistant
Ivan Tolj, Ph.D. Teaching assistant
Tino Sumić, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Elective</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- understanding basic principles of marine machineries and devices ,
- understanding application of marine machineries and devices.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Thermodynamics, Fluid Mechanics</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- analyze basic principles of marine machineries and devices,
- recommend auxiliary machinery and devices for requested application, energy demand and according to rules and regulation,
- choose elements of propulsion system, fuel, oil, cooling systems and exhaust and ventilation system.</td></tr>
<tr><td rowspan="12">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Marine machineries development. Steam boilers.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Marine steam turbines systems.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Marine gas turbines systems.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Marine propulsion engines systems.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Main parameters of marine engines</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Application of marine engine. Test bed and sea trial.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Fuel, oil, cooling systems.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Marine auxiliary engines, pumps, fans, compressors.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Heat exchangers, fuel and oil separators.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Deck machinery.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">Propeller systems.</td><td>2</td><td>2</td></tr>
</table>

	Rudder system. Ballast and bilge water system. Fire fighting systems, inert gas system	2	2
	Diesel-electric propulsion. Combined propulsion systems. IMO regulation.	2	2
	List of laboratory or design exercises		LE or DE hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1,7	Research		Practical training	
	Experimental work		Report		Individual work	2,0
	Essay		Seminar essay		(Other)	
	Tests	0,2	Oral exam		(Other)	
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests (oral test-if necessary). The requirement for passing grade is the positive assessment of exercises and 50 % points for theory and exam on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula: Grade(%) = 0,54 (M1 + M2) the activities in percentage: • M1, M2 – test results.

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Radica G. Predavanja iz predmeta Brodski strojevi i uređaji		e-learning
	Grljušić M. Pogonski pomorski sustavi. Interna skripta, FESB, 2001.	5	

	Ozretić, V.: "Brodski pomoćni strojevi i uređaji", Split Ship Management, Split, 2004	5	
Optional literature (at the time of submission of study programme proposal)	- Woodyard , D.:Pounder's Marine Diesel Engines and Gas Turbines,UK,2009. - Harrington, R.L., "Marine Engineering", SNAME, N.J. USA, 1992. - Haarlas, M., "Steam and Gas Turbines for Marine Propulsion", Naval Institute Press, Annapolis, Maryland, 1987. - Parat, Ž., "Brodski motori s unutarnjim izgaranjem", Sveučilište u Zagrebu, FSB,2005. - Ozretić, V., "Brodski pomoćni strojevi i uređaji", Split Ship Management, Split, 2004.		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)	Available in English language.		

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MATERIALS 1</td></tr>
<tr><td>Code</td><td>FETC 01</td><td>Year of study</td><td colspan="5">1</td></tr>
<tr><td>Course teacher</td><td>Dražen Živković, Ph. D., Full Professor
Nikša Krnić, Ph.D. Associate Professor</td><td>Credits (ECTS)</td><td colspan="5">6</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Nikša Čatipović, Teaching assistant
Zvonimir Dadić, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>45</td><td>0</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">- Present basic knowledge about material structures,
- Introduce students with mechanical properties and their relationship to the structure of the material.
- Explain the mechanical properties testing, both to materials and completed construction,
- Provide knowledge about basic methods of detection of errors in materials and metal structures.
- Present basic alloys phase diagrams, especially Fe - C alloys phase diagrams, as well as the properties of iron alloys</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- Analyze the processes of crystallization and the specifics of metastable and stable crystallization of Fe-C alloy
- Explain the second test procedures basic mechanical properties of materials
- Characterize polymer and composite materials
- Analyze properties and areas of application of steel, casting and non-ferrous metals
- Use the principles of optical microscopy
- Explain methods of testing materials and structures without damage</td></tr>
<tr><td rowspan="12">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L hours</td><td>AE hours</td></tr>
<tr><td colspan="5">The types of materials, recognition of materials, atomic structures, atomic bonds</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">Crystal lattice, crystalline lattice inperfections</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">The crystallization process, the rate of crystal formation and crystal growth, resolution (micro and macro), allotrope modification, Curie point</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">The deformation (elastic, plastic), sliding deformation, twins process, speed and degree of deformation, deformation in hot and cold condition, isotropy, anisotropy</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">Alloy cooling curves, Solubility - complete solubility diagram</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">Eutectic phase diagram, Peritectic phase diagram</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">Fe- C alloy phase diagrams</td><td>3</td><td>0</td></tr>
<tr><td colspan="7">First midterm exam</td></tr>
<tr><td colspan="5">Mechanical properties, Tensile strength test</td><td>3</td><td>0</td></tr>
<tr><td colspan="5">Dynamic strength, Hardness test methods</td><td>3</td><td>0</td></tr>
</table>

	Toughness, Creep, Non-destructive material testing (visual, penetrating liquids)	3	0
	Magnetic method testing, Ultrasound testing	3	0
	X and Y-ray testing, Chemical composition examination	3	0
	Steels, Fe casts	3	0
	Second midterm exam		
	List of laboratory or design exercises		LE hours
	The types of materials, recognition of materials,		2
	Pure metal heating and cooling curve		2
	Complete solubility diagram, Allotrope modification		2
	Eutectic phase diagram		2
	Stable Fe-C phase diagram		2
	Metastable Fe-Fe_3C phase diagram, Curie point		2
	Comparison Fe-C – Fe_3C phase diagrams, Metallography of Fe alloys		2
	First midterm exam		
	Mechanical properties, Tensile strength test		2
	Dynamic strength testing, Toughness testing, Sparks testing		2
	Hardness testing (Brinell, Vickers, Rockwell)		2
	Hardness testing (Poldy, Shore, Leeb)		2
	Magnetic method testing, Penetrating liquid testing		2
	Ultrasonic testing, X and Y ray testing		2
	Second midterm exam		

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence in lectures and exercises in the amount of at least 70%. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1,5	Research		Practical training	
	Experimental work		Report		Self-directed learning	3,5
	Essay		Seminar essay		Laboratory exercises	1,0
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester there will be two mid-term exams (tests). The first mid-term, after 7 weeks of classes and the second after the next 6 weeks of classes. At the final exam students have to take part material that did not pass the mid-term. Each test is carried out as written exam lasting 45 minutes. Usually it consists of 10 test questions and the two tasks. The requirements for a positive evaluation are: positive assessment of laboratory exercises and 50% points on each test. The final grade is based on the resulting percentage on mid-term exams. Percentage - Rating 50% to 61% - sufficient (2) 62% to 74% - good (3) 75% to 87% - very good (4) 88% to 100% - excellent (5) Examinations according to the Faculty schedule! The final grade is determined after the second final exam, applying the relative ECTS grading system in accordance with the study rules and study system of the

<table>
<tr><td></td><td colspan="3">University of Split. A group of students who passed the exam is divided into four sub-groups: 15% of the best students are graded excellent, 35% following very good, the next 35% a good grade and the last 15% positive grade. Students who did not pass the exam after two final exams have the last chance to pass exam in the autumn period where they can get a positive grade. Overall material has to be passed at last possible exam. The written exam consists of test with 20 questions and three tasks. The exam lasts 90 minutes.</td></tr>
<tr><td rowspan="6">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>D. Živković, the author's lecture, FESB</td><td></td><td>E-learning portal</td></tr>
<tr><td>R. Deželić, Meterijali (I dio), FESB Split, 1998.</td><td>10</td><td></td></tr>
<tr><td>F. Kovačiček, Đ. Španiček, Materijali – osnove znanosti o mmaterijaliam, FSB Zagreb, 2000.</td><td>2</td><td></td></tr>
<tr><td>M. Franz, Svojstav materijala 2005.</td><td>5</td><td></td></tr>
<tr><td>B. Anzulović, Materijali, Split, 1993.</td><td>3</td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">T.Filetin, F.Kovačiček, J. Indof, Svojstva i primijena materijala, FSB Zagreb, 2002.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">– Evaluation of results in accordance with the above learning outcomes
– Feedback from students via surveys
– Self-evaluation of teachers
– Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MATERIALS 2</td></tr>
<tr><td>Code</td><td>FETC 02</td><td>Year of study</td><td colspan="5">1</td></tr>
<tr><td>Course teachers</td><td>Dražen Živković, Ph. D., Full Professor
Nedjeljko Mišina, Ph. D., Full Professor</td><td>Credits (ECTS)</td><td colspan="5">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Nikša Čatipović, Teaching assistant
Zvonimir Dadić, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>30</td><td>0</td><td>0</td><td>30</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5"></td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Provide an overview and explanation:
- Basic principles of heat treatment processing,
- Chemical diffusion surface treatment and application of surface protective coating,
- Presents the basic methods of mechanical surface protection.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Basic knowledge about structure and properties of materials. This knowledge can be obtained in the prerequisite course Materials 1. In order to be able to follow news within this area students have to be fluent in technical English reading.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- Select the appropriate surface heat treatment,
- Combine heat treatment procedures,
- Compare the surface heat treatment,
- Analyze to the basic features of surface heat treatment,
- Set priorities to protect the surface,
- Propose possible chemical diffusion heat treatment for surface protection</td></tr>
<tr><td rowspan="15">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Introduction; The purpose of the heat treatment; Types of heat treatment</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Phase transformations during faster cooling of austenite; TTT diagrams for isothermal and continuous cooling</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Heating devices, Cooling media</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Heat treatment; Heat treatment of the entire cross-section; Hardening procedures (typically, isothermal)</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Influential parameters on the results of quenching; Tempering; Tempering of martensite; Tempering of hardened steel</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Annealing procedures; Recrystallization annealing;</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Normalization; Softened by annealing; Annealing for tension relaxation</td><td>2</td><td>0</td></tr>
<tr><td colspan="7">First midterm exam</td></tr>
<tr><td colspan="5">High temperature annealing; Homogenization annealing; Aging</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Heat treatment of the surface layers; Direct surface hardening; Induction hardening and flame tempering</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Thermo-chemical heat treatment</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Ntriding; Boroning; Diffusion metallization</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Hardening by annealing and aging, Heat treatment of aluminium alloys, Steel hardening</td><td>2</td><td>0</td></tr>
<tr><td colspan="5">Heat Treatment of High-Speed Steel</td><td>2</td><td>0</td></tr>
</table>

	Second midterm exam	
	List of laboratory or design exercises	LE hours
	Iron alloy metallography, Steel grades according to HR norms	2
	Non-ferrous metals Metallography, Non-ferrous metals by HR norms	2
	Hardness after quenching	2
	Testing of hardenability by the Grossman method	2
	Grossman task	2
	Testing by the Jominy method of hardenability	2
	Jominy task	2
	First midterm exam	
	TTT - diagram verification, TTT - diagram of the steel Č4731	2
	Tempering	2
	Normalization, Annealing	2
	Hardening of aluminium alloys	2
	Heat-treated steel metallography	2
	Exam preparation	2
	Second midterm exam	

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1,0	Research		Laboratory exercises	1,0
	Experimental work		Report		Self-directed learning	3,0
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester there will be two mid-term exams (tests). The first mid-term, after 7 weeks of classes and the second after the next 6 weeks of classes. At the final exam students have to take part material that did not pass the mid-term. Each test is carried out as written exam lasting 45 minutes. Usually it consists of 10 test questions and the two tasks. The requirements for a positive evaluation are: positive assessment of laboratory exercises and 50% points on each test. The final grade is based on the resulting percentage on mid-term exams. Percentage - Rating 50% to 61% - sufficient (2) 62% to 74% - good (3) 75% to 87% - very good (4) 88% to 100% - excellent (5) Examinations according to the Faculty schedule! The final grade is determined after the second final exam, applying the relative ECTS grading system in accordance with the study rules and study system of the University of Split. A group of students who passed the exam is divided into four sub-groups: 15% of the best students are graded excellent, 35% following very good, the next 35% a good grade and the last 15% positive grade. Students who did not pass the exam after two final exams have the last chance to pass exam in the autumn period where they can get a positive grade. Overall material has to be

	passed at last possible exam. The written exam consists of test with 20 questions and three tasks. The exam lasts 90 minutes.		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	D. Živković, Autorizirana predavanja,		E-learning portal
	R. Deželić, Metali 2, FESB Split, 1998.	10	
	F. Kovačiček, Đ. Španiček, Materijali – osnove znanosti o materijaliam, FSB Zagreb, 2000.	2	
	M. Stupnišek, F.Cajner: Osnove toplinske obrade metala, Sveučilište u zagrebu, FSB, 1996.	5	
Optional literature (at the time of submission of study programme proposal)	G.E. Totten, Steal heat treatment – metallurgy and technologies, Portland, Oregon, USA, 2006		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MATHEMATICS 1</td></tr>
<tr><td>Code</td><td>FEMX01</td><td>Year of study</td><td colspan="5">1</td></tr>
<tr><td>Course teacher</td><td>Ivan Slapničar, Ph.D., Full Professor,
Anita Matković, Ph.D., Associate Professor,
Josipa Barić, Ph.D., Assistant Professor.</td><td>Credits (ECTS)</td><td colspan="5">7</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ph.D. Nevena Jakovčević Stor, Irena Bego, Anita Carević, Marija Čatipović, Lea Dujić, Ivana Grgić, Lana Periša, Marina Mandić, Dajana Radišić, Mirjana Strukan, Stjepan Vedran Vukasović, Vanja Županović.</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>45</td><td>0</td><td>45</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">10</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- application of mathematical concepts and tools from the area of linear algebra, vector calculus, analytic geometry, diferential calculus, analysis of real functions of real variable, sequences and series of numbers and functions, to solving engineering problems.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Good knowledge of High School mathematics and passed State Exam in Mathematics.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- state definitions and theorems from the enitre course,
- reproduce proofs of basic theorems,
- illustrate theorems with examples,
- solve systems of linear equations,
- apply vector calculus to analytical geometry of space,
- interpret derivatives mathematically, geometrically and physically,
- analyse functions of one variable,
- test convergence of sequences and series of numbers and functions.</td></tr>
<tr><td rowspan="6">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="4">Course content</td><td colspan="2">L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="4">1. Introduction. Relations. Functions. Sets of numbers, complex numbers, trigonometric form of complex number, Moivre formulas.</td><td colspan="2">3</td><td>3</td></tr>
<tr><td colspan="4">2. Matrices. Basic operations with matrices. Matrix formulation of system of linear equations. Gaussian elimination. Linear independence and rank of a matrix. Kronecker-Capelli theorem.</td><td colspan="2">3</td><td>3</td></tr>
<tr><td colspan="4">3. Inverse matrix. Determinants. Submatrices and subdeterminants. Laplace expansion of a determinant. Cramer's rule.</td><td colspan="2">3</td><td>3</td></tr>
<tr><td colspan="4">4. Vectors. Basic operations with vectors. Coordinate system. Unit vector and cosines of directions. Linear independence of vectors and basis of a space. Scalar (dot) product, vector product and mixed product.</td><td colspan="2">3</td><td>3</td></tr>
<tr><td colspan="4">5. Equations of a line. Equations of a plane. Applications of analytic geometry.</td><td colspan="2">3</td><td>3</td></tr>
</table>

	6. Functions of a real variable: defining function, classification of functions. Limits and continuity. Asymptotes. Review of elementary functions.	3	3
	7. Derivatives. Tangent and normal. Differential and approximate computation.	3	3
	8. Higher derivatives and differentials. Derivatve of a parametric function. Theorems of differential calculus (Fermat, Rolle, Cauchy, Lagrange). L'Hospital's rule and limits of undetermined forms.	3	3
	9. Monotonicity. Necessary and sufficient conditions for extrema. Geometrical extrema.	3	3
	10. Curvature. Sufficient condition for convexity and concavity. Necessary and sufficient conditions for inflection points. Examining functions and drawing graphs.	3	3
	11. Sequences of real numbers. Basic inequality of convergence. Accumulation point and sub-sequence. Boundedness, monotonicity and convergence. Properties of limits. Cauchy series. Some important limits.	3	3
	12. Series of real numbers. Sufficient condition for convergence. Convergence criteria. Absolute convergence. Alternating series.	3	3
	13. Sequences of functions. Series of functions. Power series and convergence radius. Differentiating series of functions. Taylor series and applications.	3	3
	List of laboratory or design exercises		LE or DE hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☒ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	3	Research		Practical training	
	Experimental work		Report		Self study	3.6
	Essay		Seminar essay		(Other)	
	Tests	0.2	Oral exam		(Other)	
	Written exam	0.2	Project		(Other)	

Grading and evaluating student work in class and at the final exam	During semester two mid-term exams are held. The first exam is scheduled after 7 weeks of lectures, and the second in the week following the lectures. At each mid-term exam students can get 40 points, while the remaining 20 points are attained through assignements during lectures and excercises. The condition for passing the course is minimum 20 points on each mid-term exams and a total of at least 50

<table>
<tr><td></td><td colspan="3">points. After semester, two final exams and a correction exam are held.

Students which did not pass one mid-term exam, can take only this part of the exam during final exams.

Student which did not pass any mid-term exam, take the final exam with comprehensive course content. In that case, masimum numbers of available points is 80. The condition for passing the course is minimum 40 points in the final exam and a total of at least 50 points. The grade is formed after the second final exam according to article 75 of the Statute of FESB:
15% of the best students get the mark excellent (5),
next 35% students get the mark very good (4),
next 35% students get the mark good (3), and
the last 15% students get thet mark sufficient (2).
Students who did not pass the course after final exams, and have obtained total of at leat 10 points, can attend the correction exam. On the correction exam maximal number of points is 100, and the minimum requirement for a passing grade is 50 points.
Mid-term exams, final exams and correction exams are held according to the exam schedule.</td></tr>
<tr><td rowspan="4">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>I. Slapničar, Matematika 1, FESB, Split, 2002.</td><td>20</td><td>http://www.fesb.unist.hr/mat1</td></tr>
<tr><td>I. Slapničar, J. Barić, M. Ninčević, Matematika 1 – zbirka zadataka, FESB, Split, 2010.</td><td>20</td><td>http://www.fesb.unist.hr/mat1</td></tr>
<tr><td>Lecture materials on FESB e-learning portal.</td><td></td><td>httpd://elearning.fesb.unist.hr</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">- Petar Javor, Matematička analiza 1, Element, Zagreb, 2001.
- Luka Krnić i Zvonimir Šikić, Račun diferencijalni i integralni, I. dio, Školska knjiga, Zagreb, 1993.
- S. Pavasović i ostali, Matematika - riješeni zadaci, Građevinski fakultet, Split, 1999.
- B. P. Demidovič, Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1995.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">- homework
- short tests
- quizzes
- mid-term exams
- final exam
- student questionnaires</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

NAME OF THE COURSE	MATHEMATICS 2							
Code	FEMX02	Year of study	1					
Course teacher	Ivan Slapničar, Ph.D., Full Professor, Anita Matković, Ph.D., Associate Professor, Josipa Barić, Ph.D., Assistant Professor.	Credits (ECTS)	7					
Associate teachers	Ph.D. Nevena Jakovčević Stor, Irena Bego, Anita Carević, Marija Čatipović, Lea Dujić, Ivana Grgić, Lana Periša, Marina Mandić, Dajana Radišić, Mirjana Strukan, Stjepan Vedran Vukasović, Vanja Županović.	Type of instruction (number of hours)	L	S	AE	LE	DE	
			45	0	45	0	0	
Status of the course	obligatory	Percentage of application of e-learning	10					

COURSE DESCRIPTION	
Course objectives	Training students for: - application of mathematical concepts and tools from the area of integral calculus, ordinary differential equations, functions of several variables and multiple integrals, to analyze and solve engineering problems.
Course enrolment requirements and entry competences required for the course	Good knowledge of High School mathematics and passed State Exam in Mathematics.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. state definitions and theorems from the enitre course, 2. reproduce proofs of basic theorems, 3. illustrate theorems with examples, 4. identify integrals which are elementary integrable and solve them. 5. solve ordinary differential equations and systems of differential equations. 6. apply differential equations to model population growth, heat conduction, the oscillator and the predator-prey system. 7. identify quadratic surfaces 8. analyze the extrema of real functions of several variables. 9. apply a single and multiple definite integrals to computation of area, curve length, volume and center of gravity in the standard coordinate systems.

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L or S hours	AE hours
	1. Indefinite integrals. Definition and basic properties. Table of basic integrals. Basic techniques of integration.	3	3
	2. Integration of rational functions. Integration of trigonometric functions. Recursive formulae.	3	3
	3. Integration of some irrational functions. Integrating a series of functions. Application of integrals to free fall with air resistance problem.	3	3
	4. Definite integrals. Definition and basic properties. Newton-Leibnitz formulae. Techniques of integration. Improper integrals.	3	3
	5. Application of definite integrals - the length of arc planar curve, volume and surface area of the rotating body. Numerical integration – trapezoid rule, Simpson's rule, Richardson extrapolation.	3	3

	6. The functions of several variables. Definition and basic properties. Domain of the function. Limits and continuity. Quadratic surfaces.	3	3
	7. Partial derivatives. Differentiability. Tangent plane. Extrema of functions of several variables. Conditional extrema.	3	3
	8. Multiple integrals. Basic concepts and definitions. Double integral. Double integral in polar coordinates. Applications of double integral.	3	3
	9. Triple integral. Triple integral in cylindrical and spherical coordinates. Change of variables in multiple integrals.	3	3
	10. Introduction to Differential Equations. Basic concepts and definitions. Examples: modeling population growth, logistic equation, equation of heat conduction, Hooke's law. Equations with separable variables.	3	3
	11. Homogeneous differential equations. Exact differential equations. Integration factor. Linear differential equations of the first order.	3	3
	12. Bernoulli differential equation. Euler method as numerical procedure for solving linear differential equations. Differential equations of second order.	3	3
	13. Linear differential equations of second order with constant coefficients. Example: electronic circuits - harmonic oscillator. Systems of differential equations. Lotka-Volterra equations for predator-prey system.	3	3
	List of laboratory or design exercises		LE or DE hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☒ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	3	Research		Practical training	
	Experimental work		Report		Self study	3.6
	Essay		Seminar essay		(Other)	
	Tests	0.2	Oral exam		(Other)	
	Written exam	0.2	Project		(Other)	

Grading and evaluating student work in class and at the final exam	During semester two mid-term exams are held. The first exam is scheduled after 7 weeks of lectures, and the second in the week following the lectures. At each mid-term exam students can get 40 points, while the remaining 20 points are attained through assignements during lectures and excercises. The condition for passing the course is minimum 20 points on each mid-term exams and a total of at least 50

<table>
<tr><td colspan="1"></td><td colspan="3">points.
After semester, two final exams and a correction exam are held.
Students which did not pass one mid-term exam, can take only this part of the exam during final exams.

Student which did not pass any mid-term exam, take the final exam with comprehensive course content. In that case, maximum numbers of available points is 80. The condition for passing the course is minimum 40 points in the final exam and a total of at least 50 points. The grade is formed after the second final exam according to article 75 of the Statute of FESB:
15% of the best students get the mark excellent (5),
next 35% students get the mark very good (4),
next 35% students get the mark good (3), and
the last 15% students get thet mark sufficient (2).

Students who did not pass the course after final exams, and have obtained total of at least 10 points, can attend the correction exam. On the correction exam maximal number of points is 100, and the minimum requirement for a passing grade is 50 points.

Mid-term exams, final exams and correction exams are held according to the exam schedule.</td></tr>
<tr><td rowspan="6">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>I. Slapničar, Matematika 2, skripta, FESB, Split</td><td></td><td>http://www.fesb.unist.hr/mat2</td></tr>
<tr><td>Lecture materials on FESB e-learning portal.</td><td></td><td>https://elearning.fesb.unist.hr</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">- Petar Javor, Matematička analiza 2, Element, Zagreb, 2000.
- Luka Krnić i Zvonimir Šikić, Račun diferencijalni i integralni, I. dio, Školska knjiga, Zagreb, 1993.
- B. P. Demidovič, Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1995.
- Dž. Lugić, Matematika II: metodički riješeni zadaci i kratki pregled definicija i teorema, FESB, 1999.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">- homework
- short tests
- quizzes
- mid-term exams
- final exam
- student questionnaires</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MATHEMATICS 3</td></tr>
<tr><td>Code</td><td>FEMC02</td><td>Year of study</td><td colspan="5">2</td></tr>
<tr><td>Course teacher</td><td>Ivan Slapničar, Ph.D., Full Professor,
Anita Matković, Ph.D., Associate Professor,
Josipa Barić, Ph.D., Assistant Professor</td><td>Credits (ECTS)</td><td colspan="5">6</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Ph.D. Nevena Jakovčević Stor, mr. sc. Ivančica Mirošević, Irena Bego, Anita Carević, Marija Čatipović, Lea Dujić, Ivana Grgić, Lana Periša, Marina Mandić, Dajana Radišić, Mirjana Strukan, Stjepan Vedran Vukasović, Vanja Županović</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>30</td><td></td><td>30</td><td></td><td></td></tr>
<tr><td>Status of the course</td><td>obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">10</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
application of mathematical concepts and tools from the area of Vector analysis, Fourier analysis and Laplace transformation, to analyze and solve engineering and economy problems.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Passed courses Mathematics 1 and Mathematics 2.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- state definitions and theorems from the enitre course,
- illustrate basic notions and connections between them with examples,
- apply Hamilton differencial operator on scalar and vector fields,
- calculate line integrals over scalar and vector fields,
- calculate surface integrals over scalar and vector fields,
- represent functions by Fourier series and integral,
- solve differential equations by use of Laplace transformation.</td></tr>
<tr><td rowspan="9">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="5">1. Vector analysis. Vector functions of scalar variable. Limits and continuity. Derivative and integral.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">2. Scalar and vector fields. Gradient, divergence and curl. Hamilton and Laplace operator.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">3. Conservative and solenoidal fields. Sidelong derivatives.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">4. Line integrals. Curve parametrization. Tangent line. Line integral of a scalar field.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">5. Line integral of a vector field. Flow, calculation of scalar potential and Green’s theorem.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">6. Surface integrals. Surface parametrization. Tangent plane. Surface integral of a scalar field.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">7. Surface integral of a scalar field. Gauss and Stokes theorems and their applications.</td><td>2</td><td>2</td></tr>
<tr><td colspan="5">8. Fourir analysis. Periodic functions and periodic extensions. Ortogonal trigonometric systems.</td><td>2</td><td>2</td></tr>
</table>

	9. Fourier series. Dirichlet's conditions. Convergence of Fourier series.	2	2
	10. Fourer series for even and odd functions. Parseval's equality.	2	2
	11. Fourier integral. Fourier transformation, inverse Fourier transformation theorems and their applications.	2	2
	12. Laplace transformation. Basic properties of Laplace's transformation. Inverse Laplace transformation.	2	2
	13. Convolution. Applications to differential equations.	2	2
	List of laboratory or design exercises		LE or DE hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☒ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Regular attendence to and active participation in lectures and excercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2	Research		Practical training	
	Experimental work		Report		Self study	3.6
	Essay		Seminar essay		(Other)	
	Tests	0.2	Oral exam		(Other)	
	Written exam	0.2	Project		(Other)	

Grading and evaluating student work in class and at the final exam	During semester two mid-term exams are held. The first exam is scheduled after 7 weeks of lectures, and the second in the week following the lectures. At each mid-term exam students can get 40 points, while the remaining 20 points are attained through assignements during lectures and excercises. The condition for passing the course is minimum 20 points on each mid-term exams and a total of at least 50 points. After semester, two final exams and a correction exam are held. Students which did not pass one mid-term exam, can take only this part of the exam during final exams. Student which did not pass any mid-term exam, take the final exam with comprehensive course content. In that case, maximum numbers of available points is 80. The condition for passing the course is minimum 40 points in the final exam and a total of at least 50 points. The grade is formed after the second final exam according to article 75 of the Statute of FESB: 15% of the best students get the mark excellent (5), next 35% students get the mark very good (4), next 35% students get the mark good (3), and the last 15% students get thet mark sufficient (2).

<table>
<tr><td></td><td colspan="3">Students who did not pass the course after final exams, and have obtained total of at least 10 points, can attend the correction exam. On the correction exam maximal number of points is 100, and the minimum requirement for a passing grade is 50 points.

Mid-term exams, final exams and correction exams are held according to the exam schedule.</td></tr>
<tr><td rowspan="6">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>L. Korkut, M. Krnić, M. Pašić, Vektorska analiza, Element, Zagreb, 2014.</td><td>5</td><td></td></tr>
<tr><td>N. Elezović, Fourierov red i integral, Laplaceova transformacija, Element, Zagreb, 2014.</td><td>5</td><td></td></tr>
<tr><td>Ivan Slapničar, Matematika 3, FESB, Split</td><td></td><td>http://www.fesb.unist.hr/mat3</td></tr>
<tr><td>Lecture materials on FESB e-learning portal.</td><td></td><td>https://elearning.fesb.unist.hr/</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">Luka Krnić i Zvonimir Šikić, Račun diferencijalni i integralni, I. dio, Školska knjiga, Zagreb, 1993.
- B. P. Demidovič, Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1995.
- Dž. Lugić, Matematika II: metodički riješeni zadaci i kratki pregled definicija i teorema, Sveučilište u Splitu, FESB, 1999.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">- homework
- short tests
- quizzes
- mid-term exams
- final exam
- student questionnaires</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MECHANICS 1</td></tr>
<tr><td>Code</td><td>FESC02</td><td>Year of study</td><td colspan="5">1.</td></tr>
<tr><td>Course teacher</td><td>Vedrana Cvitanić, Ph.D., Associate Professor</td><td>Credits (ECTS)</td><td colspan="5">7</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Marko Vukasović, Ph.D., Teaching assistant
Maja Kovačić, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>45</td><td>0</td><td>45</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- understanding and application of basic knowledge of mechanics of rigid bodies at state of rest,
- understanding basic concepts in mechanics such as force, moment of force, couple and system of forces (from system of concurrent forces to general spatial system of forces),
- studying equilibrium of body and equilibrium of system of bodies,
- determination and analysis of internal forces for beams and trusses.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- explain fundamental quantities and concepts in mechanics (force, moment of force, couple, moment of couple, system of forces, connection, reaction of connection, external forces, internal forces),
- perform composition of system of forces (from system of concurrent forces to general spatial system of forces),
- apply equilibrium conditions for body and for system of bodies,
- compute reactions of connections for statically determined plane and spatial structures,
- consider and apply calculation of rough surface reaction as well as calculation of flexible belt friction,
- compute internal force components for statically determined plane and spatial beams and frames, plane arcs and trusses,
- compute centroid of homogenous bodies with composite shape,
- summarize equilibrium problem of flexible cables.</td></tr>
<tr><td rowspan="4">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="3">Course content</td><td colspan="2">L hours</td><td colspan="2">AE hours</td></tr>
<tr><td colspan="3">Mission of statics. Force. Axioms of statics. Connections. Reactions of connections. Axiom of connections.
System of concurrent forces. Composition of system of concurrent forces. Resultant.</td><td colspan="2">3</td><td colspan="2">2</td></tr>
<tr><td colspan="3">Determining components of force. Force projection on axis. Force projection on plane. Analytical defining of force. Equilibrium conditions of system of concurrent forces. Moment of force about point.</td><td colspan="2">3</td><td colspan="2">3</td></tr>
<tr><td colspan="3">Varignon theorem about moment of resultant of planar system of concurrent forces. Special forms of equilibrium conditions of planar system of concurrent forces.</td><td colspan="2">3</td><td colspan="2">2</td></tr>
</table>

	Coplanar system of parallel forces and couples. Composition of two parallel forces. Couple. Moment of couple. Equivalence of couples.		
	Composition of coplanar system of couples. Equilibrium conditions of coplanar system of couples. Coplanar force system. Theorem about reduction of force at point. Reduction of coplanar force system at point. Representing coplanar force system by simplier form.	3	2
	Equilibrium conditions of coplanar force system. Equilibrium conditions of coplanar system of parallel forces. Equilibrium of system of bodies. Friction. Sliding friction. Reaction of rough surface.	3	6
	Friction angle and friction cone. Equilibrium under friction conditions. Friction of flexible belt. Rolling friction.	3	5
	Plane beams. Internal force components of plane beams. Relations between internal force components and external loading.	3	3
	Examples of plane beams.	3	3
	Plane trusses. Plane arcs. Spatial system of parallel forces and couples. Moment of force about axis. Analytical defining of moment of force about point. Analytical defining of moment of force about axis.	3	3
	Moment of force about point as vector product of position vector and force vector. Equivalence of couples acting in parallel planes. Composition of spatial system of couples. Equilibrium conditions of spatial system of couples. Composition of spatial system of parallel forces. Center of system of parallel forces.	3	3
	Spatial system of forces. Composition of spatial system of forces. Representing spatial system of forces by simplier form. Equilibrium conditions of spatial system of forces. Equilibrium conditions of spatial system of parallel forces.	3	3
	Spatial beams. Internal force components of spatial beams. Examples of spatial beams. Centroid. Centroid of rigid body.	3	2
	Centorid of homogenous body. Centorid of homogenous bodies with composed shape. Experimental determination of body centroid. Pappus-Guldin rules. Flexible cables.	3	2
	List of laboratory exercises		LE hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Presence on lectures and exercises in the amount of at least 70 % of the times scheduled.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,6	Research		Practical training	
	Experimental work		Report		Individual work	4,1
	Essay		Seminar essay		Laboratory exercises	
	Tests	0,2	Oral exam		Preparation for laboratory exercises	
	Written exam	0,1	Project		(Other)	

<table>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="3">There are two midterm exams during the semester. After semester there are two final exam terms and one corrective exam term according to schedule. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks of lecturing. Each midterm exam is written and test consists of theoretical questions and numerical problems. The requirement for passing grade is 50% points on each midterm exam. In the final exams students that did not pass the midterm exams take part. In the corrective exam students take whole exam.

Final number of points is formed according to the formula:
Points(%)= (M1 + M2)/2
M1, M2 – points on midexams.

Final grade is determined after the second final exam by relative system of grading according to Regulations of studies and study system of University of Split. Based on the achived number of points students that have passed the exam are distributed into four groups: 15% of the best students get grade excellent (5), following 35% students get grade very good (4), following 35% students get grade good (3) and last 15% students get grade sufficient (2).

If the total number of students that have passed the exam at midterms and final exams is lower than 30, the final grade is determined by absolute system of grading. In this case, the final grade is determed by the achived final number of points in the following manner: from 50% to 61% - grade sufficient (2), from 62% to 74% - grade good (3), from 75% to 87% - grade very good (4) and from 88% to 100% - grade excellent (5).

Students can access the corrective exam term if they have achived at least 10% points on midterm exams or final exams.

According to Article 71 of Faculty Statue, students are obligate to contribute in all education activities and to attend at least 70% of lecture and exercise lessons. Above conditions are necessary to acess midterm and final exams.</td></tr>
<tr><td rowspan="4">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Pavazza, R.,"Mehanika - Statika", Školska knjiga, Zagreb, 2014.</td><td></td><td></td></tr>
<tr><td>Plazibat, B., Matoković, A., "Mehanika 1 – zbirka zadataka“, FESB, Split, 1999.</td><td></td><td></td></tr>
<tr><td>Cvitanić, V., "Predavanja iz kolegija Mehanika 1", FESB.</td><td></td><td>e-learning portal</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">Alfirević, I.; Saucha, J.; Tonković, Z., Kodvanj, J., "Uvod u mehaniku - I. Statika krutih tijela", "Uvod u mehaniku – II. Primjenjena statika", Golden marketing - Tehnička knjiga, Zagreb, 2010.
Brnić, J., "Statika", Sveučilište u Rijeci, Tehnički fakultet, Rijeka, 2004.
Matejiček, F., Semenski D., Vnučec, Z., "Uvod u statiku sa zbirkom zadataka", Golden marketing - Tehnička knjiga, Zagreb, 2005.
Meriam, J. L.; Kraige, L. G.: "Engineering Mechanics-Statics", John Wiley & Sons, 2003.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">– recording student’s presence on lessons
– evaluation of results in accordance with the above learning outcomes
– feedback from students via surveys
– self-evaluation of teachers
– institutional and non-institutional evaluations</td></tr>
</table>

Other (as the proposer wishes to add)	

NAME OF THE COURSE	**MECHANICS 2**						
Code	FESC21	Year of study	1.				
Course teacher	Željan Lozina, Ph.D., Full Professor	Credits (ECTS)	5				
Associate teachers	Ivan Tomac, Ph.D., Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE
			30	0	30	0	0
Status of the course	Obligatory	Percentage of application of e-learning	0				
COURSE DESCRIPTION							
Course objectives	Training students for: - understanding and application of basic principles of motion geometry - setting up and solving simple problems of motion geometry, - permanent adoption and deepening of knowledge in the field of motion geometry.						
Course enrolment requirements and entry competences required for the course	None						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Ability to analyze kinematics of the three-dimensional particle motion in various coordinate systems: cartesian, natural and cylindrical. 2. Understanding of the concepts of displacement, velocity and acceleration as vectors and how to determine them. 3. Ability to analyze the kinematics of two-dimensional (planar) rigid-body motion. 4. Ability to use concepts of angular displacement, angular velocity and angular acceleration 5. Ability of solving simple problems in geometry of motion 6. Explain constraint motion 7. Explain motion composition 8. Apply expression to plain motion Apply SI units for mechanical values: position, displacement, velocity,, acceleration,…						

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours	AE hours
	Introduction to Kinematics. Basic Concepts.	2	2
	Rectilinear motion of particle.	2	2
	Curvilinear motion of particle. Coordinate systems.	2	2
	Constrained motion of particle. Equation of constraints.	2	2
	Relative motion of particle. Relative velocity. Relative acceleration.	2	2
	Transformation of coordinates.	2	2
	Degrees of freedom rigid body kinematics: displacement and motion types	2	2
	First midterm exam		
	Rotation of rigid body.	2	2
	General motion of rigid body – relative approach.	2	2
	Constrained motion of rigid body, kinematic pairs and mechanicsms.	2	2
	General motion of rigid body – absolute approach..	2	2
	Motion of body in space (3D motion).	2	2
	Euler theorem. Chasles theorem. Simple problems.	2	2

	Second midterm exam	
	List of laboratory exercises	LE hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	2,0	Research		Practical training	
	Experimental work		Report		Individual work	2,9
	Essay		Seminar essay		Laboratory exercises	0
	Tests	0	Oral exam		Preparation for laboratory exercises	0
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam

There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. Each midterm test consists of 10 theoretical questions and numerical problems and final tests consist of 20 theoretical questions and numerical problems. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests. The requirement for passing grade is 50 % points on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula:

Grade(%) = 0,5 (M1 + M2)

the activities in percentage:

- M1, M2 – midterm test results.

Relative grading according Faculty and University rules.

Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Ž. Lozina: Autorizirana predavanja, FESB		e-learning portal
	Ž. Lozina: Kinematika, FESB, Split.	5	

Optional literature (at the time of submission of study programme proposal)	**Gross**, D., **Hauger**, W., **Schröder**, J., **Wall**, W.A., **Bonet**, J.: Engineering mechanics 3, Springer, 2011.
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations

Other (as the proposer wishes to add)	

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="8">MECHANICS 3</td></tr>
<tr><td>Code</td><td>FESC04</td><td>Year of study</td><td colspan="6">1.</td></tr>
<tr><td>Course teacher</td><td>Željan Lozina, Ph.D., Full Professor</td><td>Credits (ECTS)</td><td colspan="6">7</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Damir Sedlar, Ph.D., Assistant Professor
Ivan Tomac, Ph.D., Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td colspan="2">DE</td></tr>
<tr><td>45</td><td>0</td><td>15</td><td>15</td><td colspan="2">0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="6">0</td></tr>
<tr><td colspan="9">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="8">Training students for:
- understanding and application of basic principles and laws of motion.
- setting up and solving simple problems of kinetics,
- permanent adoption and deepening of knowledge in the field of motion.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="8">Mathematics 1, Mathematics 2, Mechanics 2 (FESC21), Mechanics of materials 1</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="8">1) Understanding of the notion of a force as a vector. Ability to understand concepts of kinetic, potential and mechanical energies and the concept of a conservative force.
2) Understanding of the concepts of power and mechanical efficiency.
3) Ability to analyze particle dynamics
a. Ability to make a right decision related to a choice of the system of particles whose motion is to be studied.
b. Ability to correctly draw the free-body diagram (FBD) for the system.
c. Ability to write and solve Newton equations of motion for the system.
d. Ability to use principles derived from Newton’s second law, including Work & Energy, and Momentum.
4) Ability to rigid body kinetics
a. Ability to use concepts of angular displacement, angular velocity and angular acceleration.
b. Ability to draw a FBD for a system of rigid bodies.
c. Ability to determine mass moment of inertia for some simple body geometries.
d. Ability to use principles derived from Newton’s second law, including Work & Energy, and Momentum, to derive equations of motion for a general rigid-body planar motion.
Ability to use both SEI system of units in all mechanical quantities (linear and angular displacement, velocity and acceleration, mass, force, torque, work/energy, power, momentum, mass moment of inertia)</td></tr>
<tr><td rowspan="8">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td colspan="2">L hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Introduction to Kinetics. Basic Concepts.</td><td colspan="2">3</td><td>1</td></tr>
<tr><td colspan="5">Dynamics of particle: direct application of Newton’s law.</td><td colspan="2">3</td><td>1</td></tr>
<tr><td colspan="5">Solution of differential equation of motion.</td><td colspan="2">3</td><td>1</td></tr>
<tr><td colspan="5">Work, energy, efficiency..</td><td colspan="2">3</td><td>1</td></tr>
<tr><td colspan="5">Conservation of mechanical energy</td><td colspan="2">3</td><td>1</td></tr>
<tr><td colspan="5">Impulse of force and momentum. Principle and conservation.</td><td colspan="2">3</td><td>1</td></tr>
<tr><td colspan="5">Impulse of moment of force and angular momentum. Principle</td><td colspan="2">3</td><td>1</td></tr>
</table>

	and conservation.		
	First midterm exam		
	Kinetics of rigid body motion: Momentum and moment of inertia.	3	1
	Kinetics of rotation of rigid body.	3	1
	General motion of rigid body – relative approach.	3	1
	Space motion. Gyroscopic motion.	3	1
	Introduction to analytical mechanics.	3	1
	Vibration of particle.	3	1
	Second midterm exam		
	List of laboratory exercises		LE hours
	Galilo’s experiments: free fall, incline plane, pendulum, gravitation		2
	Work and energy		2
	Impulse and momentum		3
	Moment of inertia		3
	Vibration		3

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,0	Research		Practical training	
	Experimental work		Report		Individual work	2,9
	Essay		Seminar essay		Laboratory exercises	0
	Tests	0	Oral exam		Preparation for laboratory exercises	0
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. Each midterm test consists of 10 theoretical questions and numerical problems and final tests consist of 20 theoretical questions and numerical problems. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests. The requirement for passing grade is 50 % points on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula: Grade(%) = 0,5 (M1 + M2) the activities in percentage: • M1, M2 – midterm test results. Relative grading according Faculty and University rules.

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Ž. Lozina: Autorizirana predavanja, FESB		e-learning portal
	Ž. Lozina: Dinamika, FESB, Split.		

Optional literature (at the time of submission of study programme proposal)	**Gross**, D., **Hauger**, W., **Schröder**, J., **Wall**, W.A., **Bonet**, J.: Engineering mechanics 3, Springer, 2011.		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">MECHANICS OF MATERIALS 1</td></tr>
<tr><td>Code</td><td>FESC05</td><td>Year of study</td><td colspan="5">1.</td></tr>
<tr><td>Course teacher</td><td>Frane Vlak, Ph.D., Associate Professor</td><td>Credits (ECTS)</td><td colspan="5">6</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Marko Vukasović, Ph.D., Teaching assistant
Branka Bužančić Primorac, Ph.D., Teaching assistant
Maja Kovačić, Teanhing assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>45</td><td>0</td><td>30</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- understanding and application of basic laws of solid body mechanics,
- introducing to stress and strain distribution in the beams under different types of loading (axial, torsion, bending, shear and combined loading).</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Statics (Mechanics 1)</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
1. explain plane stress, plane strain and stress-strain relationship (Hooke's law),
2. analyse plane stress using Mohr's circle,
3. calculate geometrical properties of cross sections,
4. determine stress and displacements of beams under tension/compression, torsion and bending,
5. apply developed procedures to analyse and design simple structures (allowable stress and strain design),
6. solve statically indeterminate problems using the method of integration of the deflection curve and the method of equating displacements ,
7. analyse beams under combined loadings using failure theories,
8. solve simple problems of buckling of columns.</td></tr>
<tr><td rowspan="6">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Introduction to mechanics of materials. Problems and methods of mechanics of materials. Modelling of structures. Stress vector, normal and shear stress. Stress tensor. Stress transformation.</td><td>3</td><td>2</td></tr>
<tr><td colspan="5">Principal stresses. Mohr's circle for plane stress. Strain, normal strain, shear strain and dilatation. Strain tensor. Strain transformation. Mohr's circle for plane strain.</td><td>3</td><td>2</td></tr>
<tr><td colspan="5">Stress-strain relationship. Experimental data for technical materials.Hooke's law for uniaxial stress state. Plane stress state. Relationship between elasticity constants. Relationship between internal force components and stress components. General approach to problems of mechanics of materials.</td><td>3</td><td>2</td></tr>
<tr><td colspan="5">Geometrical properties of plane areas, first and second moment of area. Parallel axis theorem. Transformation of second moments of area under rotation of coordinate system. Mohr's circle for second moments of area. Radius of gyration.</td><td>3</td><td>2</td></tr>
<tr><td colspan="5">Tension/compression. Prismatic beams and beams with varying cross sectional area. Displacement diagram. Stress concentration.</td><td>3</td><td>2</td></tr>
</table>

	Torsion of circular beams. Assumptions and constraints. Shear stress and strain. Allowable stress design. Bending. Assumptions and constraints.	3	2
	Pure bending. Transverse bending. Allowable stress design. Unsymmetric bending.	3	2
	First midterm exam		
	Differential equation of the deflection curve. Moment-area method. Stresses and strains of beams with nonuniform cross sections.	3	2
	Bending of thick curved beams. Shear. Influence of the shear on beam deflection.	3	2
	Statically indeterminate problems in tension/compression. Thermal effects, misfits and prestrains. Statically indeterminate problems in torsion. Statically indeterminate problems in bending.	3	2
	Strain energy. Failure theories.	3	2
	Failure theories for combined loading problems.	3	2
	Buckling of columns. Elastic and inelastic buckling. Design formulas for columns.	3	2
	Second midterm exam		

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,5	Research		Practical training	
	Experimental work		Report		Individual work	3,2
	Essay		Seminar essay		Laboratory exercises	
	Tests	0,2	Oral exam		Preparation for laboratory exercises	
	Written exam	0,1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests. Grade (in percentage) is formed according to the formula: $$\text{Grade}(\%) = 0{,}5\,(M1 + M2)$$ the activities in percentage: • M1, M2 – test results.

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Alfirević, I: Nauka o čvrstoći I, Tehnička knjiga, Zagreb, 1989.	5	
	F. Vlak: Autorizirana predavanja, FESB		e-learning portal

Optional literature (at the time of submission of study programme proposal)	Craig, R., R.: Mechanics of Materals, John Wiley & Sons, New York, 2000.		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

NAME OF THE COURSE	**MECHANICS OF MATERIALS 2**							
Code	FESC08	Year of study	2.					
Course teacher	Frane Vlak, Ph.D., Associate Professor	Credits (ECTS)	5					
Associate teachers	Marko Vukasović, Ph.D., Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE	
			30	0	30	0	0	
Status of the course	Obligatory	Percentage of application of e-learning	0					

COURSE DESCRIPTION

Course objectives	Training students for: - understanding and application of basic laws of structural analyses, - introducing to energy methods: the force method, the displacement method and method of initial parameters, - introducing to thin circular plates analysis.
Course enrolment requirements and entry competences required for the course	Statics (Mechanics 1) and Mechanics of materials 1.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - explain generalized force and displacement, flexibility and stiffness matrix, strain energy of beams, - explain Betti's theorem, Maxwell's theorem, Castigliano's theorems and theorems of minimum potential energy - apply Castigliano's theorems to plane beam structures (frames), - determine statical and kinematical indeterminancy of beam structures, - combine symmetry and antisymmetry of beam structures, - explain basic system of the force method and the canonical equations of the force method , - apply the force method to beam structures, - explain basic system of the displacement method and the canonical equations of the displacement method, - apply the displacement method to beam structures, - explain the method of initial parameters, - apply the method of initial parameters in the analysis of the displacements and internal force components, - calculate stresses and internal force components of thin circular plates.

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours	AE hours
	Work. Generalized force and displacement. Work-energy principle. Flexibility coefficients. Flexibility matrix. Stiffness coefficients. Stiffness matrix. Strain energy. Elastic strain energy for various types of loading. Clapeyron's theorem.	2	2
	Betti's theorem. Maxwell's theorem. Castigliano's theorems. Mohr's integral. Vereschagin's rule. Theorem of minimum potential energy. Theorem of minimum complementary potential energy.	2	2
	Types of beam structures. Degree of freedom. Statical indeterminancy. Kinematical indeterminancy.	2	2
	Symmetry and antisymmetry of beam structures.	2	2
	Basic system of the force method. Symmetrical basic systems.	2	2
	Canonical equations of the force method.	2	2
	Basic system of the displacement method.	2	2
	First midterm exam		

<table>
<tr><td rowspan="7"></td><td colspan="4">Symmetrical basic systems for displacement method.</td><td>2</td><td>2</td></tr>
<tr><td colspan="4">Canonical equations of the displacement method.</td><td>2</td><td>2</td></tr>
<tr><td colspan="4">Method of initial parameters. State vector. Field matrix. Load vector.</td><td>2</td><td>2</td></tr>
<tr><td colspan="4">Several load distributions. Statical indeterminate problems.</td><td>2</td><td>2</td></tr>
<tr><td colspan="4">Bending of thin circular plates.</td><td>2</td><td>2</td></tr>
<tr><td colspan="4">Membrane stresses in axisymmetric shells. Thick walled pressure vessels.</td><td>2</td><td>2</td></tr>
<tr><td colspan="4">Second midterm exam</td><td></td><td></td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☒ independent assignments
☒ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>2,0</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>2,2</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td>0,5</td><td>Laboratory exercises</td><td></td></tr>
<tr><td>Tests</td><td>0,2</td><td>Oral exam</td><td></td><td>Preparation for laboratory exercises</td><td></td></tr>
<tr><td>Written exam</td><td>0,1</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests. Grade (in percentage) is formed according to the formula:
Grade(%) = 0,45 (M1 + M2) + 0,1S
the activities in percentage:
• M1, M2 – test results,
• S - seminar essay.</td></tr>
<tr><td rowspan="5">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">Alfirević, I.: Nauka o čvrstoći II, Sveučilište u Zagrebu, Fakultet strojarstva i brodogradnje, Zagreb, 1999.</td><td>5</td><td></td></tr>
<tr><td colspan="4">Pavazza, R.; Uvod u analizu tankostjenih štapova, Zagreb, 2007.</td><td>3</td><td></td></tr>
<tr><td colspan="4"></td><td></td><td></td></tr>
<tr><td colspan="4"></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">– Parnes, R.: Solid Mechanics, John Wiley & Sons, Chichester, 2001.
– Solecky, R., Conant, R. J.: Advanced Mechanics of Materials, Oxford University Press, New York, Oxford, 2003.</td></tr>
<tr><td>Quality assurance methods that ensure</td><td colspan="6">– Evaluation of results in accordance with the above learning outcomes
– Feedback from students via surveys</td></tr>
</table>

the acquisition of exit competences	– Self-evaluation of teachers – Institutional and non-institutional evaluations
Other (as the proposer wishes to add)	

NAME OF THE COURSE	METAL STRUCTURES DESIGN						
Code	FESC24	Year of study	3				
Course teacher	Željko Domazet, Ph.D., Full Professor, Lovre Krstulović-Opara, Ph.D., Full Professor	Credits (ECTS)	4				
Associate teachers	Miro Bugarin, Ph.D.,Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE
			30	0	0	0	30
Status of the course	Elective	Percentage of application of e-learning	40%				

COURSE DESCRIPTION

Course objectives	Training students for: - Designing and maintaining of simple metal structures. Acquiring knowledge from types of structural materials, optimal designing, typical joints, corrosion and testing (control) of metal structures. - Design and project documentation based on CAD software SolidWorks. - Numerical modelling of metal structure based on finite element simulation and software ADINA.
Course enrolment requirements and entry competences required for the course	None
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Conceive and construct simple metal structure. - Prove the structure carrying capacity. - Explain calculation of weldments and bolt connections. - Carry out anti-corrosive protection. - Use results of finite element model simulation. - Carry out calculation of weldment and bolt connection. - Describe non-destructive testing base on visual testing, magnetic particles inspection, ultrasound testing and penetrant testing.

Course content broken down in detail by weekly class schedule (syllabus)

Course content	L or S hours	AE hours
Introduction to metal structures and structural design. Contracting of metal structures.	4	
Materials for metal structures (Aluminium alloys and steel)	4	
Actions on structures according to HRN, DIN, EUROCODE 3	4	
Metal structures optimal design.	2	
Bolt connections with dimensioning.	4	
Weldments with dimensioning.	4	
Design of weldments and bolt connections with respect to fatigue.	2	
Anti-corrosive protection.	2	
Contracting and renewal of anti-corrosive protection.	2	

List of laboratory or design exercises	DE hours
Introduction to SolidWorks and creating metal structure concept in SW.	8
Demonstration of NDT methods (visual testing, penetrant testing, magnetic particles inspection, ultrasound testing)	4
Introduction to the finite element method software ADINA	8
Simulation of structure loading in ADINA.	8

Format of instruction	☒ lectures	☒ independent assignments

	☒ seminars and workshops ☐ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work		☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)			
Student responsibilities						
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2	Research		Practical training	
	Experimental work		Report		Individual work	1
	Essay		Seminar essay	1	(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	Evaluation of gained knowledge in form of two colloquiums. Maximal score is 100 points, while minimum is passing of exam is with 50 points. Exam: individual, theoretical. Mode of exam: written form.					

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Ž. Domazet, L. Krstulović-Opara, Skripta iz Metalnih konstrukcija (in Croatian)		E-learning
	Additional course materials		E-learning
Optional literature (at the time of submission of study programme proposal)	- EUROCODE 1 - EUROCODE 3 - B. Androić, D. Dumović, I. Džeba, Metalne konstrukcije I, Institut građevinarstva Hrvatske, Zagreb 1994. - A. Vukov, Uvod u metalne konstrukcije, Fakultet građevinskih znanosti Sveučilišta u Splitu, Split 1998.		
Quality assurance methods that ensure the acquisition of exit competences	- Student evaluations - Registering student's attendance to course		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">NOISE AND VIBRATION CONTROL</td></tr>
<tr><td>Code</td><td>FESR16</td><td>Year of study</td><td colspan="5">3</td></tr>
<tr><td>Course teacher</td><td>Željan Lozina, Ph.D., Full Professor
Damir Sedlar, Ph.D., Assistant Professor</td><td>Credits (ECTS)</td><td colspan="5">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Tomac Ivan, Ph.D., Assistant Professor</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>30</td><td></td><td>15</td><td>15</td><td></td></tr>
<tr><td>Status of the course</td><td>Elective</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
– introduce students to the requirements, principles and methods of noise and vibration control;
– provide basic knowledge and understanding of noise and vibration control;
– provide the application of this knowledge to simple problems;
-</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- Explain free and forced vibrations,
- Determine the natural frequency of the mechanical system with single degree of freedom,
- Explain the concepts and phenomena: transferability, excitation imbalance, vibration isolation,
- Explain the principles of noise isolation,
- Apply the basic techniques of vibration isolation,
- Handle with manual measuring instruments and operate with sensors to measure acceleration (accelerometer).</td></tr>
<tr><td rowspan="18">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L or S hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Single degree of freedom system – free undamped vibration</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Single degree of freedom system – forced undamped vibration</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Single degree of freedom system – free damped vibration</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Single degree of freedom system – forced damped vibration</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Transmissibility</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Base and imbalance excitation, vibration isolation</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Two degree of freedom system</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Wave equation</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Fundamentals of noise</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Humane response to sound</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Sound source, outdoor sound</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Indoor sound</td><td>2</td><td>1</td></tr>
<tr><td colspan="5">Sound isolation</td><td>2</td><td>1</td></tr>
<tr><td colspan="6">List of laboratory or design exercises</td><td>LE or DE hours</td></tr>
<tr><td colspan="6">Introduction to Labview</td><td>2</td></tr>
<tr><td colspan="6">Single degree of freedom system – free damped vibration</td><td>1</td></tr>
<tr><td colspan="6">Frequency response function SDOF – shaker</td><td>1</td></tr>
</table>

	Frequency response function SDOF – unbalance	1
	Single plane balancing	1
	Frequency response function MDOF – shaker	2
	Sound pressure measurement - Labview	1
	Sound pressure measurement – Hand tool	1
	Sound isolation	1
	Reverberation time	1
	Kundt tube	1

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2	Research		Practical training	
	Experimental work		Report		Individual work	3
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests. The requirement for passing grade is 50 % points on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula: Grade(%) = 0,5 (M1 + M2) • M1, M2 – test results.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Ž. Lozina: Lectures, FESB D. Sedlar: Lectures, FESB		Elearning portal
	B.H. Tongue: Principles of vibration, Oxford University press, 1996		

Optional literature (at the time of submission of study programme proposal)	M. Norton, D. Karczub: Fundamentals of Noise and Vibration Analysis for Engineers, Cambridge, 2003.
Quality assurance methods that ensure the acquisition of exit competences	- Evaluation of results in accordance with the above learning outcomes - Feedback from students via surveys - Self-evaluation of teachers - Institutional and non-institutional evaluations
Other (as the proposer wishes to add)	

NAME OF THE COURSE	**PHYSICS**						
Code	FEMC03	Year of study	1.				
Course teacher	Ilja Doršner, Ph.D., Associate Professor	Credits (ECTS)	4				
Associate teachers		Type of instruction (number of hours)	L	S	AE	LE	DE
			45	0	0	0	0
Status of the course	Obligatory	Percentage of application of e-learning	0				

COURSE DESCRIPTION

Course objectives	Training students for: - understanding of basic laws of classical physics; - ability to apply laws of classical physics to real-life problems.		
Course enrolment requirements and entry competences required for the course	None		
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 11. to present basic laws of mechanics, fluid statics and dynamics, thermodynamics, oscillations, waves, electromagnetism, optics and the structure of atoms. 12. to demonstrate problem solving in the area of these physical units. 13. to perform more complex conclusions from fundamental physical principles in the mentioned units. 14. to analyse real physical problems in these units. 15. to present physical concepts and solutions of real problems in the mentioned areas. 16. to interpret physical processes in the areas of mechanics, fluid statics and dynamics, thermodynamics, oscillations, waves, electromagnetism, optics and the structure of atoms.		
Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours	AE hours
	Physical quantities and units. Vectors and scalars. Basic introduction to the calculus.	3	0
	Particle kinematics.	3	0
	Newton's laws, friction force.	3	0
	Work, power, energy. The movement of system of particles and rigid bodies.	3	0
	Gravity, gravitational potential energy.	3	0
	Fluid statics and dynamics.	3	0
	Heat and thermodynamics.	3	0
	Harmonic oscillations.	3	0
	Mechanical waves, sound waves, ultrasound.	3	0
	Electromagnetic waves.	3	0
	Geometrical and physical optics.	3	0
	The quantum nature of light.	3	0
	The structure of atoms.	3	0
Format of instruction	☒ lectures ☐ seminars and workshops ☐ exercises ☐ *on line* in entirety	☐ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor	

<table>
<tr><td></td><td colspan="3">☐ partial e-learning
☐ field work</td><td colspan="3">☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6"></td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>2,1</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Tests</td><td>0,2</td><td>Oral exam</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Written exam</td><td>0,2</td><td>Project</td><td></td><td>(Other)</td><td></td></tr>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="6">There are two midterm exams, two final exams and one make-up exam. The first midterm exam is after 7 weeks of lectures and the second one is after the next 6 weeks. Each midterm test consists of the following 6 questions:
2 obligatory questions (basic course questions);
4 additional questions that test the theory and problem solving knowledge.
The requirement for passing grade at the midterm exams is to have at least 90% from each obligatory question and at least 50% from each of remaining 4 questions. Students that do not pass one of the midterm exams can retake it during the final exams. Final exams lasts consist out of the following 12 questions:
4 obligatory questions (basic course questions);
8 additional questions that test the theory and problem solving knowledge.
The requirement for passing grade at the final exam is to have at least 90% from each of obligatory questions and at least 50% from each of remaining 8 questions.
Final grade is determined using the relative grading system based on the arithmetic mean of the per cents of each of the additional questions. Obligatory questions do not enter the arithmetic mean. Students that have passed both midterm exams or final exams are grouped in four categories: 15% of the students with the highest arithmetic means are assigned grade A (excellent), 35% of the students with the next best arithmetic means are assigned grade B (very good), 35% of the students with the next to next best arithmetic means are assigned grade C (good), and 15% of the students with the lowest passing arithmetic means are assigned grade D (satisfactory).
Students who fail to pass the course through midterms and/or final exams have one make-up exam at the beginning of fall. This exam features the same format as the final exam. Exam schedule is predetermined through the academic calendar.</td></tr>
<tr><td rowspan="4">Required literature (available in the library and via other media)</td><td colspan="4">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="4">D. Lelas: Online materials, E-learning portal of FESB</td><td></td><td></td></tr>
<tr><td colspan="4">Kulišić, P.: Mehanika i toplina, Školska knjiga, Zagreb, 1995. (in Croatian)</td><td></td><td></td></tr>
<tr><td colspan="4">V. Henč-Bartolić, Kulišić, P.: Valovi i optika, Školska knjiga, Zagreb, 1995. (in Croatian)</td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="6">- D. Halliday, R. Resnick, J. Walker: Fundamental of Physics, 7th Edition, John Wiley & Sons, Inc., 2005; N. Cindro: Fizika 1, Školska knjiga, Zagreb, 1991; C. Kittel, W. D. Knight, M. A. Ruderman: Udžbenik Sveučilišta u Berkeleyu, Svezak 1, Mehanika, Tehnička knjiga, Zagreb, 1992.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="6">- Student evaluation surveys
- Teacher self-evaluation
- Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="6"></td></tr>
</table>

NAME OF THE COURSE	PROFESSIONAL TRAINING							
Code	FEXX06	Year of study	3					
Course teacher	Head of the professional training from the Faculty	Credits (ECTS)	5					
Associate teachers	Head of the professional training from the private institution	Type of instruction (number of hours)	L	S	AE	LE	DE	
Status of the course	Elective	Percentage of application of e-learning						

COURSE DESCRIPTION						
Course objectives	Training students for: - consolidating theoretical knowledge and practical skills in solving highly complex engineering problems - acquaintance with the organization, work and business of the receiving institution, - solving practical problems, - inclusion in the labour market, - writing technical reports					
Course enrolment requirements and entry competences required for the course	Acquired 120 ECTS credits					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - consolidate theoretical knowledge and practical skills in solving problems - use literature, databases and other sources of information - select appropriate methods and procedures for solving practical problems - apply technical knowledge and skills to effectively solve engineering problems - prepare a written report on the work results					
Course content broken down in detail by weekly class schedule (syllabus)	Professional training is the independent work of the student performed in the receiving institution in accordance with the plan and programme agreed between the head of the professional training from the receiving institution and the head of professional training from the Faculty.					
Format of instruction	☐ lectures ☐ seminars and workshops ☐ exercises ☐ *on line* in entirety ☐ partial e-learning ☒ field work	☒ independent assignments ☐ multimedia ☐ laboratory ☒ work with mentor ☐ (other)				
Student responsibilities	Independent work					
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance		Research		Practical training	4
	Experimental work		Report		Independent work	
	Essay		Seminar essay		Report writing	1
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and	Professional training is not evaluated. Students are obliged to complete					

evaluating student work in class and at the final exam	professional training in accordance with the Regulation on professional training and to write a Professional training report. Professional training report is validated by the head of professional training from the receiving institution and the head of professional training from the Faculty.		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	- Questionnaire on professional training - Self-evaluation of the head of professional training - Student survey of the whole study programme		
Other (as the proposer wishes to add)			

NAME OF THE COURSE	QUALITY CONTROL						
Code	FETC14	Year of study	3.				
Course teacher	Ph.D. Boženko Bilić, senior full professor	Credits (ECTS)	4				
Associate teachers	Ph.D. Boženko Bilić, senior full professor	Type of instruction (number of hours)	L	S	AE	LE	DE
			30	0	15	0	0
Status of the course	Elective	Percentage of application of e-learning	0				

COURSE DESCRIPTION

Course objectives	- The promotion of quality as a fundamental criterion for survival companies in the market - Introducing students with theoretical concepts and practical application of quality control methods
Course enrolment requirements and entry competences required for the course	Completed the second year of mechanical engineering undergraduate study.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Explain quality costs - Apply basic quality control tools - Apply the theory of probability in quality control - Apply sampling plans for attributes and variables - Explain the causes and effects of variations in process - Create control charts for variables and control charts for attributes - Assess the capability of process - Calculate process capability indexes

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours	AE hours
	The basic postulates of modern quality control**:** What is a quality? The historical development of quality. Traditional and modern approach to quality. Quality control, quality assurance, quality management.	1	0
	The basic postulates of modern quality control**:** Internal and external quality control. On-line quality control and off-line quality control. Quality costs. Basic quality control tools	3	0
	Application of the theory of probability and statistics in the quality control.	2	2
	Statistical process control: Variation in process (special causes of variations and common causes of variations).	1	0
	Statistical process control: Control charts for attributes.	2	1
	Statistical process control: Control charts for variables.	3	2
	Statistical process control: Special control charts.	1	1
	Statistical process control: Estimation R&R using control charts.	1	1
	First midterm exam		
	Statistical process control: Process capability analysis - process capability indexes.	1	0
	Sampling plans: Sampling costs. Sampling risks – The operating characteristic(OC) curve. Quality indexes for acceptance sampling plans. Types of sampling plans.	2	1
	Sampling plans: Sampling plans by attributes.	1	1
	Sampling plans: Sampling plans by variables.	2	1
	Taguchi method (robust design method): Quality loss	3	1

	function. P-diagram and Signal-to-Noise ratio. Robust design (Parameter design). Tolerance design.		
	Design of experiments in quality control: Factorial design of experiments. Taguchi approach to design of experiments.	3	2
	Second midterm exam		

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures and exercises in the amount of at least 70 % of the times scheduled.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1,5	Research		Practical training	
	Experimental work		Report		Individual work	2,5
	Essay		Seminar essay	0	Laboratory exercises	0
	Tests		Oral exam		Preparation for laboratory exercises	0
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam

During semester there are two midterm exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. The student can take the first midterm exam if he/she regularly attended classes. Requirements for access to the second midterm exam are: regularly attended classes, at least 33 % of points achieved at the first midterm.
Midterm exams are conducted in written form. They consist of theoretical questions and numerical problems. The teacher reserves the right to hold a midterm exam in oral form. Positive assessment represents minimal 50 % points on each midterm exam:

$$\text{Grade (\%)} = 0{,}5\ (M1 + M2)$$

M1 – first midterm grade (%), i.e. percentage points achieved on the first midterm
M2 – second midterm grade (%), i.e. percentage points achieved on the second midterm
Requirement for access to the final exams is regularly attended classes.
In the two final exams students that did not pass at least one of the midterm exams take part. In the third and fourth final exams students take the whole exam regardless results of midterm exams. Final exams are conducted in written form. They consist of theoretical questions and numerical problems. The teacher reserves the right to hold a final exams in oral form. The requirement for passing grade is minimal 50% points on final exam.

Grade (%):	**Final mark:**
50% - 60%	sufficient (2)
61% - 75%	good (3)
76% - 90%	very good (4)
91% - 100%	excellent (5)

Grade (%) is average points achieved on midterm exams expressed as a percentage or number of points achieved on the final exam expressed as a percentage.

Required literature (available in the library and via other	**Title**	**Number of copies in the library**	**Availability via other media**

media)	B. Bilić: Kvaliteta – Planiranje, analiza i upravljanje, Sveučilište u Splitu, FESB, 2016.	5	
	Montgomery, D. C.: *Introduction to Statistical Quality Control*, John Wiley & Sons, 2009.	0	
	Drljača, M.: *Mala enciklopedija kvalitete – V dio: Troškovi kvalitete*, Oskar, Zagreb, 2004.	0	
Optional literature (at the time of submission of study programme proposal)	- Banovac, E., Kozak, D., Maglić, L.: *Osnove, metode i alati kvalitete*, Strojarski fakultet u Slavonskom Brodu Sveučilišta J. J. Strossmayera u Osijeku, Slavonski Brod, 2011. - Chandra, M. Jeya: *Statistical Quality Control*, CRC Press LLC, 2001. - Grant E. L., Leavenworth, R. S.: *Statistical Quality Control*, McGraw-Hill, New York, 1996. - Feigenbaum, A.: *Total Quality Control*, McGraw-Hill, 1991.		
Quality assurance methods that ensure the acquisition of exit competences	– Keeping records of the attendance of students – Annual evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="5">TECHNOLOGY 1</td></tr>
<tr><td>Code</td><td>FETC03</td><td>Year of study</td><td colspan="3">2.</td></tr>
<tr><td>Course teacher</td><td>PhD Nikša Krnić, Associated professor
PhD Sonja Jozić, Assistant professor</td><td>Credits (ECTS)</td><td colspan="3">6</td></tr>
<tr><td>Associate teachers</td><td></td><td>Type of instruction (number of hours)</td><td colspan="3">L: 60 | S: | AE: | LE: 30 | DE:</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="3"></td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">Part Welding:
- to furnish students with suitable basic knowledge about joining, cutting or other allied processes and to prepare them for challenges of modern production industries in these technological fields and
- to enable students thoretical and practical insight into conventional and advanced welding and allied processes, their interactions with metals with accent on structural metals and alloys, metal’s weldability and quality of welded structures.
Part Casting:
Training students for:
- aquiering knowledge about different methods of casting metal. Understanding of the connection between the chemical composition and structure of the cast, as well the casting parameters with exploitation properties of cast.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">Passed exams Materials 1 and Materials 2.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">Upon successful Welding course completion it is to be expected from students:
1. to make distinction and to recognize basic features of the main joining and thermal cutting processes and their implementation and to distinguish different machines and apparatus for their industrial applications,
2. to select basic welding parameters of electric arc processes and to know the effects they produce on welded metals (carbon steels and aluminium),
3. to analyze welding or cutting process characteristics and to apply that on suitable metal,
4 to correlate energy effects with macro- and microstructure on the example of carbon steels,
5. to be able to distinguish different welding defects and to know methods of mechanical testing of welded joints.

Students will be able to:
17. categorize casting methods
18. bring in relation the chemical composition and structure of the casting, as well the casting parameters with exploitation properties of casting.
19. present methods of making models, cores and moulds for casting.
20. introduce of determining fluidity alloys and the theoretical foundations of casting solidification.</td></tr>
<tr><td rowspan="3">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="4">Course content</td><td>L hours</td></tr>
<tr><td colspan="4">Part Welding</td><td></td></tr>
<tr><td colspan="4">Historical overview and principles of the joining and cutting technologies. Basic terminology and classification of the welding processes (fusion and solid state). Forms of energy and basic heat flow in welding. Hazards</td><td>2</td></tr>
</table>

	and safety.	
	Joint designs and welding positions. Filler metals and consumables. Features and characteristics of electric arc and welding plasma. Main types of power sources for electric-arc welding and their characteristics (CC/drooping and CP/flat).	4
	Classification, features, parameters, interaction with metals, process variations and industrial applications of the electric arc welding processes: shielded metal arc (SMAW), gas metal arc (GMAW ie. MAG/MIG), gas tungsten arc (GTAW ie. TIG), submerged arc (SAW), plasma arc (PAW) and stud welding.	10
	Other fusion welding processes: high power beam processes – laser beam (LBW) and electron beam (EBW) welding, electro-slag welding, thermit welding, oxy-fuel (gas) welding …	3
	Classification, features, parameters, interaction with metals and industrial applications of the solid state welding processes – cold, friction, ultrasonic, resistance, diffusion and explosion welding. Contemporary welding processes – hybrid laser-arc (HLA) and friction stir (FSW) welding.	4
	Mechanization, automation and robotzation of welding Basics of brazing, soldering, overlay welding, thermal spraying and adhesion joining.	3
	Thermal cutting and gouging. Basic welding metallurgy and weldability of carbon steels and aluminium alloys.	3
	Quality of welded joints. Weld discontinuities, defects and mechanical properties. Non-destructive testing and testing of mechanical properties of welded joints. General information on welding distortions and residual stresses.	3
	Part Casting	
	Introduction, basic terms in the foundry, history of casting technology. Alloys for casting.	4
	Casting patterns, permanent patterns, expendable patterns. Moulds for casting, permanent and expendable moulds, cores.	4
	Casting processes: pressure die casting, centrifugal casting, continous casting, sand casting, precise casting.	4
	Tests for fluidity, solidification of metals. Deviations in castings.	4
	Aggregates for melting metals: cupola furnace, the furnace flame, electric ovens. Technology of design, guidelines for the design of castings.	4
	List of exercises	E hours
	Part Welding (laboratory exercises)	
	Health hazards, precautions and safety in welding laboratory. Presentation of basic features, handling and selection of the the basic welding parameters of the main types of the electric-arc welding power sources. Measurement and creation of drooping static voltage – current characteristic of the welding transformer.	3
	Measurement and creation of static voltage – current characteristic of electric arc. Experimental determination of arc stability by covered and bare electrode. Demonstration and practical welding of shielded metal arc welding with different types of covered electrodes.	3
	Experimental characterization of metal transfer in electric arc by different current intensities in shielded metal arc welding. Practical demonstration of mechanized gravitational SMAW and submerged arc welding (SAW).Demonstration and practical welding of mild steel by gas metal arc welding (MAG).	3
	Demonstration and practical welding of aluminium by gas metal arc welding (MIG). Demonstration and practical welding of stainless steel and aluminium by gas tungsten arc welding (TIG). Practical demonstration of	3

	spot electro resistance welding and rotational friction welding.	
	Practical demonstration of oxy-acetylene welding, brazing, soldering and flame spraying. Experimental presentation of oxy-fuel and arc plasma cutting effects on different alloys. Practical demonstration of weld gouging.	3
	Practical presentation of robotic GMA welding.	1
	An adequate educational and professional excursion and visit to one relevant company dealing with joining or allied processes could be organized as an additional but nonmandatory learning opportunity for students.	(x)
	Part Casting (laboratory or design exercises)	
	Permanent and expendable patterns, sand moulds for single use	2
	Metal patterns, metal moulds and sand cores for casting of piston	2
	Analysis of castings made by different casting techniques	2
	Analysis of casting defects.	2
	Determining of mould features; sprue, riser, runner system etc.	2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	*Part Welding:* Mandatory minimum attendance: 70 % for the lectures and 85 % for lab exercises. Approved reports from every lab excersise. *Part Casting:* The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,5	Research		Practical training	
	Experimental work	0,5	Report		Individual work	3
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	*Part Welding* In order to take the exam students are obliged to regulary attend lectures (> 70 %) and lab excercises and to prepare written reports from every lab excercise. There are two written midterm or partial exams in regular and officially announced terms during the semester (one at the middle and the other at the end of the semester). Midterm exams encompasse approximately one half of welding course topics. Students who successfully complete both midterm exams (more than 50 %) are administered to and have to satisfy a short oral examination. Unsuccessful termination of one or both partial exams qualifies students for final written in regular summer or fall exam terms and oral check. Grade is formed upon the success on midterm partial written exams or on final written exam and upon success on short oral examination. For 50 % to 61 % successfully and satisfactorly adopted knowledge grade (2) or sufficient is earned for 62 % to 74 % grade (3) or good, for 75 % to 87 % grade (4) or very good and over 88 % grade (5) or excellent is administered. Regularity of student's attendance of lectures and exercises and quality of laboratory exercises reports can improve the final grade. *Part Casting* There are two midterms and final exams. The first midterm exam is after 7 weeks of

	lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. In the makeup exam students take the entire exam. The midterm, final and makeup exams are carried out as written tests. The requirements for passing grade is: 1. Positive assessment of laboratory exercises 2. 50 % points on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula: Grade(%) = 0,5 (M1 + M2) M1, M2 – test results of first and second midterm exam. Final grade is determined according to: Percentage Grade 50% to 61% sufficient (2) 62% to 74% good (3) 75% to 87% very good (4) 88% to 100% excellent (5). Final grade is calculated as an arithmetical mean of the grades earned for parts Welding and Casting.		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Anzulović, B.: Zavarivanje, FESB Split 1990. Lukačević, Z.: Zavarivanje, SF Slavonski Brod 1997. S. Kralj i Š. Andrić: Zavarivanje i srodni postupci, FSB Zagreb 1999. Gojić, M.: Tehnike spajanja i razdvajanja materijala, MF Sisak, 2008. Krnić, N.: Handouts, unpublished, - 2016.		
	Jozić, S., Predavanja objavljena na eLearning portal, FESB, Split, 2016.		eLearning portal
	Živković, D., “Lijevanje metala”, skripta, Sveučilište u Splitu, FESB, Split, 2006.		
	Unkić, D., Glavaš, Z.,"Osnove lijevanja metala", skripta, Sveučilište u Zagrebu, Metalurški fakultet, Sisak, 2009.		
Optional literature (at the time of submission of study programme proposal)	Various books, handbooks, conference proceedings, manuals, journals, manufacturer informations and relevant and distinguished web documents in Croatian and English: Welding Handbook, Vol. 1 - 4, Welding Technology, Welding Processes, Materials and Applications, American Welding Society, 1992 Zavarivanje, Welding Journal, Schweissen und Schneiden, Kalpakjian, S., Schmid S.R., “Manufacturing Engineering & Technology”, Prentice Hall, 2013.		
Quality assurance methods that ensure the acquisition of exit competences	- Evaluation of results in accordance with the above learning outcomes - Feedback from students via surveys - Self-evaluation of teachers - Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">TECHNOLOGY 2</td></tr>
<tr><td>Code</td><td>FETC04</td><td>Year of study</td><td colspan="5">3</td></tr>
<tr><td>Course teacher</td><td>Dražen Bajić, Ph.D.,Full Professor
Branimir Lela, Ph. D., Assistant Professor</td><td>Credits (ECTS)</td><td colspan="5">6</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Sonja Jozić, Ph. D., Assistant Professor
Jure Krolo, Teaching assistant, Mario Veić, Teaching assistant</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>60</td><td>0</td><td>0</td><td>0</td><td>30</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">10%</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- acquisition of basic knowledge of manufacturing processes by means of metal forming processes and metal removal processes,
- understanding basic features of various processes that are based on shaping of the product without and with chip removals.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">None.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:

- categorize metal forming processes and metal removal processes
- design the use of machining and metal forming technologies
- outline procedures and machines used in metal forming processing
- comment flow stress and flow rules
- derive expressions to calculate forces, stresses, strains and strain rates in metal forming processes
- analyse the flow of materials, friction factor, flow stress, work and power in metal forming processes
- derive expressions to calculate the cutting speed, material removal volume, cutting force, torque, power, theoretical roughness and the main machine time for particular machining operations
- analyse the mechanics of orthogonal and oblique cutting
- analyse the mechanisms and forms of tool wear in machining
- classify sources of vibration during machining</td></tr>
<tr><td rowspan="9">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Course content</td><td>L hours</td><td>AE hours</td></tr>
<tr><td colspan="5">Introduction. Classification of metal-removal processes. Basic features particular machining procedures.</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">Parameters of cutting. Basic principles, tool and workpiece motion.</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">Basic tool geometry. Models of chip formation, shape and size of chip. Chips compression, compression rate. Conditions of occurrence of build up edge.</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">Cutting forces, power, vibrations during machining. Thermal phenomena in cutting.</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">Tribology of machining process</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">Integrity of machined surface.</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">Cutting-tool materials. High speed machining.</td><td>4</td><td>/</td></tr>
<tr><td colspan="5">First midterm exam</td><td></td><td></td></tr>
</table>

	Introduction; Classification of deformation processes; Concept of plastic deformation;	4	/
	Material plasticity indicators; Changes in material caused by deformation; Anisotropy;	4	/
	Deformation strain and strain rate; Flow stress and flow curves; Yield criteria;	4	/
	Upsetting processes; Forging processes; Drawing processes	4	/
	Extrusion processes; Rolling processes;	4	/
	Sheet metal bending; Deep drawing and spinning processes; Stamping processes;	4	/
	Second midterm exam		
	List of laboratory exercises		LE hours
	Turning, Tool and workpiece geometry, Chip shapes, Cutting-tools materials, 1st part		2
	Turning, Tool and workpiece geometry, Chip shapes, Cutting-tools materials, 2nd part		2
	Planing and slotting, compression rate measurement		2
	Drilling, sinking, and reaming. Measuring the axial force and torque for drilling		2
	Sawing, broaching. Measuring the main cutting force for turning using the power consumption.		2
	Milling. Measuring the surface roughness in relation with cutting parametars.		2
	Grinding, honing, superfinishing. Measuring the cutting forces using three component dynamometer		2
	Deformation influence on material mechanical properties		2
	Investigation of material flow		2
	Friction coefficient determination by ring and cylinder upsetting		2
	Flow stress determination by strip and cylinder upsetting		2
	Testing of material formability by upsetting and forging		2
	Testing of material formability by extrusion; Determination of sheet metal spring-back during bending		2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required laboratory exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,5	Research		Practical training	
	Experimental work	0,5	Report		Individual work	3
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. In the makeup exam students take the entire exam. The midterm, final and makeup exams are carried out as written tests. The requirements for passing grade is: 3. Positive assessment of laboratory exercises 4. 50 % points on each midterm exam or the final exam.

<table>
<tr><td></td><td colspan="3">Grade (in percentage) is formed according to the formula:
Grade(%) = 0,5 (M1 + M2)
M1, M2 – test results of first and second midterm exam.
Final grade is determined according to:
Percentage Grade
50% do 61% sufficient (2)
62% do 74% good (3)
75% do 87% very good (4)
88% do 100% excellent (5)

Examination terms: according to the timetable</td></tr>
<tr><td rowspan="4">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Duplančić, I.: “Obrada deformiranjem”, Sveučilište u Splitu, FESB, Split 2007.</td><td>5</td><td></td></tr>
<tr><td>Bajić, D. “Obrada odvajanjem”, autorizirana predavanja.</td><td></td><td>e-learning portal</td></tr>
<tr><td>Ekinović S.: “Postupci obrade rezanjem”, Univerzitet u Sarajevu, Mašinski fakultet u Zenici, 2003.</td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">- Povrzanović, A. “Obrada metala deformiranjem – odabrana poglavlja”, Sveučilište u Zagrebu, Fakultet strojarstva i brodogradnje, Zagreb, 1996.
- Math M., “Uvod u tehnologiju oblikovanja deformiranjem”, Sveučilište u Zagrebu, Fakultet strojarstva i brodogradnje, Zagreb, 1999.
- Lange K.: "Lehrbuch der Umformtechnik I, II, III", Springer - Verlag Berlin, Heidelberg, New York, 1974.
- Kalpakjian, S., Schmid S.R., “Manufacturing Engineering & Technology”, Prentice Hall, 2013.
- Grote, K.H., Antonsson, G., “Handbook of Mechanical Engineering“, Springer, 2008.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">- Keeping records of class attendance
- Evaluation of results in accordance with the above learning outcomes
- Feedback from students via surveys
- Self-evaluation of teachers
- Feedback information from graduated students</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

NAME OF THE COURSE	**THEORY AND TECHNIQUE OF MEASUREMENT**						
Code	FETC13	Year of study	3.				
Course teacher	Ph.D. Boženko Bilić, senior full professor	Credits (ECTS)	5				
Associate teachers	M.sc. Jakša Galić Ph.D. Nikola Gjeldum, assistant professor	Type of instruction (number of hours)	L	S	AE	LE	DE
			45	0	0	15	0
Status of the course	Obligatory	Percentage of application of e-learning	0				
COURSE DESCRIPTION							
Course objectives	Training students for: - Understanding the basic principles of the metrology theory and technique - Acquiring specific skills in methods and techniques of metrology and control.						
Course enrolment requirements and entry competences required for the course	None						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - Interpret metrological terms - Classify measurement errors - Perform measurements in the field of industrial metrology - Assess the measurement uncertainty of the measurement results - Use statistical tools and methods in the analysis, comparison and validation of measurement results - Assess the results of measurements on the basis of critical thinking and intellectual honesty.						

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L hours
	Theory of measurement: Introduction in metrology. Basic terms in metrology: measurement, measurement accuracy, repeatability of results of measurements, reproducibility of results of measurements, traceability of a measurement result, measurement standards, calibration … Physical quantities and measurement units. Measurement errors. Measurement methods.	3
	Theory of measurement: Direct measurement of physical quantities: Statistical analysis of measurement results. Gaussian distribution of random measurement errors. Experimental standard deviation of the mean.	4
	Theory of measurement: Indirect measurement of physical quantities: Standard deviation of indirectly measured physical quantity. Experimental standard deviation of the mean of indirectly measured physical quantity. Systematic error of indirectly measured physical quantity.	3
	Theory of measurement: Measurement uncertainty. Expression of measurement result	3
	Theory of measurement: Basic characteristics of measurement instruments and measurement systems. Capability of measuring system. Measurement transducers.	3
	Measurement technique: Measuring instruments for measuring lengths, forms and positions.	3
	Measurement technique: Methods for measuring dimensions and forms. Systematic errors in the measurement of dimensions and forms.	2
	First midterm exam.	
	Measurement technique: Measurement and control of angles, threads and gears.	6

<table>
<tr><td rowspan="16"></td><td colspan="5">Measurement technique: Measurement and control of surface roughness.</td><td>2</td></tr>
<tr><td colspan="5">Measurement technique: Measurement the forms and positions</td><td>3</td></tr>
<tr><td colspan="5">Measurement technique: Coordinate measuring machines.</td><td>1</td></tr>
<tr><td colspan="5">Measurement technique: Temperature measurement: Temperature scales. Thermometers based on thermal expansion. Pressure thermometers. Resistance thermometers. Thermocouples. Quartz thermometer. Radiation thermometers.</td><td>3</td></tr>
<tr><td colspan="5">Measurement technique: Pressure measurement: Pressure scales. McLeod Gauge. Manometer. Barometer. Pressure transducers.</td><td>3</td></tr>
<tr><td colspan="5">Second midterm exam.</td><td></td></tr>
<tr><td colspan="5">List of laboratory exercises</td><td>LE hours</td></tr>
<tr><td colspan="5">Introduction with measuring instruments intended for the measurement of dimensions, forms and positions.
Certification the dial indicator according to standard DIN 878
Indirect measurement of the distance between the hole centers using a special vernier caliper
Measurement an inside diameter using three-point inside micrometer</td><td>2</td></tr>
<tr><td colspan="5">Comparative measurement of an internal diameter using bore gauge
Measurement angle prism using gauge blocks, rollers and dial indicator
Measurement angle of prism using the protractor (direct contact measurement)</td><td>2</td></tr>
<tr><td colspan="5">Measurement the cone angle using sine bar
The measurement of the internal angle of the cone
Measurement the pitch diameter of thread using screw thread micrometer</td><td>2</td></tr>
<tr><td colspan="5">Dividing head: indirect indexing and differential indexing
Three-wire method of measuring pitch diameter</td><td>2</td></tr>
<tr><td colspan="5">Direct method for tooth thickness measurement by means of a gear tooth caliper
Direct method for tooth thickness measurement by means of a disc-type micrometer (measurement over a several teeth)
Runout measurement on gear</td><td>2</td></tr>
<tr><td colspan="5">Measurement of flatness
Runout measurement on shaft
Surface roughness measurement</td><td>2</td></tr>
<tr><td colspan="5">Planning of the measurement process (measurement plan)</td><td>2</td></tr>
<tr><td colspan="5">Laboratory exercises reports control</td><td>1</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☐ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="3">☐ independent assignments
☒ multimedia
☒ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">The presence on lectures and exercises in the amount of at least 70 % of the times scheduled. Perform all laboratory exercises.</td></tr>
<tr><td rowspan="5">Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</td><td>Class attendance</td><td>1,5</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>Individual work</td><td>3</td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>Laboratory exercises</td><td>0,5</td></tr>
<tr><td>Tests</td><td>0</td><td>Oral exam</td><td></td><td>Preparation for laboratory exercises</td><td>0</td></tr>
<tr><td>Written exam</td><td>0</td><td>Project</td><td>1</td><td>(Other)</td><td></td></tr>
<tr><td>Grading and</td><td colspan="6">During semester there are two midterm exams. The first midterm exam is after 7</td></tr>
</table>

<table>
<tr><td>evaluating student work in class and at the final exam</td><td colspan="3">weeks of lecturing and the second one is after the next 6 weeks. The student can take the first midterm exam if he/she regularly attended classes. Requirements for access to the second midterm exam are: regularly attended classes and at least 25% of points achieved at the first midterm.
Midterm exams are conducted in written form. They consist of theoretical questions and numerical problems. The teacher reserves the right to hold a midterm exam in oral form. The requirement for passing grade represents minimal 50% points on each midterm exam:

Grade (%) = 0,5(M1 + M2)

M1 – first midterm grade (%), i.e. percentage points achieved on the first midterm
M2 – second midterm grade (%), i.e. percentage points achieved on the second midterm
Requirement for access to the final exams is regularly attended classes. In the first two final exams students that did not pass at least one of the midterm exams take part. In the third and fourth final exams students take the whole exam regardless results of midterm exams. Final exams are conducted in written form. They consist of theoretical questions and numerical problems. The teacher reserves the right to hold a final exams in oral form. The requirement for passing grade is positive assessment in exam. Positive assessment represents minimal 50% points on final exam.

Grade (%): Final mark:
50% - 60% sufficient (2)
61% - 75% good (3)
76% - 90% very good (4)
91% - 100% excellent (5)

Grade (%) is average points achieved on midterm exams expressed as a percentage or number of points achieved on the final exam expressed as a percentage.</td></tr>
<tr><td rowspan="5">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Bilić, B.: Teorija i tehnika mjerenja, FESB, Split, 2007.</td><td>5</td><td></td></tr>
<tr><td>Figliola, R. S., Beasley, D. E.: Theory and Design for Mechanical Measurements, John Wiley & Sons, 2011.</td><td>0</td><td></td></tr>
<tr><td>Zaimović-Uzunović, N., Lemeš, S., Denjo, D., Softić, A.: Proizvodna mjerenja, Mašinski fakultet u Zenici, Zenica, 2009.</td><td>0</td><td></td></tr>
<tr><td>Smith, G. T.: Industrial Metrology: Surfaces and Roundness, Springer, 2002.</td><td>0</td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">- Bilić, B.: Predavanja postavljena na e-learning portal
- Farago, F. T., Curtis, M. A.: Handbook of Dimensional Measurement, Industrial Press Inc, New York, 1994.
- Bucher, Jay L.: The Metrology Handbook, ASQ Quality Press, 2012.
- Bašić, H.: Mjerenja u mašinstvu, Mašinski fakultet, Sarajevo, 2008.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">– Keeping records of the attendance of students
– Annual evaluation of results in accordance with the above learning outcomes
– Feedback from students via surveys
– Self-evaluation of teachers</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

NAME OF THE COURSE	**THERMAL MACHINES**							
Code	FESC14	Year of study	3.					
Course teacher	Gojmir Radica, Ph. D., Full Professor	Credits (ECTS)	6					
Associate teachers	Dario Bezmalinović, Ph. D., Teaching assistant Ivan Tolj, Ph. D., Teaching assistant Tino Sumić, Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE	
			45	0	15	15	0	
Status of the course	Obligatory	Percentage of application of e-learning	0					

COURSE DESCRIPTION

Course objectives	Training students for: - understanding of basic principles of internal combustion engines and compressors, - setting up and solving thermodynamic and design parameters of IC engines, - permanent adoption and deepening of knowledge in the field of IC engines.
Course enrolment requirements and entry competences required for the course	Thermodynamics, Fluid Mechanics
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: - identify different types of thermal machines, - calculate basic design and performance parameters of internal combustion engines and compressors, - analyze the energy transformation in thermal machines and its dependence on basic working and dimensional characteristics of the process, - select a heat engine for the particular system based on its energy characteristics, - evaluate proper use of materials, fuel type, scavenging process and combustion quality, - analyze exhaust gas emissions and reduction methods, - estimate the state of the thermal machine.

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L or S hours	AE hours
	Introduction to thermal machines. Brief history of thermal machines. Internal combustion engines definition. Description of system and engine parts.	3	1
	Design and operating parameters. Brake power and torque. Indicated work. Mechanical efficiency.	3	1
	Mean effective pressure. Specific fuel consumption. Air excess ratio. Volumetric efficiency. Emissions. Power. Torque..	3	1
	IC Engine working cycles. Otto cycle. Diesel cycle. Sabathė cycle. Two stroke. Four stroke.	3	1
	Inlet and exhaust systems. Diesel fuel systems. Direct and	3	1

	indirect injection systems. Fuel characteristics.		
	Otto engines - fuel systems.	3	1
	Gas engines.	3	1
	Scavenging. Turbocharging. Turbocharger design and characteristics.	3	1
	Classification and application of compressors. Thermodynamic fundamentals of single- and multi-stage compressor operation. Compressor power consumption.	3	1
	Reciprocating compressors, design and constructive features. Calculation and design of single- and multi-stage reciprocating compressors. Dynamics of a reciprocating mechanism.	3	1
	Suction and discharge valves of reciprocating compressors. Ideal and actual capacity. Capacity control. Efficiency.	3	1
	Screw compressors, constructive features, capacities and control. Scroll compressors, constructive features capacities and control. Vane compressors.	3	1
	Turbo compressors, constructive features, performance and control..	3	1

	List of laboratory or design exercises	LE or DE hours
	Engine parts, technical specification.	2
	Engine constructive and operating parameters. Testing.	3
	Brake power and torque. Indicated work. Efficiency. Fuel consumption. Maintenance and diagnostic.	3
	Emission measuring and analysing	3
	Compressor parts, technical specification, characteristics.	2

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,5	Research		Practical training	
	Experimental work		Report		(Other)	3,2
	Essay		Seminar essay		(Other)	
	Tests	0,2	Oral exam		(Other)	
	Written exam	0,1	Project		(Other)	
Grading and evaluating student work in class and at the final exam	There are two midterms and final exams. The first midterm exam is after 7 weeks of lecturing and the second one is after the next 6 weeks. In the final exams students that did not pass the midterm exams take part. The midterm and final exams are carried out as written tests (oral test-if necessary). The requirement for passing					

<table>
<tr><td></td><td colspan="3">grade is the positive assessment of exercises and 50 % points for theory and exam on each midterm exam or the final exam. Grade (in percentage) is formed according to the formula:
$$Grade(\%) = 0{,}54\ (M1 + M2)$$
the activities in percentage:
• M1, M2 – test results.</td></tr>
<tr><td rowspan="6">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>Radica G.: Predavanja iz predmeta Toplinski strojevi</td><td></td><td>e-learning portal</td></tr>
<tr><td>Grljušić M.:" Motori s unutrašnjim izgaranjem", Sveučilište u Splitu, FESB, 2000</td><td>5</td><td></td></tr>
<tr><td>Fabris O., Grljušić M.:" Kompresori", Sveučilište u Splitu, FESB, 2009.</td><td>5</td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">1.Stone R.:" Introduction to Internal Combustion Engines", University of Oxford, PALGRAVE, N.Y., 1999.
2.Jeras D.:" Klipni motori-uređaji", Školska knjiga, Zagreb, 1992.
3.Andrassy M.:" Kompresori", FSB, Sveučilište u Zagrebu, 2001.
4 J.H. Horlock, D.E Winterbone The Thermodynamics and gas dynamic of internal-combustion engines, , Oxford, 1986.
5. J. B. Heywood: Internal combustion engines fundamentals, McGraw-Hill, 1988</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">– Evaluation of results in accordance with the above learning outcomes
– Feedback from students via surveys
– Self-evaluation of teachers
– Institutional and non-institutional evaluations</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
</table>

NAME OF THE COURSE	**THERMODYNAMICS 1**						
Code	FESC06	Year of study	2				
FESC06	Nižetić Sandro, Ph.D. Associate Professor	Credits (ECTS)	7				
Nižetić Sandro Ivan Tolj Dario Bezmalinović Grubišić-Čabo Filip	Ivan Tolj, Ph.D., Teaching assistant Dario Bezmalinović, Ph.D., Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE
			45	0	30	0	0
	Obligatory	Percentage of application of e-learning					
Obavezni							
Course objectives	Training students for: - Specify (list) basic thermodynamic terms and notations and apply general thermodynamic laws.						
Course enrolment requirements and entry competences required for the course	None.						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. Classify and consider; basic thermodynamic terms, external influences and properties of state and connect them with causal relationship for considered property or analysed system, 2. Describe and implement general thermodynamic laws for specific properties or systems, 3. Implement thermodynamic charts for real properties to calculate their properties of state (values), 4. Consider and compute; flow systems, right and left ideal gas cycles and calculate heat to work efficiency, 5. Consider maximal work and calculate exergy flows.						

Course content broken down in detail by weekly class schedule (syllabus)	Course content	L or S hours	AE hours
	Introduction to the thermodynamics. External influences. Temperature, pressure and heat. Observer's aspect.	3 hours	2 hours
	Ideal gas equation and ideal gas mixtures.	3 hours	2 hours
	Equivalency of heat and work.	3 hours	2 hours
	Internal energy and First law of thermodynamics.	3 hours	2 hours
	Equilibrium polytropes.	3 hours	2 hours
	Ideal gas cycles and implementation of polytropes.	3 hours	2 hours
	Second law of thermodynamics.	3 hours	2 hours
	Analytical formulation of the second law of thermodynamics for reversible and irreversible processes.	3 hours	2 hours
	Entropy and statistical interpretation.	3 hours	2 hours
	Maximal work.	3 hours	2 hours

	Flow processes and implementation.	3 hours	2 hours
	Exergy analysis.	3 hours	2 hours
	Real properties, properties charts, Clapeyron-Clausiusova equation, Van der Waalsova equation.	3 hours	2 hours
	Properties curves for real gases, real gas power cycles.	3 hours	2 hours
	Left right cycles, refrigeration cycles and gas liquefaction.	3 hours	2 hours
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☒ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)	
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required auditorium exercises.		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2,5	Research	4,5	Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam						

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Nižetić, S. : Online predavanja dostupna na E-learning portalu, (2010)		
	Bošnjaković F.: Nauka o toplini I, tehnička knjiga, Zagreb 1978.	2	
	Y. A. Cengel, M.A.Boles, Thermodynamics, 4th Edition,McGrawHill, 2002.	1	
	Fabris O: Osnove inženjerske termodinamike, Pomorski fakultet u Dubrovniku, Dubrovnik 1994.		
Optional literature (at the time of submission of study programme proposal)	–Ražnjević K.: Toplinske tablice, Aksiom, Zagreb 2000. –Paić M.: Toplina i termodinamika, školska knjiga, Zagreb 1994. –Zemansky, M.W., Dittman B.H.: heat and Thermodynamics, McGraw Hill Book Company, London 1987. –Ninić N.: Uvod u termodinamiku i njene tehničke primjene, Sveučilište u Splitu, FESB, (2008)		

	– Baehr H.D.: Thermodynamik, Springer Verlag. Berlin 1984.
Quality assurance methods that ensure the acquisition of exit competences	- Evaluation of results in accordance with the above learning outcomes - Feedback from students via surveys - Self-evaluation of teachers - Institutional and non-institutional evaluations
Other (as the proposer wishes to add)	

NAME OF THE COURSE	**THERMODYNAMICS 2**						
Code	FESC09	Year of study	1				
FESC06	Nižetić Sandro, Ph.D. Associate Professor	Credits (ECTS)	7				
Nižetić Sandro Ivan Tolj Dario Bezmalinović Grubišić-Čabo Filip	Ivan Tolj, Ph.D. Teaching assistant Dario Bezmalinović, Ph.D. Teaching assistant	Type of instruction (number of hours)	L	S	AE	LE	DE
			45	0	30	0	0
	Obligatory	Percentage of application of e-learning					
Obavezni							

Course objectives	Training students for: - Specify (list) and describe general heat transfer mechanisms, - Implement general heat transfer laws (mechanisms) for properties and systems, - Analyse and compute: combustion process, heat exchangers, and properties state change for moist air.
Course enrolment requirements and entry competences required for the course	Thermodynamics 1, Mathematics 1 and Mathematics 2.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. Classify and implement basic heat transfer mechanisms, 2. Classify and compute basic parameters for heat exchangers, 3. Demonstrate and compute processes in the charts for moist air, 4. Analyse and elaborate general combustion processes, 5. Analyse and elaborate general flow processes and laws.

	Course content	L or S hours	AE hours
Course content broken down in detail by weekly class schedule (syllabus)	Introduction to the heat transfer. Heat conduction (stationary case).	3 hours	2 hours
	Nonstationary heat conduction. Introduction to the heat convection.	3 hours	2 hours
	Convective heat transfer.	3 hours	2 hours
	Introduction to the thermal radiation, general thermal radiation laws.	3 hours	2 hours
	Heat transfer by thermal radiation – analysis of specific cases.	3 hours	2 hours
	Heat transfer (fluid to fluid), introduction to heat exchangers.	3 hours	2 hours
	Heat exchangers.	3 hours	2 hours
	Introduction to the moist air, properties of the moist air, Moliere h-x properties chart.	3 hours	2 hours
	Properties change curves for moist air.	3 hours	2 hours

	Drying process, drying processes, water evaporation.	3 hours	2 hours
	Introduction to the combustion, stoichiometric ratio.	3 hours	2 hours
	Combustion products analysis, gross and net calorific value, theoretical and real combustion temperature, and Moliere h-x properties chart for combustion analysis.	3 hours	2 hours
	Introduction to the flow processes, elementary flow equations.	3 hours	2 hours
	Laval nozzle and flow processes, turbine work.	3 hours	2 hours
	Introduction to the binary mixtures, evaporation and liquefaction processes (distillation).	3 hours	2 hours

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☒ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	The presence on lectures in the amount of at least 70 % of the times scheduled. Performed all required auditorium exercises.	

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	2	Research	3	Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam						

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	S. Nižetić, Termodnimika 2, online predavanja (FESB), 2010.		
	F. Bošnjaković: Nauka o toplini (I i II dio), Tehnička knjiga, Zagreb, 1970 i 1976	2	
	O. Fabris: Osnove inženjerske termodinamike, Pomorski fakultet Dubrovnik, Dubrovnik, 1994.	3	

Optional literature (at the time of submission of study programme proposal)	-E. Kulić, A. Lekić, P. Kesić, O. Fabris: Zbirka riješenih zadataka iz termodinamike, Mašinski fakultet, Sarajevo, 1968 -A. Galović, M. Tadić, B. Halasz, "Nauka o toplini II", Zbirka zadataka FSB, 1996.		
Quality assurance methods that ensure the acquisition of exit competences	- Evaluation of results in accordance with the above learning outcomes - Feedback from students via surveys - Self-evaluation of teachers - Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

<table>
<tr><td>NAME OF THE COURSE</td><td colspan="7">TRIBOLOGY</td></tr>
<tr><td>Code</td><td>FETC11</td><td>Year of study</td><td colspan="5">3</td></tr>
<tr><td>Course teacher</td><td>Dražen Živković, Ph. D., Full Professor</td><td>Credits (ECTS)</td><td colspan="5">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">----------</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>AE</td><td>LE</td><td>DE</td></tr>
<tr><td>30</td><td></td><td>30</td><td>0</td><td>0</td></tr>
<tr><td>Status of the course</td><td>elective</td><td>Percentage of application of e-learning</td><td colspan="5">0</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">Training students for:
- Introduction to basic tribological wear mechanisms.
- Basic types of wear of materials and construction, as well as monitoring wear process.
- The basic methods of friction control and wear, as well as the principle of material selectin for tribological pairs.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">Passed exams: Materials 1 Materials 2</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students will be able to:
- Classify the fundamental tribological wear mechanisms
- Describe the wear types of materials
- Assess tribological properties of materials
- Characterize the tribological mechanisms of corrosion and material damage
- Collect data to analyze the tribological wear
- Choose the type of lubricant due to the mechanisms of wear and tear</td></tr>
<tr><td rowspan="15">Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="4">Course content</td><td colspan="2">L hours</td><td>hours</td></tr>
<tr><td colspan="4">Introduction to tribology, historical development, importance of tribology in industrial production</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">Surfaces: physical and chemical properties of the surface, surface (conformal) contact, concentrated (conforming) contact</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">Systematic approach to tribological problems, processes of friction (slip, rolling)</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">The wear mechanisms I: abrasion, adhesion, abrasion and adhesion wear resistance</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">The wear mechanisms II: surface fatigue, corrosion wear, fatigue resistance and surface protection</td><td colspan="2">3</td><td></td></tr>
<tr><td colspan="4">Wear processes, wear monitoring</td><td colspan="2">3</td><td></td></tr>
<tr><td colspan="4">Tribological control - the materials selectin of tribological parts</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="7">First midterm exam</td></tr>
<tr><td colspan="4">Distribution of wear cases I: slip wear, rolling wear, fatigue wear, fretting</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">Distribution of wear cases II: abrasive wear, erosion particles, erosion, cavitation erosion</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">Lubricants, the role of lubricant in tribological-systems, hydrodynamic lubrication</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">Elasto-hydrodynamic lubrication, mixed lubrication, limit state lubrication</td><td colspan="2">2</td><td></td></tr>
<tr><td colspan="4">Conventional and new tribological materials (ceramics,</td><td colspan="2">2</td><td></td></tr>
</table>

diamonds, diamond films, composite coating)		
Identification of the basic tribological systems in metal processing, the basic of tribometry	2	
Second midterm exam		

AV content	AV hours
Tribological losses in the maintenance of machines	2
Analysis of tribological losses on tools and devices in the metal processing industry	3
Selection of wear resistant materials	2
Estimation of the relative resistance to abrasive wear mechanism based on the analysis of microstructures	2
Tribological system: cereals - tubular transport	3
Tribological processes at the basic elements of the cement production plant	2
New processes for surface modifying	2
First midterm exam	
Testing methodology for wear dynamics contact (type metal-polymer)	2
Sliding wear laboratory test methods	3
Tribological mechanisms for large low-speed diesel engine	3
Second midterm exam	

Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities		

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research		Practical training	
	Experimental work		Report		Self-directed learning	2
	Essay		Seminar essay		AV	1
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester there will be two mid-term exams (tests). The first mid-term, after 7 weeks of classes and the second after the next 6 weeks of classes. At the final exam students have to take part material that did not pass the mid-term. Each test is carried out as written exam lasting 45 minutes. Usually it consists of three tasks. The requirements for a positive evaluation are: positive assessment of exercises and 50% points on each test. The final grade is based on the resulting percentage on mid-term exams. Percentage - Rating 50% to 61% - sufficient (2) 62% to 74% - good (3) 75% to 87% - very good (4) 88% to 100% - excellent (5) Examinations according to the Faculty schedule! The final grade is determined after the second final exam. Students who did not pass the exam after two final exams have the last chance to pass exam in the autumn period where they can get a positive grade. Overall material has to be

	passed at last possible exam. The written exam consists of six tasks. The exam lasts 90 minutes.		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	D. Živković: the author's lectures, FESB		E-learning portal
Optional literature (at the time of submission of study programme proposal)	V. Ivušić. “Tribologija”, HDMT, Zagreb, 1998		
Quality assurance methods that ensure the acquisition of exit competences	– Evaluation of results in accordance with the above learning outcomes – Feedback from students via surveys – Self-evaluation of teachers – Institutional and non-institutional evaluations		
Other (as the proposer wishes to add)			

3. STUDY PERFORMANCE CONDITIONS

3.1. Places of the study performance

Buildings of the constituent part (name existing, under construction and planned buildings)	
Identification of building	FESB
Location of building	R. Boškovića 32
Year of completion	1980. first phase, 2008. second phase
Total square area in m^2	29.477

3.2. List of teachers and associate teachers

Course	Teachers and associate teachers
Communication Skills in English	Mirjana M. Kovač, Ph.D., Assistant Professor Nina Sirković, Ph.D., Assistant Professor
Computer- Aided Analysis	Damir Vučina, Ph.D.,Full Professor Igor Pehnec, Ph.D., Assistant Professor Ivo Marinić- Kragić, Teaching assistant
Design For Manufacturing	Nikola Gjeldum, Ph.D., Assistant Professor Ivan Peko, Teaching assistant
Design Of Industrial Products	Željko Domazet, Ph. D., Full Professor, Lovre Krstulović-Opara, Ph. D., Full Professor
Economics and Organization	Ivica Veža, Ph. D. Full Professor Marko Mladineo, Ph. D., Teaching assistant
Electrical Engineering and Electronics	Ivan Marinović, Ph.D., Full Professor Ivica Jurić-Grgić, Ph.D., Associate Professor Duje Čoko,Ph.D,, Teaching assistant Nedjeljka Grulović– Plavljanić, Teaching assistant
Engineering Graphics 1	Željko Domazet, Ph.D., Full Professor Miro Bugarin, Ph.D., Assistant Professor, Ivan Špar, Teaching assistant Dejan Bobić, Teaching assistant, Joško Kunac, Teaching assistant,
Engineering Graphics 2	Tonči Piršić, Ph.D., Associate Professor Dražen Škabar, Teaching assistant Ivan Špar, Teaching assistant Joško Kunac, Teaching assistant Dejan Bobić, Teaching assistant
English Language 1	Nina Sirković, Ph.D., Assistant Professor
English Language 2	Nina Sirković, Ph.D., Assistant Professor
Industry Processes Automatic Control	Jadranka Marasović, Ph.D.., Full Professor, Jani Barle, Ph.D., Full Professor

	Josip Eterović, Ivan Jadrić, Teaching Assistants
Introduction To Public Speaking	Mirjana M. Kovač Ph.D., Assistant Professor
Machine Elements 1	Srdjan Podrug, Ph.D. Associate Professor Vjekoslav Tvrdić, Teaching assistant Filip Grubišić-Čabo, Teaching assistant
Machine Elements 2	Srdjan Podrug, Ph.D. Associate Professor Milan Perkušić, Teaching assistant
Marine Machinery and Devices	Gojmir Radica, Ph.D., Full Professor Dario Bezmalinović, Ph.D., Teaching assistant Ivan Tolj, Ph.D. Teaching assistant Tino Sumić, Teaching assistant
Materials 1	Dražen Živković, Ph. D., Full Professor Nikša Krnić, Ph.D. Associate Professor Nikša Čatipović, Teaching assistant Zvonimir Dadić, Teaching assistant
Materials 2	Dražen Živković, Ph. D., Full Professor Nedjeljko Mišina, Ph. D., Full Professor Nikša Čatipović, Teaching assistant Zvonimir Dadić, Teaching assistant
Mathematics 1	Ivan Slapničar, Ph.D., Full Professor, Anita Matković, Ph.D., Associate Professor, Josipa Barić, Ph.D., Assistant Professor. Ph.D. Nevena Jakovčević Stor, Irena Bego, Anita Carević,Marija Čatipović, Lea Dujić, Ivana Grgić, Lana Periša, Marina Mandić, Dajana Radišić, Mirjana Strukan, Stjepan Vedran Vukasović,. Vanja Županović
Mathematics 2	Ivan Slapničar, Ph.D., Full Professor, Anita Matković, Ph.D., Associate Professor, Josipa Barić, Ph.D., Assistant Professor. Ph.D. Nevena Jakovčević Stor, Irena Bego, Anita Carević,Marija Čatipović, Lea Dujić, Ivana Grgić, Lana Periša, Marina Mandić, Dajana Radišić, Mirjana Strukan, Stjepan Vedran Vukasović,. Vanja Županović
Mathematics 3	Ivan Slapničar, Ph.D., Full Professor, Anita Matković, Ph.D., Associate Professor, Josipa Barić, Ph.D., Assistant Professor. Ph.D. Nevena Jakovčević Stor, Irena Bego, Anita Carević,Marija Čatipović, Lea Dujić, Ivana Grgić, Lana Periša, Marina Mandić, Dajana Radišić, Mirjana Strukan, Stjepan Vedran Vukasović,. Vanja Županović
Mechanics 1	Vedrana Cvitanić, Ph.D., Associate Professor Marko Vukasović, Ph.D., Teaching assistant Maja Kovačić, Teaching assistant
Mechanics 2	Željan Lozina, Ph.D., Full Professor

	Ivan Tomac, Ph.D., Teaching assistant
Mechanics 3	Željan Lozina, Ph.D., Full Professor Damir Sedlar, Ph.D., Assistant Professor Ivan Tomac, Ph.D., Teaching assistant
Mechanics of Materials 1	Frane Vlak, Ph.D., Associate Professor Marko Vukasović, Ph.D., Teaching assistant Branka Bužančić Primorac, Ph.D., Teaching assistant, Maja Kovačić, Teanhing assistant
Mechanics of Materials 2	Frane Vlak, Ph.D., Associate Professor Marko Vukasović, Ph.D., Teaching assistant
Metal Structures Design	Željko Domazet, Ph.D., Full Professor, Lovre Krstulović-Opara, Ph.D., Full Professor Miro Bugarin, Ph.D.,Teaching assistant
Noise and Vibration Control	Željan Lozina, Ph.D., Full Professor Damir Sedlar, Ph.D., Assistant Professor Ivan Tomac, Ph.D., Teaching assistant,
Physics	Ilja Doršner, Ph.D. Associate Professor
Professional Training	Head of the professional training from the Faculty Head of the professional training from the private institution
Quality Control	Boženko Bilić, Ph.D., Full professor
Technology 1	Nikša Krnić, Ph.D, Associate Professor Sonja Jozić, Ph.D Assistant Professor
Technology 2	Dražen Bajić, Ph.D.,Full Professor Branimir Lela, Ph. D., Assistant Professor Sonja Jozić, Ph. D., Assistant Professor Jure Krolo, Teaching assistant, Mario Veić, Teaching assistant
Theory and Technique of Measurement	Boženko Bilić, Ph.D., Full professor Jakša Galić, Teaching assistant Nikola Gjeldum, Ph.D., assistant professor
Thermal Machines	Gojmir Radica, Ph. D., Full Professor Dario Bezmalinović, Ph. D., Teaching assistant Ivan Tolj, Ph. D., Teaching assistant Tino Sumić, Teaching assistant
Thermodynamics 1	Sandro Nižetić, Ph.D., Associate Professor Ivan Tolj, Ph.D., Teaching assistant Dario Bezmalinović, Ph.D., Teaching assistant Filip Grubišić-Čabo, Teaching assistant
Thermodynamics 2	Sandro Nižetić, Ph.D., Associate Professor Ivan Tolj, Ph.D., Teaching assistant Dario Bezmalinović, Ph.D., Teaching assistant
Tribology	Dražen Živković, Ph. D., Full Professor

3.3. Curriculum vitae of the course teacher

First and last name and title of teacher	**Dražen Bajić, Ph. D., Full Professor**
The course he/she teaches in the proposed study programme	1. Technology 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	Julija Klovića 16 B, 21000 Split
Telephone number	091 430 59 31
E-mail address	dbajic@fesb.hr
Personal web page	
Year of birth	1965.
Scientist ID	186 194
Research or art rank, and date of last rank appointment	Scientific Adviser, 12/4/2006
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 25/1/2013
Area and field of election into research or art rank	Technical Sciences, Mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	15/7/1991
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Manufacturing engineering, machining, machine tools
Function	Head of Chair of Mechanical Engineering Technology
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture
Place	Zagreb
Date	17/4/2000
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme	**Undergraduate study:** 2. Technology 2 (150) **Graduate study:**

where it is/was offered, and level of study programme)	1. Computer aided manufacturing (261,262,263) 2. Machine tools (261, 263) 3. Machine tools and systems (270) 4. Sustainable production (272) **Professional study:** 1. Machining and machine tools (530) 2. Computer aided manufacturing (530) 3. Manufacturing processes (540) **Postgraduate study:** 1. Modern machining processes (330) 2. Rapid manufacturing (330)
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Jozić, Sonja; Bajić, Dražen; Celent, Luka. Application of compressed cold air cooling: achieving multiple performance characteristics in end milling process. // Journal of cleaner production. 100 (2015) , /; 325-332 2. Jozić, Sonja; Bajić, Dražen; Stoić, Antun. *Flank wear and surface roughness in end milling of hardened steel* // Metalurgija. 54 (2015), 2; 343-346. 3. Jozić, Sonja; Lela, Branimir; Bajić, Dražen. A New Mathematical Model for Flank Wear Prediction Using Functional Data Analysis Methodology. // Advances in Materials Science and Engineering. 2014 (2014) ; 1-8 4. Jozić, Sonja; Bajić, Dražen; Samardzić, Ivan. Contribution to the assessment of economic viability of hard milling process. Tehnički vjesnik: znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku (1330-3651) 21 (2014), 6; 1329-1336. 5. Bajić, Dražen; Celent Luka; Jozić, Sonja. *Modeling of the influence of cutting parameters of the surface roughness, tool wear and cutting force in face milling in off-line process control*. // Strojniški vestnik – Journal of Mechanical Engineering. 58 (2012), 11; 673-682
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	- Bajić, D., Celent, L., Jozić, S., Design and 3D printing of bottles for designing of bottling plant, (Ordered by: Viloet Logistics Ltd., Obrež Zelinski), Split, 2013. - Bajić, D., Celent, L., Jozić, S., Design and manufacture of molds for steering of student formula (Ordered by: UPS, Split), Split, 2012 - Bajić (PL), I. Veža, B. Bilić, S. Jozić, L. Celent, N. Koboević. High speed machining research, Ministry of science, education and sport, Croatia, - 2012
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	- Gold medal and plaque for innovation "Planning and optimization of manufacturing system by using simulation"

	at the Spring Exhibition of Inventions INOVA'95 Zagreb, 1995. - Jubilee plaques and medals Croatian Association of Production Engineering for outstanding contribution to the work of HUPS's, and for the benefit of scientific and economic development of the Republic of Croatia, Zagreb, 2000. - Gold Medal Croatian Association of Production Engineering for Outstanding Contribution to the work of HUPS's, and for the benefit of scientific and economic development of the Republic of Croatia, Zagreb, 2003. - Gold Medal Croatian Association of Production Engineering for Outstanding Contribution to the work of HUPS's, and for the benefit of scientific and economic development of the Republic of Croatia, Zagreb, 2005
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	Josipa Barić, Ph.D., Assistant Professor
The course he/she teaches in the proposed study programme	Mathematics 1, Mathematics 2, Mathematics 3,
GENERAL INFORMATION ON COURSE TEACHER	
Address	FESB, R. Boškovića 32, B809
Telephone number	021 305899
E-mail address	josipa.baric@fesb.hr
Personal web page	
Year of birth	1974.
Scientist ID	248871
Research or art rank, and date of last rank appointment	scientific assistant
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant professor, permanent position, since 2011.
Area and field of election into research or art rank	Area od Natural Sciences, Field of Mathematics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	FESB, Split
Date of employment	2001.
Name of position (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Mathematics
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	PMF
Place	Zagreb
Date	January 2011.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
Year	
Place	
Institution	
Field of training	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	

COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Lecturer of various courses since 2001.
Authorship of university/faculty textbooks in the field of the course	Ivan Slapničar, Josipa Barić i Marina Ninčević, Matematika 2 – zbirka zadataka, FESB, Split, 2010. (Manualia Universitatis studiorum Spalatensis) Barić, Josipa; Bibi, Rabia; Bohner, Martin; Nosheen, Ammara; Pečarić, Josip. Jensen Inequalities on Time Scales, Theory and Applications . Zagreb : Element, 2015
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Barić, Josipa; Jakšić, Rozarija; Pečarić, Josip. Converses of Jessen's inequality on time scales II. // Mathematical inequalities & applications. 19 (2016) , 4; 1271-1285. 2. Barić, Josipa; Bohner, Martin; Jakšić, Rozarija; Pečarić, Josip. Converses of Jessen's inequality on time scales. // Mathematical notes. 98 (2015) , 1; 11-24. 3. Barić, Josipa; Nosheen, Ammara; Pečarić, Josip. Time scale Hardy-type inequalities with general kernel for superquadratic functions. // Proceedings of A. Razmadze Mathematical Institute. 165 (2014) ; 1-18, 4. Barić, Josipa; Bibi, Rabia; Bohner, Martin; Pečarić, Josip. Time scales integral inequalities for superquadratic functions. // Journal of the Korean Mathematical Society. 50 (2013) , 3; 465-477
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Evaluations organized by the Quality Enhancement Centre of the University of Split each semester. Average grade is 4.5 on the 1-5 scale.

First and last name and title of teacher	**Jani Barle, Ph. D., Full Professor**
The course he/she teaches in the proposed study programme	Industry Processes Automatic Control
GENERAL INFORMATION ON COURSE TEACHER	
Address	Žnjanska 4, 21000 Split, HR a
Telephone number	+385 (21) 305930
E-mail address	Jani.Barle@fesb.hr
Personal web page	https://nastava.fesb.hr/nastava/nastavnici/detalji/barle
Year of birth	1964
Scientist ID	186172
Research or art rank, and date of last rank appointment	Scientific Adviser, May 2011.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, September 2016.
Area and field of election into research or art rank	Mechanical engineering, mechanical construction engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	July 1991.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Process Automation, System Maintenance Management
Function	Education and research
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture
Place	HR - Zagreb
Date	January 1998.
INFORMATION ON ADDITIONAL TRAINING	
Year	1996.
Place	IT - Padua
Institution	Dipartimento di Ingegneria Meccanica
Field of training	Research on experimental methods
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English - 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German - 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian - 3
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	On Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture Undergraduate study: - Industrial process control (FETC06) Master's degree study:

	- Hydraulics and pneumatics(FETL17) - Maintenance management (FETL04) Doctorate degree study: - Experimental methods (FETU24) - Reliability engineering (FETU14)
Authorship of university/faculty textbooks in the field of the course	Barle, J.: Reliability in maintenance management, (student handbook in Croatian: *Pouzdanost u funkciji održavanja tehničkih sustava*), FESB, Split, 2009
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Barle, Jani; Đukić, Predrag; Ban, Dario. Verification of Number of Cycles for Fatique Life Estimation of Wind-Sensitive Structures // 7th ICCSM / Croatian Society of Mechanics, 2012. 233-234. 2. Barle, Jani; Wolf, Hinko; Đukić, Predrag. Experimental verification of the dynamic model for a wind turbine tower // 30th Danubia-Adria: Symposium on Advances in Experimental Mechanics / Croatian Society of Mechanics, 2013. 219-220 3. Grubišić, Vatroslav; Barle, Jani. Procedure for the Service Strength Approval of the Drillship Derricks. // Rad Hrvatske akademije znanosti i umjetnosti. Tehničke znanosti. 521 (2015), 17; 51-62. 4. Đukić, Predrag; Wolf, Hinko; Jani, Barle. Simple dynamic model of wind turbine tower with experimental verification. // International journal for engineering modelling. 28 (2015) , 1-4; 49-59
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. Barle, Jani; Franulović, Marina; Jurčević Lulić, Tanja; Kladarić, Ivica; Markučič, Damir; Radica, Gojmir. *Izrada kataloga znanja, vještina i kompetencija za studije strojarstva u Republici Hrvatsko*j // Zbornik radova međunarodne stručne konferencije ME4CataLOgue / Kozak, D., Barle, J., Markučič, D., Pavletić, D., Matičević, G, Vranešević M. N., Rosandić, Ž, Damjanović, D. (ur.)., Sl.Brod 2015. 2. "*Hrvatski katalog znanja, vještina i kompetencija za studije strojarstva zasnovan na ishodima učenja (za preddiplomski, diplomski i doktorski studij)*", Strojarski fakultet u Slavonskom Brodu Sveučilišta J. J. Strossmayera u Osijeku, 2015., Kozak, D., Barle, J., Boras, I., Franulović,, M., Jurčević-Lulić, T., Kladarić, I., Lelas, D., Markučić, D., Matičević, G., Pavletić, D., Vranešević-Marinić, N.(ur.), ISBN 978-953-6048-78-6
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	IPA IV project ME4CataLOgue “Further development and implementation of the Croatian Qualifications Framework (CQF)”, 2013-2015.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on	

grading scale and course evaluated)	

First and last name and title of teacher	**Boženko Bilić, Ph.D. Full Professor**
The course he/she teaches in the proposed study programme	Theory and Technique of Measurement, Quality Control
GENERAL INFORMATION ON COURSE TEACHER	
Address	Makarska ulica 2, 21000 Split, HR
Telephone number	+385 21 410 810
E-mail address	bbilic@fesb.hr
Personal web page	
Year of birth	1962.
Scientist ID	154905
Research or art rank, and date of last rank appointment	Scientific Adviser, 12/04/2006
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 25/01/2013
Area and field of election into research or art rank	Technical Sciences, Field Mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	1/10/1987
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Production engineering and organization of production
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	30/6/2000
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Germany (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Vast experience in teaching these courses.
Authorship of university/faculty	1. Bilić, B., *Kvaliteta – Planiranje, analiza i upravljanje*

textbooks in the field of the course	(sveučilišni udžbenik, ISBN 978-953-290-058-3), Sveučilište u Splitu, Fakultet elektrotehnike, strojarstva i brodogradnje, Split, 2016. 2. Bilić, B., *Teorija i tehnika mjerenja – Mjerenje oblika i izmjera* (interna skripta - udžbenik, ISBN 978-953-6114-99-3), Fakultet elektrotehnike, strojarstva i brodogradnje, Split, 2007.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Gjeldum, N. Bilić, B., Veža, I., *Investigation and modelling of process parameters and workpiece dimensions influence on material removal rate in CWEDT process*, International Journal of Computer Integrated Manufacturing, (ISSN 0951-192X), 28 (7), 2015., str. 715-728, DOI: 10.1080/0951192X.2014.900868 2. Gjeldum, N., Veža, I., Bilić, B., *Prediction of Material Removal Rates of Cylindrical Wire Electrical Discharge Turning Processes*, Transactions of FAMENA, (ISSN 1333-1124), 35 (1), 2011., str. 27-38 3. Bilić, B., Trlin, G., Vojković, V., *Application of simulated annealing method in the cutting parameters optimization regarding surface roughness*, Proceedings of the 11th International Scientific Conference - MMA 2012: Advanced Production Technologies", (ISBN 978-86-7892-429-3), str. 9-12, Novi Sad, 2012.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Training for teachers and administrative staff in the EU project ME4CataLOgue Croatian Catalogue of knowledge, skills and competences for mechanical engineering studies (Bachelor, Master and Doctoral study programmes) based on learning outcomes, Split, 2014
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	1. Croatian Association of Production Engineering – gold medal, Zagreb, 2005. 2. Innovation Fair INOVA'95 - Gold medal and a plaque for innovation "Production system planning and optimization by using simulation", Zagreb, 1995.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	3.8

First and last name and title of teacher	**Vedrana Cvitanić, Ph.D., Associate Professor**
The course he/she teaches in the proposed study programme	Mechanics 1
GENERAL INFORMATION ON COURSE TEACHER	
Address	Lovretska 19, 21000 Split, Hrvatska
Telephone number	021-305-970
E-mail address	vcvit@fesb.hr
Personal web page	
Year of birth	1970.
Scientist ID	233760
Research or art rank, and date of last rank appointment	Scientific Adviser, 11/5/2011
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associated Professor, 19/7/2012
Area and field of election into research or art rank	Technical Sciences, Field Basic Technical Sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	22/09/1995
Name of position (professor, researcher, associate teacher, etc.)	Associated Professor
Field of research	Theory of plasticity, Continuum mechanics
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	19/05/2006
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of	Mechanics 1 - Industrial Engineering, Undergraduate study programme, FESB Technical Mechanics 1

study programme)	- Mechanical Engineering, Naval Architecture, Professional study programme, FESB Mechanics of materials - Mechanical Engineering, Naval Architecture, Professional study programme, FESB Theory of Plasticity and Viscoelasticity - Mechanical Engineering, Graduate study programme, FESB
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Cvitanić, V., Kovačić, M., Vladislavić, A., Numerical analysis of accuracy for evolutionary anisotropic plasticity models, *Engineering review* 36 (3), 255-267, 2016. 2. Cvitanić, V., Kovačić, M., Algorithmic formulation for evolutionary anisotropic plasticity model for sheet metals, Proceedings of the 8th International Congress of Croatian Society of Mechanics, CD-ROM, Opatija, Croatia, 2015. 3. Cvitanić, V., Ivandić, D., Lela, B., Comparison of orthotropic constitutive models in predicting square cup deep drawing process of AA2090-T3 sheet, Conference Proceedings of 4th International conference "Mechanical Technologies and Structural Materials", str. 61-70, Split, Croatia, 2014. 4. Cvitanić, V., Ivandić, D., Krstulović-Opara, L., Influence of constitutive and process parameters on the cylindrical cup deep drawing predictions for Al2090-T3 sheet. Conference Proceedings of 3rd International conference "Mechanical Technologies and Structural Materials", str. 117-126, Split, Croatia, 2013. 5. Cvitanić, V., Salečić, M., Vukasović, M., Numerical simulations of S-rail forming for Al 6111-T4 sheet based on Hill stress function, Proceedings of 7th International Congress of Croatian Society of Mechanics, CD-ROM, Zadar, Croatia, 2012.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. FESB - reseach project, Linear and nonlinear analysis of thin-walled structures, 2013.- 2. Croatian Ministry of Science, Education and Sport - science project number 023-0231744-1747, Inverse procedures and advanced algorithms in dynamics of structures and machines, 2006.-2013. 3. Croatian Ministry of Science, Education and Sport - science project number 023-0231744-3113, Intelligent and evolutionary algorithms in the optimization of materials and structures, 2006.-2013.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	ME4CataLOgue (Mechanical Engineering for Catalogue) Hrvatski katalog znanja, vještina i kompetencija za studije strojarstva temeljen na ishodima učenja. (participation at workshop „Training for teachers“, April 2014.)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	

Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Mechanics 1 - Undergraduate study programme, Mechanical Engineering, Naval Architecture - 4,2/5 Mechanics 1 - Undergraduate study programme, Industrial Engineering - 4,3/5 Mechanics of Materials – Professional study programme, Mechanical Engineering, Naval Architecture – 4,3/5

First and last name and title of teacher	**Željko Domazet, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Metal structures, Engineering graphics 1 (130, 140, 150)
GENERAL INFORMATION ON COURSE TEACHER	
Address	R. Boškovića 32
Telephone number	+385/21/305777
E-mail address	Zeljko.domazet@fesb.hr
Personal web page	www.fesb.hr
Year of birth	1954
Scientist ID	95632
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor – permanent position 2005.
Area and field of election into research or art rank	Technical sciences, mechanical engineering, general mechanical engineering (structures)
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split Faculty of Electr. Eng., Mech. Eng. and Naval Arch.
Date of employment	1980.
Name of position (professor, researcher, associate teacher, etc.)	Full professor - permanent position
Field of research	metal structures, fatigue
Function	head of Department of Mechanical Eng. And Naval Arch.
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Dr.sc.
Institution	FSB-Zagreb
Place	Zagreb
Date	1993.
INFORMATION ON ADDITIONAL TRAINING	
Year	1988., 1990.
Place	Darmstadt, Germany
Institution	Fraunhofer Institut fuer Betriebsfestigkeit
Field of training	Fatigue
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	L. Krstulović-O., Ž. Domazet: Dizajn industrijskih proizvoda V.Grubišić, Ž. Domazet: Pogonska čvrstoća-interna skripta

	Ž. Domazet, L. Krstulović-O., Skripta iz osnova strojarstva(KTF)
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Domazet, Željko; Lukša, Francisko; Stanivuk, Tatjana. **An optimal design approach for calibrated rolls with respect to fatigue life**. // *International journal of fatigue*. **59** (2014) ; 50-63 2. Krstulović-Opara, Lovre; Domazet, Željko; Garafulić, Endri. **Detection of osmotic damages in GRP boat hulls**. // *Infrared physics & technology*. **60** (2013.) ; 359-364 3. Domazet, Željko; Lukša, Francisko; Bugarin, Miro. **Fatigue Strength of the Rolls with Grooves**. // *Applied Mechanics and Materials*. **459** (2014) ; 330-334 4. Domazet, Željko; Lukša, Francisko; Stanivuk, Tatjana. **The influence of rolling speed on the fatigue life of rolls with grooves**. // *International journal of damage mechanics*. (2014) 5. Krstulović-Opara, Lovre; Garafulić, Endri; Klarin, Branko; Domazet, Željko. **Application of gradient based IR thermography to the GRP structures inspection**. // *Key Engineering Materials*. **488-489** (2012) ; 682-685
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Domazet, Željko; Lukša, Francisko. **Influence of Rolling Temperature on Fatigue Life of Calibrated Rolls**. // *Advanced materials research*. **742** (2013) ; 482-487 2. Domazet, Željko; Lukša, Francisko; Šušnjar, Marko; Korun Curić, Kristina. **Stress-time History of Rolls with Grooves**. // *Transactions of FAMENA*. **35** (2011) , 3; 67-74 3. Krstulović-Opara, Lovre; Domazet, Željko; Klarin, Branko; Garafulić, Endri. **The Application of IR Thermography to the NDT and Thermal Stress Analysis**. // *HDKBR info*. **1** (2012.) , 6/7; 17-22 4. Krstulović-Opara, Lovre; Klarin, Branko; Neves, Pedro; Domazet, Željko. **Thermal imaging and Thermal Stress Analysis of the impact damage of composite materials**. // *Engineering failure analysis*. **18** (2011) ; 713-719 Vesenjak, Matej; Krstulović-Opara, Lovre; Ren, Zoran; Domazet, Željko. **Cell shape effect evaluation of polyamide cellular structures**. // *Polymer testing*. **29** (2010) , 8; 991-994
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-	„Training for administrative and educational personnel“ part of the EU project ME4CataLOgue (Mechanical Engineering for Catalogue)

didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	University of Split, Rector price, 2015.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Results are confidential matter and kept by employer (University of Split, FESB)

First and last name and title of teacher	**Ilja Doršner, Ph.D., Associate Professor**
The course he/she teaches in the proposed study programme	Physics
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ulica pod Kosom 15, 21000 SPLIT
Telephone number	0914305883
E-mail address	dorsner@fesb.hr
Personal web page	
Year of birth	1971
Scientist ID	341315
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate professor, 16.4.2014.
Area and field of election into research or art rank	Area of natural sciences, field of physics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, R. Boškovića 32, 21000 Split, Croatia
Date of employment	1.9.2014.
Name of position (professor, researcher, associate teacher, etc.)	professor
Field of research	Physics
Function	Head of Chair of Physics
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Delaware
Place	Newark, Delaware, United States of America
Date	10.1.2004.
INFORMATION ON ADDITIONAL TRAINING	
Year	2007. – 2009. god.
Place	Ljubljana, Slovenia
Institution	Institute Jožef Stefan
Field of training	Elementary Particle Physics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Slovenian 4
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Fundamentals in Physics II, undergraduate program, University of Delaware, USA
Authorship of university/faculty	*Symmetries in physics*, Ilja Doršner, ISBN 978-9958-592-35-5,

textbooks in the field of the course	2013.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Ilja Doršner, Svjetlana Fajfer, Admir Greljo, Jernej F. Kamenik, and Nejc Košnik, "**Physics of leptoquarks in precision experiments and at particle colliders"**," *Phys. Rept.* 641 (2016) 1-68, arXiv:1603.04993. Ilja Doršner, Svjetlana Fajfer, and Nejc Košnik, "**Is symmetry breaking of** *SU*(5) **theory responsible for the diphoton excess?**," *Phys. Rev. D* 94 (2016) no.1, 015009, arXiv:1601.03267. Ilja Doršner, "**Comment on "***SU*(5) **octet scalar at the LHC**"," *Phys. Rev. D* **91** (2015) 118701. Ilja Doršner, Svjetlana Fajfer, Admir Greljo, Jernej F. Kamenik, Nejc Košnik, and Ivan Nišandžić, "**New physics models facing lepton flavor violating Higgs decays at the percent level**," JHEP (2015) 0615:108, arXiv:1502.07784. Ilja Doršner, Svjetlana Fajfer, and Admir Greljo, "**Cornering Scalar Leptoquarks at LHC**," JHEP (2014) 1014:154, arXiv:1406.4831.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	None
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	***HRZZ Research Projects*** **(IP-11-2013)**, Hrvatska zaklada za znanost (1.10.2014. god. – 30.9.2018. god.). ***Exploiting the LHC Potential to build Collaboration in Science and Technology*** **(IZ74Z0_ 137346)**, Swiss Science National Foundation (1.1.2012. – 31.12.2014. god.). ***Sofinanciranje znanstveno raziskovalnega sodelovanja med RS in ZDA v letih*** **2009-2012**, Slovenian Research Agency (ARRS) (1.7. 2009. – 30.6.2012. god.).
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Competitive Scholarship 2002, University of Delaware
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Nikola Gjeldum, Ph. D., Assistant Professor**
The course he/she teaches in the proposed study programme	Design for Manufacturing
GENERAL INFORMATION ON COURSE TEACHER	
Address	Mosećka 6, Split, Hrvatska
Telephone number	+385914305934
E-mail address	nikola.gjeldum@fesb.hr
Personal web page	http://marjan.fesb.hr/~ngjeldum/
Year of birth	1979
Scientist ID	287306
Research or art rank, and date of last rank appointment	Senior Research Associate, 20/3/2011
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 15/6/2016
Area and field of election into research or art rank	Technical Sciences, Field Mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	14/5/2006
Name of position (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Manufacturing technology, production organization, plant layout, design for manufacturing and assembly
Function	Assistant professor
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	25/02/2011
INFORMATION ON ADDITIONAL TRAINING	
Year	2009
Place	Aachen, Germany
Institution	RWTH WZL Aachen
Field of training	Optimization of manufacturing processes
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4) (very good)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name	Manufacturing process planning Mechanical engineering

title of course, study programme where it is/was offered, and level of study programme)	1. year of graduate study
Authorship of university/faculty textbooks in the field of the course	-
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Gjeldum, Nikola; Bilić, Boženko; Kujundžić, Fabris. Application of modified value stream mapping tool for restructuring of make-to-order production system // CIM 2013 : Computer Integrated Manufacturing and High Speed Machining / Abele, Eberhard ; Udiljak, Toma ; Ciglar, Damir (ur.). Zagreb : Croatian Association of Production Engineering, 2013. 113-118 2. Gjeldum, Nikola; Veža, Ivica; Beram Žana. Design Tool For Solar Panels Product Customization // Proceedings of the 5th International Conference on Mass Customization and Personalization in Central Europe (MCP-CE 2012) / Anišić, Zoran ; Freund, Robert (ur.). Novi Sad : Faculty of Technical Sciences in Novi Sad, 2012. 82-87 3. Gjeldum, Nikola; Veža, Ivica; Bilić, Boženko. Simulation of production process reorganized with value stream mapping. // Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku. 18 (2011) , 3; 341-347 4. Štefanić, Nedeljko; Gjeldum, Nikola; Mikac, Tonči. Lean Concept Application in Production Busines. // Technical Gazzete, Tehnički vjesnik : znanstveno-stručni časopis tehničkih fakulteta Sveučilišta u Osijeku. 17 (2010) , 3; 353-356
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	-
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Collaboration with industry – implementation of production reorganizationimplementacija, improvement of production and assembly processes and products: FEAL d.o.o. Široki Brijeg, Bosnia and Herzegovina, - production and assebbly of alluminium parts DALSTROJ d.d. production and assembly of winches BRODOTROGIR d.d. shipyard KONČAR – production and assembly of power transformers
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Scientific award Festo: Young researcher and scientist support scolarship, kao autoru nagrađenog rada, dodijeljena na 19. DAAAM International Symposium on Intelligent Manufacturing & Automation, Trnavi, Slovakia, 22-25.10.2008.
Results of student evaluation taken	None

in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Sonja Jozić, Ph. D., Assistant Professor**
The course he/she teaches in the proposed study programme	Technology 1
GENERAL INFORMATION ON COURSE TEACHER	
Address	Sibovica 10, Kaštel Lukšić
Telephone number	091 4305 914
E-mail address	sjozic@fesb.hr
Personal web page	
Year of birth	1967.
Scientist ID	297785
Research or art rank, and date of last rank appointment	Research Associate, 04.07.2012.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 19.12.2012.
Area and field of election into research or art rank	Technical Science, Mechanical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	01.10.2007.
Name of position (professor, researcher, associate teacher, etc.)	Assistant Professor
Field of research	Manufacturing Engineering, Metal Cutting Processes, Computer Aided Manufacturing
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	15.02.2012.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English language (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German language (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of	**Professional undergraduate studies:** 1. Computer Aided Manufacturing (530) **Graduate studies:** 1. Computer Aided Manufacturing (261, 262, 263)

study programme)	2. Nonconventional machining processes (261,262,263) 3. Machine tools (261, 263) 4. Machine tools and systems (270) **Postraduate doctoral studies:** 1. Optimization of (330)
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Jozić, Sonja; Bajić, Dražen; Celent, Luka. **Application of compressed cold air cooling: achieving multiple performance characteristics in end milling process**. // Journal of cleaner production. 100 (2015) , /; 325-332 (paper, scientific). 2. Jozić, Sonja; Lela, Branimir; Bajić, Dražen. A New **Mathematical Model for Flank Wear Prediction Using Functional Data Analysis Methodology**. // Advances in Materials Science and Engineering. 2014 (2014) ; 1-8 (paper, scientific). 3. Jozić, Sonja; Bajić, Dražen; Stoić, Antun. **Flank wear and surface roughness in end milling of hardened steel**. // Metalurgija. 54 (2015) , 2; 343-346 (paper, scientific). 4. Celent, Luka; Bajić, Dražen; Jozić, Sonja. **Application of reverse engineering process in mould manufacturing industry** // Mechanical technologies and structural materials, 2011, Split, Croatia, pp. 29-32. (lecture, international review, published work, scientific)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Bajić, D., Celent, L., Jozić, S., Projektiranje tehnologije i izrada kalupa za proizvodnju medicinske obuće, (Naručitelj; Dr. Luigi d.o.o., Šestanovac), Split 2015. 2. Bajić, D., Celent, L., Jozić, S., Konstrukcija i izrada modela za proizvodnju ribarskog pribora, (Naručitelj; DTD d.o.o., Dugi rat) Split, 2014. 3. Bajić, D., Celent, L., Jozić, S., Konstruiranje i 3D tiskanje modela boca za projektiranje punionice, (Naručitelj: Logistika Violeta d.o.o. Sveti Ivan Zelina), Split, 2013. 4. Bajić, D., Celent, L., Jozić, S., Konstrukcija i izrada kalupa za upravljač studentske formule, (Naručitelj: UPS, Split), Split, 2012. Bajić, D., Celent, L., Jozić, S., Izrada kočionog sustava student formule primjenom 3D tiska, (Naručitelj: UPS, Split), Split, 2012.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Training for teachers and administrative staff within the EU Project ME4CataLOgue, Split, 2014. The program of additional pedagogical psychological education, University of Split, Faculty of Science, 1999
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation	

organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Ivica Jurić-Grgić, Ph.D., Associate Professor**
The course he/she teaches in the proposed study programme	Electrical Engineering and Electronics
GENERAL INFORMATION ON COURSE TEACHER	
Address	Pujanke 59, 21000 Split, Croatia
Telephone number	+385 21 305-811
E-mail address	ijuricgr@fesb.hr
Personal web page	-
Year of birth	1977.
Scientist ID	248792
Research or art rank, and date of last rank appointment	Senior scientific associate, 12/7/2012
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor, 20/9/2016
Area and field of election into research or art rank	Technical Sciences, Field Electrical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	23/9/2001
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Power engineering
Function	-
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	10/3/2008
INFORMATION ON ADDITIONAL TRAINING	
Year	-
Place	-
Institution	-
Field of training	-
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Electrical Machines 1, Graduate study programme. Testing of electrical installation, Graduate study programme. Electrical safety, Undergraduate study programme. Electrical engineering, Undergraduate study programme.
Authorship of university/faculty textbooks in the field of the course	-
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	• Jurić-Grgić, I.; Lucić, R.; Dabro, M.: "A coupled nonuniform transmission line analysis using FEM", International Transactions on Electrical Energy Systems, Vol.23 (8), 2013, pp. 1365–1372. • Lucić, R.; Jurić-Grgić, I.; Balaž, Z.: " Grounding grid

	transient analysis using the improved transmission line model based on the finite element method", ETEP: European Transactions on Electrical Power, Vol.23 (2), 2013, pp. 282–289. • Dabro, M.; Jurić-Grgić, I.; Martinović, M.: "Improvement of Synchronous Generator Power Stability Using Hydraulic Digital Governor", International Journal on Engineering Applications (IREA), Vol. 1 (5), 2013, pp. 263-267. • Dabro, M.; Jurić-Grgić, I.; Lucić, R.: "Optimization of Hydraulic Digital Governor parameters using EMTP-RV", International Journal on Engineering Applications (IREA), Vol. 1 (2), 2013, pp. 90-93. • Dabro, M.; Jurić-Grgić, I.; Lucić, R.: "EMTP-RV Model of Hydraulic Digital Governor", International Review on Modelling and Simulations (IREMOS), Vol. 4 (6), 2011, pp. 1-5.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	-
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	• Study: Elaborat iznošenja potencijala i izračun napona dodira i koraka za EVP 110/25 kV Novska, Naručitelj: Projektni biro Split, 2010. • Project: 023 0231581-1610, "Numeričko modeliranje elektroenergetskog sustava tehnikom konačnih elemenata", br. 023 0231581-1610, Ministarstvo znanosti, obrazovanja i športa Republike Hrvatske, 2007.-2011. • Study: Izrada pravila i mjera sigurnosti za osiguranje mjesta rada na elektroenergetskim vodovima, Naručitelj: HEP OPS d.o.o., Prijenosno područje Split, 2013.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	-
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	-
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	-

First and last name and title of teacher	**Mirjana M. Kovač, Ph.D., Assistant Professor**
The course he/she teaches in the proposed study programme	Introduction to Public Speaking
GENERAL INFORMATION ON COURSE TEACHER	
Address	Put sv. Lovre 35, 21215 Kaštel Lukšić
Telephone number	021 305715
E-mail address	Mirjana.kovac@fesb.hr
Personal web page	
Year of birth	1971
Scientist ID	297 640
Research or art rank, and date of last rank appointment	Research Associate
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, February, 2012
Area and field of election into research or art rank	Humanities and Social Sciences; Philology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, Split
Date of employment	June, 2006
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Communication skills, speech production and speech disfluencies, communication strategies
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Philosophy, University of Zagreb
Place	Zagreb
Date	10th March, 2010
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Communication Skills (Undergraduate Study of Electrical Engineering; Undergraduate Study of Computing)

Authorship of university/faculty textbooks in the field of the course	1.Kovač, M.M.; Sirković, N. Presentation, Writing and Interpersonal Communication Skills. FESB, Split, 2014. 2.Kovač, Mirjana M.; Sirković, Nina. Strategije rješavanja poteškoća u komunikaciji na stranom jeziku. Hrvatska sveučilišna naklada, Zagreb (2015)
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1.Kovač, Mirjana Matea; Sirković, Nina. Peer Evaluation of Oral Presentations in Croatia. // *English Language Teaching*. 5 (2012) , 7; 8-17 (scientific paper). 2.Kovač, Mirjana Matea. Utjecaj kognitivne složenosti zadatka na samoispravljanja. // *Linguistica Copernicana*. 5 (2011) , 1; 269-300 (scientific paper). 3.Kovač, Mirjana Matea; Horga, Damir. Ponavljanja kao oblik govorne disfluentnosti. // *Linguistica Copernicana*. 5 (2011) , 1; 245-267 (scientific paper). 4. Kovač, Mirjana Matea. The Influence of Task Type on Perceived Fluency. // *Studies in English Language Teaching.* 4 (2016), 2; 241-253 (scientific paper). 5. Kovač, Mirjana Matea. Repetition as a Communication Strategy. // *Studies in English Language Teaching.* 4 (2016), 1; 87-104 (scientific paper).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1.Kovač, Mirjana Matea; Sirković, Nina. Peer Evaluation of Oral Presentations in Croatia. // *English Language Teaching*. 5 (2012) , 7; 8-17 (scientific paper).
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoškekompetencije?	Graduate study program in English Language and Literature; Graduate study program in German Language and Literature
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Nikša Krnić, Associate Professor, Ph. D.**
The course he/she teaches in the proposed study programme	Materijals 1, Technology 1 (part Welding)
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32
Telephone number	+38521305912
E-mail address	nkrnic@fesb.hr
Personal web page	-
Year of birth	1956.
Scientist ID	122696
Research or art rank, and date of last rank appointment	Research scientist, 2011.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor, 2011., in re-election process
Area and field of election into research or art rank	Technical sciences, Mechanical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, FESB
Date of employment	1984.
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Production technologies
Function	-
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph. D.
Institution	FSB, Zagreb
Place	Zagreb
Date	1999.
INFORMATION ON ADDITIONAL TRAINING	
Year	1988. – 1989.; 1992.
Place	Berlin, Njemačka
Institution	Technische Universitat Berlin, Fuege- und Schweisstechnik
Field of training	Underwater Welding; Welding
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French, 2
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Performed, proposed and upgraded more similar or new courses on Undergraduate, Bachelor and Graduate studies on FESB, Faculty of Maritime Studies in Split, University Dept. of professional Studies in Splitu, University of Applied Sciences in Velika Gorica, Study of Underwater Science and Technology on the University of Zadar
Authorship of university/faculty textbooks in the field of the course	1. Duplančić, I.; Krnić, N.: "Materijali 3", Split, 2011., electronic book, FESB, e – learning portal, 2. Duplančić, I.; Krnić, N.; Bajić, D.: Osnove tehnologijâ, Split, 2008., electronic book, FESB, e – learning portal 1. Krnić, N.: Additive Layer Manufacturing Based on Robotic Electric-Arc Welding and Wire Feedstock, 41st Int. Conf. on Welding – Modern Joining Processes, Development of Filler Materials and Simulations, Opatija, June 2016. 2. Krnić, N.: Suvremene laserske tehnologije obrade materijala, Društvo inženjera strojarstva Split, DISS, Split, 2012., invited lecture 3. Kordić, Z.; Krnić, N.: Trends in Application of Composite Materials for Helicopter Rotor Blades, Proceedings of 2nd Conf. on Business Systems Management – UPS 2001, DAAAM, Mostar, 2001. 4. Krnić, N.; Dorn, L.; Kralj, S.: Welding Processes in Modern Shipbuilding Industry, Proc. of the 3rd International Conf. Welding in Maritime Engineering, Hvar, Croatia, 2004, HDTZ, CWS, pp. 523 - 532, ISBN 953-96454-6-8. 5. N. Krnić, N.; Bekavac, T.: Robotic Gas Metal Arc Welding and Off-line Programming for Metal Additive Layer Manufacturing, 41st Int. Conf. on Welding – Modern Joining Processes, Development of Filler Materials and Simulations, Opatija, June 2016.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	ME4CataLOgoue (Mechanical Engineering for Catalogue)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Award of the Croatian Welding Society Specialisation on Technical University of Berlin and fellowship

	of the German Academic Exchange Office (DAAD)
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Lovre Krstulović-Opara, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Product Development and Management
GENERAL INFORMATION ON COURSE TEACHER	
Address	R. Boškovića 32
Telephone number	+385/21/305777
E-mail address	Lovre.Krstulovic-Opara@fesb.hr
Personal web page	http://marjan.fesb.hr/~opara/index.html
Year of birth	1967
Scientist ID	203806
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor – permanent position 9.12.2015.
Area and field of election into research or art rank	Technical sciences, mechanical engineering, general mechanical engineering (structures)
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split Faculty of Electr. Eng., Mech. Eng. and Naval Arch.
Date of employment	IX.2001.
Name of position (professor, researcher, associate teacher, etc.)	Full professor - permanent position
Field of research	metal structures, non-destructive testing
Function	head of Chair for structural mechanics and design
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Dr.-Ing.
Institution	Leibniz Universitaet Hannover
Place	Hannover
Date	13.12.2000.
INFORMATION ON ADDITIONAL TRAINING	
Year	2015 (MT), 2014 (VT), 2013 (PT), 2012 (UT)
Place	Zagreb
Institution	Croatian society of non-destructive testing
Field of training	NDT methods: UT2, MT2, VT2, PT1
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 4
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	
Authorship of university/faculty	L. Krstulović-O., Ž. Domazet: Dizajn industrijskih proizvoda

textbooks in the field of the course	(skripta FESB) Ž. Domazet, L. Krstulović-O., Skripta iz osnova strojarstva (KTF)
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	O. Andersen, M. Vesenjak, T. Fiedler, U. Jehring and L. Krstulović-Opara: "Experimental and Numerical Evaluation of the Mechanical Behavior of Strongly Anisotropic Light-Weight Metallic Fiber Structures under Static and Dynamic Compressive Loading", Materials, 9(5), 398, 2016. L. Krstulovic-Opara, M. Surjak, M. Vesenjak, Z. Tonković, J. Kodvanj, Ž. Domazet: "Comparison of infrared and 3D digital image correlation techniques applied for mechanical testing of materials", Infrared Physics & Technology, 73, 166-174, 2015. L. Krstulović-Opara, M. Vesenjak, I. Duarte, Z. Ren, Ž. Domazet: "Infrared thermography as a method for energy absorption evaluation of metal foams", Materials Today: Proceedings, 3, 1025-1030, 2016. L. Krstulovic-Opara, M. Surjak, M. Vesenjak, Z. Tonković, J. Kodvanj, Ž. Domazet: "Comparison of infrared and 3D digital image correlation techniques applied for mechanical testing of materials", Infrared Physics & Technology, 73, 166-174, 2015. I. Duarte, M. Vesenjak, L. Krstulovic-Opara, Z. Ren :"Static and dynamic axial crush performance of in-situ foam-filled tubes", Composite structures, **124**, 128–139, 2015. L. Krstulovic-Opara: "Application of thermography in analysis of fatigue strength of materials and structures", HDKBR info, 10, 3-11, 2013.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	„Training for administrative and educational personnel“ part of the EU project ME4CataLOgue (Mechanical Engineering for Catalogue)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Results are confidential matter and kept by employer (University of Split, FESB)

First and last name and title of teacher	**Branimir Lela, Ph.D., Assistant Professor**
The course he/she teaches in the proposed study programme	Technology 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32, Split
Telephone number	021/305909
E-mail address	blela@fesb.hr
Personal web page	
Year of birth	1976
Scientist ID	250123
Research or art rank, and date of last rank appointment	Scientific associate, 10/12/2010
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	assistant professor, 18/04/2012
Area and field of election into research or art rank	Technical Sciences, Field Mechanical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	01/10/2001
Name of position (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Engineering materials; Metal heat treatment; Forming by deformation; Numerical modelling of production processes; Tools and fixtures
Function	Vice Dean for Education
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	16/07/2010
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of	**Undergraduate study:** 1. Technology 2 (130) 2. Technology 2 (150) 3. Fundamentals of technologies (140)

study programme)	**Professional study:** 1. Metal forming by deformation (530) 2. Technology of metal processing (540) **Graduate study:** 1. Tools and fixtures (263,261,271,272) **Postgraduate study**: 1. Processing by deformation (330)
Authorship of university/faculty textbooks in the field of the course	- Manual for laboratory exercise in processing by deformation - Manual for laboratory exercise in heat treatment
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Jozić, Sonja; Lela, Branimir; Bajić, Dražen. **A New Mathematical Model for Flank Wear Prediction Using Functional Data Analysis Methodology**. *Advances in Materials Science and Engineering*. **2014** (2014) ; 1-8 2. Lela, Branimir; Musa, Ante; Zovko, Oliver. **Model-based controlling of extrusion process**. *International journal of advanced manufacturing technology*. **74** (2014) , 9-12; 1267-1273 3. Krstić Vukelja, Elizabeta; Duplančić, Igor; Lela, Branimir. **Continuous roll casting of aluminium alloys– casting parameters analysis**. *Metalurgija*. **49** (2010) , 2; 115-118 4. Cvitanić, Vedrana; Ivandić, Daniel; Lela, Branimir. **Comparison of orthotropic constitutive models in predicting square cup deep drawing process of AA2090-T3 sheet** . *Proceedings of 4th International Conference Mechanical Technologies and Structural Materials 2014* / Živković, Dražen (ur.). Split : Croatian society for mechanical technologies, 2014. 61-70 5. Duplancic, Igor; Lela, Branimir; Musa, Ante; Zovko, Oliver. **Functional Data Analyses in Control of Extrusion Process**. *Proceedings of the Tenth International Aluminum Extrusion Technology Seminar*. Wauconda, Illinois, USA : ET Foundation, 2012. 655-663
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Improving the properties and methods of processing aluminium alloys Project manager: prof. dr. sc. Igor Duplančić, Time period: 2007.-2014. Financing: MZOŠ 2. Parameters optimization and prediction of results of metal heat treatment Project manager: prof. dr. sc. Božo Smoljan, Time period: 2014.- Financing: HRZZ
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of	Training for teachers and administrative staff within EU project ME4CataLOgue

competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4.9/5

First and last name and title of teacher	**Željan Lozina, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Mechanics 2, Mechanics3
GENERAL INFORMATION ON COURSE TEACHER	
Address	Rendićeva 18
Telephone number	021-305-968
E-mail address	zeljan.lozina@fesb.hr
Personal web page	http://marjan.fesb.hr/~lozina/
Year of birth	1956.
Scientist ID	96925
Research or art rank, and date of last rank appointment	Scientific Adviser, 21.06.2000.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 09.03.2005.
Area and field of election into research or art rank	Engineering Sciences, Field Engineering mechanics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	22.10.1982
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Dynamics/Vibration, Numerical methods, FEM
Function	Head of Chair of Dynamics and Vibration
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	FSB – Univerity of Zagreb
Place	Zagreb
Date	05.04.1989.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	Udine, Italy
Institution	CISM
Field of training	Engineering Mechanics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Mechanics of materials, Programming, Mechanisms, Vehicle (ship) systems,…

Authorship of university/faculty textbooks in the field of the course	Finte element method, Univerity of Split Kinematics, Univerity of Split Dynamics, Univerity of Split Programming, Univerity of Split
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. 1. Sedlar, Damir; Lozina, Željan; Vučina, Damir: An implementation of structural change detection procedure based on experimental and numerical model correlation. // Journal of sound and vibration. 331 (2012) , 13; 3068-3082 2. Vučina, Damir; Lozina, Željan; Pehnec, Igor.: Ad-Hoc Cluster and Workflow for Parallel Implementation of Initial-Stage Evolutionary Optimum Design. // Structural and multidisciplinary optimization. 45 (2012) , 2; 197-222 3. Vučina, Damir; Lozina, Željan; Pehnec, Igor.: Computational procedure for optimum shape design based on chained Bezier surfaces parameterization. // Engineering applications of artificial intelligence. 25 (2012) , 3; 648-667 4. Vučina, Damir; Lozina, Željan; Vlak, Frane.: NPV-based decision support in multi-objective design using evolutionary algorithms. // Engineering applications of artificial intelligence. 23 (2010) , 1; 48-60 5. Lozina, Željan; Sedlar, Damir; Vučina, Damir.: Model Update with Observer/Kalman Filter and Genetic Algorithm Approach. // Transactions of FAMENA. 36 (2012)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. Cvitanić, Vedrana; Duplančić, Igor; Lozina, Željan; Ivandić, Daniel.:Earing predictions for Al2008-T4 sheet. // Aluminium and its alloys. 3 (2011) ; 73-77 2. Sedlar, Damir; Lozina, Željan; Vučina, Damir. 3. Comparison of Genetic and Bees Algorithm in the Finite Element Model Update. // Transactions of FAMENA. 35 (2011) , 1; 1-12
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. HRZZ Istraživački projekt: Mjeriteljska infrastruktura za pametne mreže, 2015. - 2018. 2. LLP - ERASMUS: Strategic Alignment of Electrical and Information Engineering in European Higher Education Institutions, 2012. -2014. 3. TEMPUS: Creation of the third cycle studies-doctoral studies in metrology Trajanje projekta: 2010. – 2013.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Me4
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,8/5

First and last name and title of teacher	**Jadranka Marasović, Ph. D., Full Professor**
The course he/she teaches in the proposed study programme	Industry Processes Automatic Control
GENERAL INFORMATION ON COURSE TEACHER	
Address	Split, Zagrebačka 21
Telephone number	385 021 305 830 (institution)
E-mail address	jmar@fesb.hr
Personal web page	/
Year of birth	1955.
Scientist ID	080633
Research or art rank, and date of last rank appointment	Senior Research Scientist, 09. July 2007.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor, 01. March 2009.
Area and field of election into research or art rank	Technical science, field of electrical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Machine Engineering and Naval Architecture, University of Split
Date of employment	04. May 1978.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Science and Education
Function	/
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctor of science
Institution	Faculty of Electrical Engineering, Machine Engineering and Naval Architecture, University of Split
Place	Split
Date	11. July 1997.
INFORMATION ON ADDITIONAL TRAINING	
Year	/
Place	/
Institution	/
Field of training	/
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (excellent -5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (sufficient-2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of	**Undergraduate studies:** Mjerenje i vođenje procesa (Measurements and Process

study programme)	Control), Automatizacija industrijskih procesa (Industrial Process Control) **Graduate studies:** Automatsko reguliranje procesa (Automatic Control), Identifikacija sustava (System Identification), Praktikum iz vođenja procesa (Process Control Laboratory Exercises) Metode optimizacije (Optimization Methods), Operacijska istraživanja (Operations Research) Automatizacija (Automation) **Postgraduate study:** Optimization Techniques for Environmental Studies (Wessex Institute of Tecnology, UK i FESB) Game theory and optimization methods (FESB) Complex systems modelling and simulation (FESB)
Authorship of university/faculty textbooks in the field of the course	- (autor) Kvantitativno i kvalitativno modeliranje i simuliranje (Quantitative and Qualitative Modelling and Simulation) (ISBN 953-6114-67-4), - (koautor) On-line (web) udžbenik, Informatički projekt MZT-a, http://laris.fesb.hr/digitalno_vodjenje (Digital Control) - (autor) Predavanja iz kolegija Metode optimizacije (Lessons for Optimizaion Methods) (FESB, e-learning). - (autor) Predavanja iz kolegija Modeliranje i simuliranje sustava (Lessons for Modelling and Simulations) (FESB, e-learning).
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	- Marasović, Tea; Papić, Vladan; **Marasović, Jadranka**. *Motion-based Gesture Recognition Algorithms for Robot Manipulation*. // International Journal of Advanced Robotic Systems. 12 (2015), 51; 1-13, doi: 10.5772/60077. - **Marasović, Jadranka**; Marasović, Tea; Đapić, Marija. *Fair Division Methods Approach as the Option of Learning Process Modeling*. // Proceedings of 18th IEEE International Symposium on Computers and Communications (ISCC). 2013; 735-739. - Mance, Davor; **Marasović, Jadranka**. *EMC in Electronic System Developed to Support Measurements in Space Environment*. // Proceedings of 20th International Conference on Software, Telecommunications and

	Computer Networks (SoftCOM). 2012; 1-5.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	/
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Associated member in scientific projects: - Računalna inteligencija za prepoznavanje i potporu ljudskih aktivnosti (RIPrePAkt), - GRS Front End Electronics Characterization for LISA, - Agentski orijentirani inteligentni sustavi za nadzor i zaštitu okoliša (Agents Oriented Intelligent Systems for Environment Control and Protection), - Inteligentni agenti u modeliranju i vođenju kompleksnih sustava (Intelligent Agents used for Complex Systems Modelling and Control), - Vođenje složenih sustava inteligentnim metodama (Intelligent Methods for Complex Systems Control).
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	/
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	/
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Ivan Marinović, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Electrical Engineering and Electronics
GENERAL INFORMATION ON COURSE TEACHER	
Address	Butor dolac 13, 21405 Milna, o. Brač
Telephone number	098 1835911
E-mail address	imarin@fesb.hr
Personal web page	www.fesb.hr/~imarin
Year of birth	1966.
Scientist ID	200263
Research or art rank, and date of last rank appointment	Scientific Advisor, 20.06.2016.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Professor, 15.07.2016.
Area and field of election into research or art rank	Technical Sciences, Electrical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture – Split
Date of employment	21.02.1991.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Electronics, Radiocommunications
Function	Head of Cathedra for Radiocommunication Circuits and Systems
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture – Split
Place	Split
Date	12.05.2005.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Electronic Circuits, Graduate study programme, Electronic Circuits and Measurements, Graduate study programme
Authorship of university/faculty	Marinović, Ivan; Čoko, Duje, Electronički sklopovi-Upute za

textbooks in the field of the course	laboratorijske vježbe, FESB-Split
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4.8

First and last name and title of teacher	**Anita Matković, Ph.D., Associate Professor**
The course he/she teaches in the proposed study programme	Mathematics 3
GENERAL INFORMATION ON COURSE TEACHER	
Address	FESB, R. Boškovića 32, B804
Telephone number	021 305894
E-mail address	anita.matkovic@fesb.hr
Personal web page	https://nastava.fesb.hr/nastava/nastavnici/detalji/amatkovi
Year of birth	1966
Scientist ID	180406
Research or art rank, and date of last rank appointment	higher scientific collaborator
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor, 2011
Area and field of election into research or art rank	Area od Natural Sciences, Field of Mathematics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	FESB, Split
Date of employment	2006
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Mathematics
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Zagreb, Faculty of Science
Place	Zagreb, Croatia
Date	October 2006
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Mathematics 1, Mathematics 2, Mathematics 3, Mathematics – selected topics, undergraduate studies of electrical engineering, mechanical engineering and naval archicecture.
Authorship of university/faculty	

textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Matković, A., Generalization of the Jensen-Mercer inequality by Taylor's polynomial, Mathematical Inequalities and Applications, 19 (2016), 4; 1387-1398. 2. Matković, A.; Pečarić, Josip.; Perić, J., A refinement of the Jessen-Mercer inequality and a generalization on convex hulls in R^k, Journal of Mathematical Inequalities 9 (2015), 4; 1093-1114.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Convex functions and applications, project MZOS No. 177-1170889-1207, 2007- 2015, collaborator. 2. 2. Inequalities and Applications , HRZZ research project No. 5435, 2014- , collaborator.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Graduate teachers study of mathematics and informatics, University of Split, Faculty of Science.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	Evaluations organized by the Quality Enhancement Centre of the University of Split each semester. Average grade is 4.4 on the 1-5 scale.

First and last name and title of teacher	**Prof. dr. sc. Zoran Milas**
The course he/she teaches in the proposed study programme	Fluid Mechanics 1
GENERAL INFORMATION ON COURSE TEACHER	
Address	Mažuranićevo šet.1, 21000, Split, HR
Telephone number	+385 21 305951
E-mail address	zmilas@fesb.hr
Personal web page	
Year of birth	1951.
Scientist ID	080670
Research or art rank, and date of last rank appointment	Scientific Adviser, 2016
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Professor, 2017
Area and field of election into research or art rank	Technical Sciences, Field of Mechanical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture (FESB)
Date of employment	1980
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Fluid Mechanics, Hydraulic Machines, Numerical Modelling
Function	Head of the Laboratory for Fluid Mechanics
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Mechanical Engineering and Naval Architecture
Place	Zagreb
Date	2001
INFORMATION ON ADDITIONAL TRAINING	
Year	1994
Place	Rhodes
Institution	UNEP, MAP
Field of training	Wind power engineering
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (-5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (-2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Fluid Mechanics, Undergraduate study programme, FESB Hydraulic Machines, Undergraduate study programme, FESB
Authorship of university/faculty	Zoran, Milas: Mehanika fluida, FESB Split, 2016

textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Milas, Zoran; Vučina, Damir; Ivo Marinić Kragić. “Multi-Regime Shape Optimization of Fan Vanes for Energy Conversion Efficiency Using CFD, 3D Optical Scanning and Parameterization”, Engineering Application of Computational Fluid Mechanics, (1994-2060) , 8, (2014), 3,2014., 407-421 2. Vučina, Damir; Marinić-Kragić, Ivo; Milas, Zoran, “Numerical Models for Robust Shape Optimization of Wind Turbine Blades”, Renewable Energy, (0960-1481) 87 (2016), 2, 2016, 849-862 3. Marinić-Kragić, Ivo; Vučina, Damir; Milas, Zoran, “3D Shape Optimization of Fan Vanes for Multiple Operating Regimes Subject to Efficiency and Noise Related Excellence Criteria and Constraints” Engineering Applications of Computational Fluid Mechanics (1994-2060) 10 (2016), 1, 2016, 210-228 4. Milas, Zoran; Penga, Željko, “Numerical Simulation of Fan Flow“, Proceedings of the 8th ICCSM 2015, Opatija, ISBN 978-953-7539-21-4
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	-“Adaptive Parameterization of 3D Geometry for Shape Optimization and Meshless Numerical Modelling“, nr. 6130. 2015-2018, Croatian Science Foundation -Optimizing shape (of turbomachines) using CFD (FESB Reasearch Group)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	IPA IV project ME4Catalogue
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	University of Split, 4,5/5

First and last name and title of teacher	**Nedjeljko Mišina, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Materials 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32, SPLIT
Telephone number	021/305911
E-mail address	nmisina@fesb.hr
Personal web page	----
Year of birth	1950.
Scientist ID	71172
Research or art rank, and date of last rank appointment	Scientific Adviser, 31/ 05/ 2006.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 25/1/2013.
Area and field of election into research or art rank	Technical Sciences, Field Mechanical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	1/10/1977
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Mechanical Engineering
Function	Head of Chair of Materials and Tribology
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Mechanical Engineering and Naval Architecture
Place	Zagreb
Date	24/6/1992.
INFORMATION ON ADDITIONAL TRAINING	
Year	-
Place	-
Institution	-
Field of training	-
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Germany (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Materials (530, 540), Materials 1 (150), Materials 2 (150, 130), Technology 1 (150), Welding and similar treatments (530, 540)
Authorship of university/faculty	

textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Ž. Bilić, N. Mišina, L. Kuščer, J. Diaci, I. Polajnar: ¨Influence of welding conditions on resistance flash welds¨, International Journal of Microstructure and Materials Properties, Vol. 8, No. 6, 2013., 425-435. 2. N. Mišina, I. Polajnar, Ž. Bilić: ¨Production and weldability of microalloyed steels¨, 6. International scientific-professional conference, Slavonski Brod, 2011., 15-26.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	1. I. Polajnar, N. Mišina: ¨Automation and/or robotization of welding processes¨, CIM 2011., Biograd, 195-202. 2. I. Polajnar, N. Mišina: ¨The latest achievement of personal protection for welders¨, 3. International Professional and Safety and Health, Zadar, 2010., 53-61
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Ž. Bilić, I. Samardžić, N. Mišina: ¨Opasnosti i mjere zaštite kod postupaka zavarivanja¨, Dan varilne tehnike, Novo Mesto, 2014., 185-189
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,3/6

First and last name and title of teacher	**Sandro Nižetić, Ph.D. Associate Professor**
The course he/she teaches in the proposed study programme	Thermodynamics 1, Thermodynamics 2.
GENERAL INFORMATION ON COURSE TEACHER	
Address	Slovenićeva 5, 21000, Split
Telephone number	+385914305954
E-mail address	snizetic@fesb.hr
Personal web page	
Year of birth	03.06.1980.
Scientist ID	272991
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	izv.prof., December 18, 2013.
Area and field of election into research or art rank	Technical sciences, Thermodynamics.
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	01/03/2003.
Name of position (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Thermodynamics, Energy Efficiency, Energy Conversion, Renewable energy.
Function	Head of Laboratory for Thermodynamics and Energy Efficiency
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	12/02/2009
INFORMATION ON ADDITIONAL TRAINING	
Year	2016.
Place	USA
Institution	Florida solar energy research centre
Field of training	Renewable energy, energy efficiency in buildings.
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme	Thermodynamics 1 and 2 (undergraduate study programme), Heat and mass transfer (graduate study programme), rational use of energy (graduate study programme).

where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	Thermodynamics 1, online lectures (2010), FESB. Thermodynamics 2, online lectures (2010), FESB.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1) Nižetić, S.,Papadopulos, A.M.,Tina, G.M., Rosa-Clot, M. Hybrid energy scenarios for residential applications based on the heat pump split air-conditioning units for operation in the Mediterranean climate conditions, Energy and Buildings 140,110-120,(2017) 2) S. Nižetić, F. Grubišić- Čabo, I. Marinic-Kragić, A.M. Papadopoulos. Experimental and numerical investigation of a backside convective cooling mechanism on photovoltaic panels, Energy 111, 211-225, (2016). 3) Grubišić-Čabo, F., Nižetić, S., Tina, G.M. Photovoltaic panels: A review of the cooling techniques, Transactions of FAMENA, SI, 63-74, (2016). 4) Grigoropoulos, E., Anastaselos, D., Nižetić, S., Papadopoulos, A.M. Effective ventilation strategies for net zero-energy buildings in Mediterranean climates, International Journal of Ventilation, Pages 1-17, (under press, DOI: 10.1080/14733315.2016.1203607), (2016). 5) Nižetić, S., Čoko, D., Yadav, A., Grubišić-Čabo, F. Water spray cooling technique applied on a photovoltaic panel: The performance response, Energy Conversion and Management 108,287-296, (2016), 6) Lela, B., Barišić, M., Nižetić, S. Cardboard/sawdust briquettes as biomass fuel: Physical-Mechanical and thermal characteristics, Waste Management 47(B), 236-245, (2016), 7) Nižetić, S., Tolj, I., Papadopulos, A.M. Hybrid energy fuel cell based system for household applications in a Mediterranean climate, Energy Conversion and Management 105(15),1037-1045 (2015), 8) Nižetić, S., Duić, N., Papadopulos, A.M., Tina, G.M., Grubišić-Čabo, F. Energy efficiency evaluation of a hybrid energy system for building applications in a Mediterranean climate and its feasibility aspect, Energy 90, 1171-1179, (2015), 9) S. Nižetić, F. Grubišić-Čabo, M. Bugarin. Experimental setup for the analysis of vortices. Journal of Applied Fluid Mechanics 8(1),143-149, (2015) 10) S. Nižetić, R. Gizdic, A. Yadav, M. Bugarin. Integrated split heat pump system for building applications, Applied Mechanics and Materials 705, 263-267, (2015) 11) S. Nizetic, D. Coko, I. Marasovic, Experimental study on a hybrid energy system with small-and medium-scale applications for mild climates, Energy 75, 379-389, (2014) 12) S. Nizetic. Analytical approach for estimating the pressure drop potential in convective vortex heat engines. Transactions of the Canadian Society for Mechanical Engineering, 38(1), 81-91, (2014).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at	

most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	-2008. – 2013.- UNDP (United Nations Development Programme), "Removing Barriers to Energy Efficiency in Croatia", Project Coordinator for the Dalmatian region, -2007. – 2013.- Research project (023-0231751-3011), "New aspect of solar energy utilization in solar chimney power plants, Head of the scientific project, Ministry of Science, Education and Sports. -2003. - 2006., Research project (0023013), "Significant reduction of chimney height in solar chimney power plants", Researcher, Ministry of Science, Education and Sports. -2015.-to date-Research of the ice based floating structures, cooperation with DIV company.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,8/5.0

First and last name and title of teacher	**Tonči Piršić, Ph.D., Associate professor**
The course he/she teaches in the proposed study programme	Enginering graphics 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	Stepinčeva 2, 21000 Split
Telephone number	021/535517
E-mail address	tpirsic@fesb.hr
Personal web page	www.fesb.hr/kk
Year of birth	1959.
Scientist ID	134894
Research or art rank, and date of last rank appointment	Higher scientific colaborator 15. 06. 2016.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate proffesor 15. 06. 2016.
Area and field of election into research or art rank	Technical science, general mechanical engineering, construction
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	01. 10. 1987.
Name of position (professor, researcher, associate teacher, etc.)	Proffesor
Field of research	Machine elements, fatigue of materials, transport in industry
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty ofMechanical Engineering and Naval Architecture
Place	Zagreb
Date	15.06. 1999.
INFORMATION ON ADDITIONAL TRAINING	
Year	2001
Place	Bologna, Italy
Institution	University of Bologna
Field of training	Fatogu of materials
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Professor of Enginering graphics 2 Undergraduate study programme,
Authorship of university/faculty textbooks in the field of the course	T. Piršić: Tehničko crtanje, FESB Split, 2010. T. Piršić: AutoCAD u Strojarstvu, FESB Split, 2008.

Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	T. Piršić: “Experimentally Based Method for Fatigue Life Prediction of Aluminium Welded Joints”, Fatigue 99, Proceedings of the 7. International Fatigue Congress, Beijing, P.R. China, Editors X. R Wu and Z. G. Wang, pp. 1309 -1312, Volume 2/4, Higher Education Press, Beijing, P.R. China, Engineering Advisory Services Ltd, UK, 1999. ISBN 1901537080 (Rad objavljen u knjizi) Ž. Domazet, Ž. Lozina, T. Piršić: "Fatigue Damage and Repair of 250 kN Crane in Shipyard", Proceedings of the 10th International Conference on Fracture, Hawai, USA, 2001. Ž. Domazet, T. Piršić: "Fatigue Failures in industry – Case Studies", Proceedings of the 7th International Design Conference, Vol. 2., pp. 1153-1158, ISBN 953-6313-47-9, Dubrovnik, 2002. Ž. Domazet, T. Piršić, M. Stupalo: "Fatigue Damages and Repair of a Cement Mill Gear Wheel", Proceedings of 4th International Congress of Croatian Society of Mechanics, pp. 145-151, ISBN 953-96243-4-7, Bizovac, Croatia, 2003.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course	

described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Srdjan Podrug, Ph.D. Associate Professor**
The course he/she teaches in the proposed study programme	Machine Elements 1 (FESC10), Machine Elements 2 (FESC12)
GENERAL INFORMATION ON COURSE TEACHER	
Address	Kroz Smrdečac 13
Telephone number	+385-91-4305-992
E-mail address	spodrug@fesb.hr
Personal web page	www.fesb.hr/~spodrug
Year of birth	1971
Scientist ID	233771
Research or art rank, and date of last rank appointment	Senior scientific associate, 10/02/2010
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate professor, 17/02/2010
Area and field of election into research or art rank	Technical sciences, Mechanical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	5/02/1996
Name of position (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Machine Elements, Fatigue, Fracture Mechanics
Function	Head of Chair of Machine Elements
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.
Institution	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	27/09/2004
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level	Course teacher of courses: • Machine elements 1 and Machine elements 2 / undergraduate university study Mechanical engineering; • Machine elements / undergraduate university study Naval

of study programme)	architecture, undergraduate vocational study Naval architecture and undergraduate university study Industrial engineering • Introduction to fracture mechanics and Mechanical drives / graduate university study Mechanical engineering • Integrity of machines and structures, Fracture mechanics and Machine Elements: Selected chapters / postgraduate university study Mechanical engineering
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Jelaska, Damir; Podrug, Srdjan; Perkušić, Milan., Kinematic Synthesis of a Novel Type of the Series of Transmissions with Independently Controllable Output Speed, Mechanism and Machine Theory, 103 (2016); 189-201 2. Jelaska Damir; Podrug Srdjan; Perkušić Milan., A novel hybrid transmission for variable speed wind turbines, Renewable energy, 83 (2015); 78-84 3. Jelaska Damir; Podrug Srdjan; Perkušić, Milan., Proposition of the series of transmissions having an independently controllable output speed, International Journal Advanced Engineering, 6 (2015), 1; 13-21 4. Jelaska, Damir; Podrug, Srdjan; Perkušić, MIlan. On the feasibility of the power split type transmissions having independently controllable output speed, International Journal of Advanced Engineering, 7 (2013) 5. Perkušić, Milan; Jelaska, Damir; Podrug, Srdjan, Estimation of fatigue life of involute gears, Strojarstvo, 54 (2012), 5; 381-391 (in croatian)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Development of components life assessment procedures (Project MSES no. 023-0692195-1749), 2007.-2013.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Training for teachers and administrative staff in the EU project ME4CataLOgue (Mechanical Engineering for Catalogue)
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	• Average grade for the course Machine elements 1 in the last five years: 4,73/5. • Grade for the course Machine elements 2 in the last year: 4,9/5.

First and last name and title of teacher	**Gojmir Radica, Ph.D., Full Professor**
The course he/she teaches in the proposed study program	Thermal machines, Marine Machinery and devices
GENERAL INFORMATION ON COURSE TEACHER	
Address	Tolstojeva 43, 21000 Split
Telephone number	021 305955
E-mail address	gojmir.radica@fesb.hr
Personal web page	https://nastava.fesb.unist.hr/nastava/nastavnici/detalji/goradica
Year of birth	1962
Scientist ID	245370
Research or art rank, and date of last rank appointment	15.9.2010. scientific adviser
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	20.03.2013. Full professor
Area and field of election into research or art rank	Technical science, mechanical engineering, marine engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of electrical engineering mechanical engineering and naval architecture
Date of employment	1.10.2011.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Thermodynamic machines, marine engineering
Function	Professor
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Doctor of Science in Mechanical Engineering
Institution	Postgraduate Studies, Faculty of Mechanical Engineering and Naval Architecture - University of Zagreb
Place	Zagreb
Date	21.06.2004.
INFORMATION ON ADDITIONAL TRAINING	
Year	1992
Place	Split, Croatia
Institution	Maritime faculty University of Split, Croatia
Field of training	Marine engineer
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English - 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian- 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German- 3
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Professional studies: – Thermal and hydraulic machines (430) – Marine propulsion (440)

	Undergraduate studies: – Thermal machines (130) – Marine engineering (140) – Marine machineries and devices (140) – Propulsion systems of small ships (140)) Graduate studies: – Power plant (260) – Thermal machines (270) – Ship propulsion systems (260) Doctoral study: - Expert systems for diagnostic
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	– Lalić, B., Radica, G., Račić, N.: Analysis of exhaust gas emission in the marine two stroke engine, Brodogradnja 67, 2016, ISSN 0007-215X – Jurić T., Radica G., Jelić M.: Experimental Method for Marine Engine's Emissions Analysis, Naše more, 2016, Dubrovnik; DOI 10.17818/NM/2016/1.4;UDK 629.5:621.43; – Grljušić, Mirko; Medica, Vladimir; Radica, Gojmir. Calculation of Efficiencies of a Ship Power Plant Operating with Waste Heat Recovery through Combined Heat and Power Production. // Energies. 8 (2015) , 5; 4273-4299 (članak, znanstveni) – Landeka, P., Radica, G..: Efficiency Increase in Ships Primal Energy System, THERMAL SCIENCE, Year 2016, Vol. 20, No. 2, pp. 1-8 – N. Račić, G. Radica, F. Lušić: Simulation of the marine engine performance with the purpose of predicting parameters, 6th. International Maritime Science Conference,IMSCpage 437-444; ISSN 1847-1498, 2014.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	– Barle, Jani; Franulović, Marina; Jurčević Lulić, Tanja; Kladarić, Ivica; Markučič, Damir; Radica, Gojmir. Izrada kataloga znanja, vještina i kompetencija za studije strojarstva u Republici Hrvatskoj // Zbornik radova međunarodne stručne konferencije ME4CataLOgue / Kozak, D., Barle, J., Markučič, D., Pavletić, D., Matičević, G, Vranešević M. N., Rosandić, Ž, Damjanović D. (ur.). Slavonski Brod : Strojarski fakultet u Slavonskom Brodu, 2014. 21-30 (plenarno predavanje,međunarodna recenzija,objavljeni rad,stručni).
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	– Repowering motor boat 2012-13
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	– Implementacije ishoda učenja u razvoj studijskih programa i kurikuluma; Povezivanje ishoda učenja i metoda poučavanja-Prof. dr. sc. Izabela Sorić, Odjel za psihologiju,Sveučilište u Zadru, i Doc. dr. sc. Slavica Šimić Šašić,Odjel izobrazbu učitelja i odgojitelja,Sveučilište u Zadru, ukupno 24 sata; u sklopu IPA IV projekt: "ME4CataLOgue - Hrvatski katalog znanja, vještina i

	kompetencija za studije strojarstva temeljen na ishodima učenja (za preddiplomski, diplomski i doktorski studij)", aktivni učesnik projekta od 9.2013-2.2015.
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Gold medal for patent on 8th Innovation fair INVENTUM 2014.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,8/5

First and last name and title of teacher	**Damir Sedlar, Ph. D., Assistant Professor**
The course he/she teaches in the proposed study programme	Noise and Vibration Control
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32, 21000 Split
Telephone number	021/305-967
E-mail address	dsedlar@fesb.hr
Personal web page	http://marjan.fesb.hr/~dsedlar/
Year of birth	1976.
Scientist ID	248913
Research or art rank, and date of last rank appointment	Research scientist, March, 2013.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant professor, September, 2012.
Area and field of election into research or art rank	Technical Sciences, field fundamentals technical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	2001
Name of position (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Dynamics, finite element method, noise and vibration, optimization
Function	
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	2009
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	

Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	- Sedlar, Damir; Lozina, Željan; Vučina, Damir. An implementation of structural change detection procedure based on experimental and numerical model correlation. // Journal of sound and vibration. 331 (2012) - Lozina, Željan; Sedlar, Damir; Vučina, Damir. Model Update with Observer/Kalman Filter and Genetic Algorithm Approach. // Transactions of FAMENA. 36 (2012)
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Me4CataLOgue
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Nina Sirković, Ph.D., Assistant Professor**
The course he/she teaches in the proposed study programme	English Language 1, English Language 2 Mechanical Engineering
GENERAL INFORMATION ON COURSE TEACHER	
Address	Vukovarska 117, Split
Telephone number	+385 21 305 716
E-mail address	nina.sirkovic@fesb.hr
Personal web page	
Year of birth	1964
Scientist ID	297651
Research or art rank, and date of last rank appointment	Scientific Associate, 21 November 2012
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Assistant Professor, 21 November 2012
Area and field of election into research or art rank	Humanities, Philology
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	1 June 2007
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Philology
Function	Head of General Course Department
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Philosophy, University of Zagreb
Place	Zagreb
Date	7 December 2010
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	English Language 1 and English Language 2, Undergraduate study programme Communication Skills in English, Undergraduate study programme
Authorship of university/faculty	Kovač, Mirjana M.; Sirković, Nina (2014). *Presentation, Writing*

textbooks in the field of the course	*and Interpersonal Communication Skills.* Split, FESB. Kovač, Mirjana, M..Sirković, N.(2015) *Strategije rješavanja poteškoća u komunikaciji na stranom jeziku*. Hrvatska sveučilišna naklada, Zagreb
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	Kovač, Mirjana, Sirković, Nina, „Peer Evaluation of Oral Presentations in Croatia“, in: *English Language teaching,* Canadian Center of Science and Education, Vol. 5, No. 7, Toronto, 2012. (8-16)
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	Kovač, Mirjana Matea, Sirković Nina, Attitudes towards Communication Skills among Engineering Students, in: *English Language Teaching*, Canadian Center of Science and Education ,Vol.10, No. 3, Toronto, 2017.(111-117)
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	University degree at the Faculty of Philology – pedagogical group
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,8

First and last name and title of teacher	**Ivan Slapničar, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Mathematics 1, Mathematics 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	FESB, R. Boškovića 32, B803
Telephone number	021 305893
E-mail address	ivan.slapnicar@fesb.hr
Personal web page	http://www.fesb.hr/~slap
Year of birth	1961
Scientist ID	30650
Research or art rank, and date of last rank appointment	scientific counselor
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full Professor, permanent position, since 2008
Area and field of election into research or art rank	Area od Natural Sciences, Field of Mathematics
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	FESB, Split
Date of employment	1985
Name of position (professor, researcher, associate teacher, etc.)	Full Professor
Field of research	Mathematics
Function	Head of the Chair of Mathematics
INFORMATION ON EDUCATION – Highest degree earned	
Degree	dr. sc. (dr. rer. Nat.)
Institution	Fernuniversität Hagen
Place	Hagen, Germany
Date	October 1992
INFORMATION ON ADDITIONAL TRAINING	
Year	2014
Place	Cambridge, MA, USA
Institution	Massachusetts Institute of Technology
Field of training	Fulbright-Schuman International Educator/Lecturer Grant
Year	2009/2010
Place	Berlin, Germany
Institution	Technische Universität Berlin
Field of training	FP7 People "Marie Curie" Intra European Fellowship
Year	2001/2002
Place	Logan, UT, SAD
Institution	Utah State University
Field of training	Visiting Professor of Mathematics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (5)
Foreign language and command of foreign language on a scale from 2	

(sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Lecturer of various courses since 1992.
Authorship of university/faculty textbooks in the field of the course	Ivan Slapničar, Matematika 1, FESB, Split, 2002. (Manualia Universitatis studiorum Spalatensis) Ivan Slapničar, Josipa Barić i Marina Ninčević, Matematika 2 – zbirka zadataka, FESB, Split, 2010. (Manualia Universitatis studiorum Spalatensis)
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Jakovčević Stor, Nevena; Slapničar, Ivan; Barlow, Jesse L. **Forward stable eigenvalue decomposition of rank-one modifications of diagonal matrices,** *Linear Algebra and its Applications*. **487** (2015) 301**-**315. 2. Jakovčević Stor, Nevena; Slapničar, Ivan. **Forward Stable Computation of Roots of Real Polynomials with Real Simple Roots**, *Applied Mathematics and Information Sciences*. **11** (2017) 33**-**41. 3. Jakovčević Stor, Nevena; Slapničar, Ivan; Barlow, Jesse L. **Accurate eigenvalue decomposition of real symmetric arrowhead matrices and applications,** *Linear algebra and its applications*. **464** (2015) 62**-**89. 4. Slapničar, Ivan. **Symmetric matrix eigenvalue techniques,** Handbook of Linear Algebra, Hogben, Leslie (ed.). Chapman & Hall / CRC, Boca Raton, 2013, pp. 55-1-55-23. 5. Slapničar, Ivan. **On the spectra of generalized Fibonacci and Fibonacci-like operators**., *Operators and Matrices. **6*** (2012) 49**-**62.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	1. Accurate and fast matriox algorithms and applications, project MZOS No. 372783-1289, 2007- 2013, principal investigator. 2. Optimization of parameter dependent mechanical systems, HRZZ research project No. 9540, 2015-2019, collaborator.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	Prize of the Fernunivesität Hagenu for the best disseration, 1992. Prize of the Croatian Mathematical Society Nagrada for the young scientist, 1996.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on	Evaluations organized by the Quality Enhancement Centre of the University of Split each semester. Average grade is 4.5 on the 1-5 scale.

grading scale and course evaluated)	

First and last name and title of teacher	**Ivica Veža, Ph. D., Full Professor**
The course he/she teaches in the proposed study programme	Business Systems Organisation
GENERAL INFORMATION ON COURSE TEACHER	
Address	Odeska 13, 21000 Split, HR
Telephone number	+385 21 305933
E-mail address	iveza@fesb.hr
Personal web page	
Year of birth	1951.
Scientist ID	095643
Research or art rank, and date of last rank appointment	Scientific Adviser - Mechanical Engineering, 08.03.2001. Scientific Adviser – Fundamental Technical Science 05.07.2006.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 23.01.1998.
Area and field of election into research or art rank	Technical Sciences, Field Industrial engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	1/1/1981
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Plant Layout, Organization, Production Engineering
Function	Head of Chair of Inudstrial Engineering
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Mechanical Engineering and Naval Architecture
Place	Zagreb
Date	9/11/2001
INFORMATION ON ADDITIONAL TRAINING	
Year	1983/84
Place	Stuttgart, Germany
Institution	University of Stuttgart, Fraunhofer – Institut fuer Produktiontechnik und Automatisierung
Field of training	Plant Layout, Simulation
INFORMATION ON ADDITIONAL TRAINING	
Year	1991
Place	Berlin, Germany
Institution	Technical University of Berlin, Fraunhofer IPK
Field of training	Design of Assembly Systems
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Germany (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	

COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Economics and Production Organisation, Undergraduate study programme,
Authorship of university/faculty textbooks in the field of the course	Dulčić, Želimir; Pavić, Ivan; Rovan, Mario; Veža, Ivica: Proizvodni management, Ekonomski fakultet, FESB Split, Split, 1996.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Perić, Tunjo; Babić, Zoran; Veža, Ivica: Vendor selection and supply quantities determination in a bakery by AHP and fuzzy multi-criteria programming. International journal of computer integrated manufacturing. 26 (2013) , 9; 816-829 2. Veža, Ivica; Mladineo, Marko: SUSTAINABILITY THROUGH PRODUCTION NETWORKS. Management and Production Engineering Review. 4 (2013), 4; 33-39 3. Gjeldum, Nikola; Bilić, Boženko; Veža, Ivica. Investigation and modelling of process parameters and workpiece dimensions influence on material removal rate in CWEDT process. International journal of computer integrated manufacturing. 28 (2015) , 7; 715-728 4. Takakuwa, Soemon; Veža, Ivica: Technology Transfer and World Competitiveness. Procedia Engineering. 69 (2014); 121-127 5. Banduka, Nikola; Veža, Ivica; Bilić, Boženko: An integrated lean approach to Process Failure Mode and Effect Analysis (PFMEA): A case study from automotive industry. Advances in Production Engineering & Management. 11 (2016) , 4; 355-365
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	4. Gečevska, Valentina; Čuš, Franci; Chiabert, Paolo; Veža, Ivica: LINKING LEAN PRODUCTION WITH PRODUCT LIFECYCLE MANAGEMENT FOR SUSTAINABLE BUSINESS ENVIRONMENT, DEVELOPMENT OF INTELLIGENT AND INNOVATIVE TOOLS FOR PRODUCTION PROCESS ENGINEERING AND SUSTAINABLE MANAGEMENT, Čuš, F.; Gečevska, V. (Ed.). Maribor, Slovenija: Faculty of Mechanical engineering, Maribor, 2013. 19-39. 5. Čelar, Stipe; Turić, Mili; Dragičević, Srdjana; Veža, Ivica. Digital Learning Factory at FESB – University of Split , ZBORNIK RADOVA YU INFO 2016, 2016. 001-006 6. Veža, Ivica; Gjeldum, Nikola; Mladineo, Marko: Logistics Personal Excellence by Continuous Self-Assessment (LOPEC): Pilot Implementation - Case Studies. Conference Proceedings - MTSM 2014, Split, 2014. 39-46 7. Stojkić, Željko; Veža, Ivica; Bošnjak, Igor. CONCEPT OF INFORMATION SYSTEM IMPLEMENTATION (CRM AND ERP) WITHIN INDUSTRY 4.0, Proceedings of the 26th DAAAM International Symposium, Beč : DAAAM International, 2016. 912-919
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	4. 2008 – 2013 Project TEMPUS-2008-IT-JPCR 144 959, Master Study Program in Product Lifecycle Management with Sustainable Production 5. 2011-2014 LEONARDO DA VINCI Project “LOPEC - Logistics personnel excellence by continuous self-assessment”, FESB Split, University of Reutlingen 6. 2013-2016 Network of Innovative Learning Factories NIL, “System - Learning Factory“, FESB, Split, University of

	Reutlingen 7. 2013-2016 Know-how Exchange on the Consequences and Challenges of the Integration of Key Enabling Technologies in European Manufacturing for the Danube Region, Fraunhofer Institute for Systems and Innovation Research ISI – Karlsruhe 8. 2014-2018 Innovative Smart Enterprise, INSENT, Croatian Science Foundation, Zagreb
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,8/5

First and last name and title of teacher	**Frane Vlak, Ph.D., Associate Professor**
The course he/she teaches in the proposed study programme	Mechanics of materials 1 Mechanics of materials 2
GENERAL INFORMATION ON COURSE TEACHER	
Address	Ruđera Boškovića 32
Telephone number	021305971
E-mail address	fvlak@fesb.hr
Personal web page	
Year of birth	1968.
Scientist ID	233385
Research or art rank, and date of last rank appointment	Scientific Adviser, 11/11/2015
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Associate Professor, 29/9/2011
Area and field of election into research or art rank	Technical Sciences, Field Electrical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	6/6/1995
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Mechanics of deformable solids
Function	Head of Chair of Mechanics
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	13/1/2006
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme	Technical mechanics 1, Mechanics of materials: Professional studies of mechanical engineering and naval architecture, Undergraduate study programme

where it is/was offered, and level of study programme)	Mechanics of materials: University studies of mechanical engineering, naval architecture and industrial engineering, Undergraduate study programme
Authorship of university/faculty textbooks in the field of the course	
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Barle, Jani; Grubišić, Vatroslav; Vlak, Frane. Failure analysis of the highway sign structure and the design improvement. // Engineering failure analysis. 18 (2011) , 3; 1076-1084 (članak, znanstveni). 2. Vlak, Frane; Cvitanić, Vedrana; Vučina, Damir. An approach for reduction of the volume loss in the rigid-plastic FEM using two-step updating procedure. // International journal of mechanical sciences. 53 (2011) , 10; 839-845 (članak, znanstveni). 3. Pavazza, Radoslav; Vlak, Frane; Vukasović, Marko. Bending and torsion of stiffeners with L sections under the plate normal pressure // Advanced Ship Design for Pollution Prevention / Soares, Guedes C. ; Parunov, Joško (ur.). London : CRC Press/Balkema, Taylor & Francis Group, 2010. Str. 121-127. 4. Vlak, Frane; Pavazza, Radoslav; Vukasović, Marko. An approximate analytic solution for the stresses and displacements of thin-walled orthotropic beams subjected to bending // 16th European Conference on Composite Materials ECCM16-Conference Proceedings-Seville, Spain: University of Seville, Spain, 2014. / Paris, Federico (ur.). Seville : University of Seville, 2014. 1-8 (predavanje,međunarodna recenzija,objavljeni rad,znanstveni). 5. Pavazza, Radoslav; Matoković, Ado; Vlak, Frane. An analytical solution for displacements and stresses for mono symmetrical stiffend plate structures under transverse loads // Knjiga sažetaka XX. simpozija Teorija i praksa brodogradnje in memoriam prof. Leopolod Sorta / Žiha, Kalman (ur.). Zagreb : Fakultet strojarstva i brodogradnje, Brodarski institut d.o.o., 2012. 76-76 (predavanje,međunarodna recenzija,objavljeni rad,znanstveni).
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	9.
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	ME4CataLOgoue (Mechanical Engineering for Catalogue) Croatian Catalogue of knowledge, skills and competences for Mechanical Engineering studies (Bachelor, Master and Doctoral study programmes) based on learning outcomes
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken	

in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

First and last name and title of teacher	**Damir Vučina, Ph.D., Full Professor**
The course he/she teaches in the proposed study programme	Computer aided analysis
GENERAL INFORMATION ON COURSE TEACHER	
Address	FESB, R. Boškovića 32, 21000 Split
Telephone number	021 305 969
E-mail address	vucina@fesb.hr
Personal web page	
Year of birth	1962
Scientist ID	129716
Research or art rank, and date of last rank appointment	Scientific Adviser, 2005
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 2005
Area and field of election into research or art rank	Technical Sciences, Fundamental Technical Sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	1985
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	Numerical methods in engineering and optimization
Function	Head of group for modeling and computer-aided analysis
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Fakultet strojarstva i brodogradnje
Place	Zagreb
Date	1993
INFORMATION ON ADDITIONAL TRAINING	
Year	Fulbright grant, Columbia University New York Several courses at CISM Italy
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Computer.aided analysis Optimization methods Programming Graduate courses

Authorship of university/faculty textbooks in the field of the course	D. Vučina, 'Metode inženjerske numeričke optimizacije', Sveučilište u Splitu, FESB 2005 Damir Vučina, 'Primjena računala u inženjerskoj analizi', FESB, 2007
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	**p1.** Ćurković, M.; Vučina, D. 3D Shape acquisition and integral compact representation using optical scanning and enhanced shape parameterization. Advanced engineering informatics. 28 (2014) , 2; 111-126, IF 2.086. **p2.** Vučina, D.; Ćurković, M.; Novković, T. CLASSIFICATION OF 3D SHAPE DEVIATION USING FEATURE RECOGNITION OPERATING ON PARAMETERIZATION CONTROL POINTS. // Computers in industry. 65 (2014) , 6; 1018-1031. IF 1.457. **p3.** Milas, Zoran; Vučina, Damir; Marinić-Kragić, Ivo. MULTI-REGIME SHAPE OPTIMIZATION OF FAN VANES FOR ENERGY CONVERSION EFFICIENCY USING CFD, 3D OPTICAL SCANNING AND PARAMETERIZATION. // Engineering Applications of Computational Fluid Mechanics. 8 (2014), 3; 407-421. IF 0.921. **p6.** Vučina, D.; Lozina, Ž.; Pehnec, I. Ad-Hoc Cluster and Workflow for Parallel Implementation of Initial-Stage Evolutionary Optimum Design. Structural and multidisciplinary optimization. 45 (2012) , 2; 197-222. IF 1.488. **p5.** Vučina, D.; Lozina, Ž.; Pehnec, I. Computational procedure for optimum shape design based on chained Bezier surfaces parameterization. Engineering applications of artificial intelligence. 25 (2012) , 3; 648-667. IF 1.665.
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	s.a.
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	s.a..
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	continuously
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	1. Columbia University, New York, USA, 1986- 1987, dobitnik US Fulbright stipendije 2. Sveučilište u Splitu, za tehničke znanosti, 2014
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	excellent

First and last name and title of teacher	**Dražen Živković, Ph.D. Full Professor**
The course he/she teaches in the proposed study programme	Materials 1, Materials 2, Technology 1, Tribology
GENERAL INFORMATION ON COURSE TEACHER	
Address	Rovinjska 4, 21000 Split, Republic of Croatia
Telephone number	+385 21 305910
E-mail address	Drazen.Zivkovic@fesb.hr
Personal web page	/
Year of birth	1957.
Scientist ID	044701
Research or art rank, and date of last rank appointment	Scientific Adviser, 21/01/2009.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Senior Full Professor, 05/06/2014
Area and field of election into research or art rank	Technical Sciences, Field: Mechanical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Date of employment	13/09/1983.
Name of position (professor, researcher, associate teacher, etc.)	Professor
Field of research	
Function	Head of Mechanical Engineering Technology Department
INFORMATION ON EDUCATION – Highest degree earned	
Degree	PhD
Institution	Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture
Place	Split
Date	04/09/1999.
INFORMATION ON ADDITIONAL TRAINING	
Year	/
Place	/
Institution	/
Field of training	/
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (2)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	Materials, , Basic of Tribology (530) Materials 1, Materials 2, Technology 1, Tribology, (130, 140, 150) Heat treatment and surface protection (263)

Authorship of university/faculty textbooks in the field of the course	Dražen, Živković: Lijevanje, ISBN 978-953-6114-91-7
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	1. Živković, Dražen; Gabrić, Igor; Šitić, Slaven. Popravak zavarivanjem konstrukcija iz titanovih legura. // Strojarstvo. 53 (2011) , 4; 319-326 2. Živković, Dražen; Gabrić, Igor; Šitić, Slaven. Utjecaj niskog i visokog popuštanja na tvrdoću čelika EN 42CRM04. // Tehnički glasnik. 6 (2012) 3. Živković, Dražen; Gabrić, Igor; Šitić, Slaven. Analiza utjecaja parametara toplinske obrade na tvrdoću čelika EN 42CrMo4 // MATRIB 2012 materials/tribology/recycling : zbornik radova = conference proceedings / Željko Alar, Suzana Jakovljević (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2012. 379-386 4. Živković, Dražen; Gabrić, Igor; Šitić, Slaven. Utjecaj toplinske obrade na dinamičku izdržljivost čelika EN 42CrMo4 // International conference Heat Treatment and Surface Engineering - European Opportunities for Croatian Economy : proceedings book = Međunarodno savjetovanje Toplinska obrada i inženjerstvo površina - europske mogućnosti hrvatskog gospodarstva : zbornik radova / Smojan, Božo ; Iljkić, Dario (ur.). Rijeka : Hrvatsko društvo za toplinsku obradu i inženjerstvo površina, 2012. 67-74 5. Ljumović, Petar; Živković, Dražen; Dadić, Zvonimir; Gabrić, Igor. IZBOR MATERIJALA KALUPA ZA VISOKOTLAČNO LIJEVANJE // MATRIB 2014, materials, tribology, recycling / Šolić, Sanja ; Šnajder Musa, Matea (ur.). Zagreb : Hrvatsko društvo za materijale i tribologiju, 2014. 307-317
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	/
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	Projekt: „Računalno optimiranje parametara termalnih procesa obrade metala“, voditelj prof.dr.sc. Božo Smoljan
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	/
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	/
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	4,8/5

3.4. Optimal number of students

The admission quote for the first year of studies is 120.

3.5. Estimate of costs per student

Annual costs of studies per student amount to HRK 25,000.00.

3.6. Plan of procedures of study programme quality assurance

In keeping with the European standards and guidelines for internal quality assurance in higher education institutions (according to "Standards and Guidelines of Quality Assurance in the European Higher Education Area") on the basis of which the University of Split defines procedures for quality assurance, the proposer of the study programme is obliged to draw up a plan of procedures of study programme quality assurance.	
Documentation on which the quality assurance system of the constituent part of the University is based:	
• Regulations on the quality enhancement system of FESB	
• Quality Assurance Handbook of the constituent part	
Description of procedures for evaluation of the quality of study programme implementation: • For each procedure the method needs to be described (most often questionnaires for students or teachers, and self-evaluation questionnaire), name the body conducting evaluation (constituent part, university office), method of processing results and making information available, and timeframe for carrying out evaluation • If procedure is described in an attached document, name the document and the article.	
Evaluation of the work of teachers and part-time teachers	• Student evaluation of quality of instruction and teaching activities conducted through student survey (printed questionnaires) • Survey is organised and conducted by the Quality Enhancement Committee of the Faculty (Committee) • Survey results are processed automatically at the University • Survey is conducted each semester • The Committee presents cumulative results of the survey at the sessions of the Faculty Council. The report is published at the Faculty web site. All procedures are conducted in accordance with the Regulations on organisation and role of the quality assurance system of the University of Split, Regulations on procedure of student evaluation of the quality of teachers and teaching of the University of Split and Regulations on the quality enhancement system of FESB.
Monitoring of grading and harmonization of grading with anticipated learning outcomes	Committee for study programmes in Mechanical Engineering is monitoring the harmonisation of grading and learning outcomes. All the procedures are conducted in accordance with the Rules of procedure of the Faculty Council and the Rules of procedure of the Department, since the Committees for study programmes are bodies of the Faculty Council and

	are accountable to the Faculty Council.
Evaluation of availability of resources (spatial, human, IT) in the process of learning and instruction	• Student evaluation of work performance of administrative and supporting services, learning infrastructure and student life is conducted through e-survey • Evaluation is conducted using an on-line questionnaire which the students complete in each year of study, except the final year • Survey is organised by the Quality Enhancement Centre of the University of Split, and is implemented by the Quality Enhancement Committee of the Faculty (Committee) • Survey results are processed automatically at the University • Survey is conducted every year • Survey results are presented at the Faculty Council sessions and published at the Faculty web site.
Availability and evaluation of student support (mentorship, tutorship, advising)	• Administrative and supporting services are available to students to provide support in their study activities • Supervisors/ mentors are appointed for students' final papers and diploma thesis
Monitoring of student pass/fail rate by course and study programme as a whole	• Analysis of student pass rate by courses and study programmes is carried out once a year • Analysis of pass rate by study programmes is carried out by the University in cooperation with the Committee • Analysis by courses and study programmes is carried out by the Faculty Management Board • Results of both analyses are presented at the Faculty Council sessions and published at the Faculty web site.
Student satisfaction with the programme as a whole	• Student evaluation of work performance of administrative and supporting services, learning infrastructure and student life is conducted through e-survey • Evaluation is conducted using an on-line questionnaire which the students complete following the completion of studies • Survey is organised by the Quality Enhancement Centre of the University of Split, and is implemented by the Quality Enhancement Committee of the Faculty (Committee) • Survey results are processed automatically at the University • Survey results are presented at the Faculty Council sessions and published at the Faculty web site.
Procedures for obtaining feedback from external parties (alums, employers, labour market and other relevant organizations)	• Once every month, the Faculty Management Board meets with the alumni representatives • Once a year, during the annual FESB anniversary event, round tables and workshops are organised with representatives of employers and other stakeholders
Evaluation of student practical education (where this applies)	Student training is not a mandatory part of the programme. Some of the students complete elective-based training abroad
Other evaluation procedures carried out by the proposer	• Internal audit of the quality assurance system is conducted once every year • Self-evaluation is carried out every 5 years All the procedures are conducted in line with the Quality

	Assurance Handbook of FESB.
Description of procedures for informing external parties on the study programme (students, employers, alums)	• All information are available through the Faculty web site: https://www.fesb.hr • Visits to the faculty are organised for high-school students from Split and the wider region • Participation at University fairs • Public media presentations