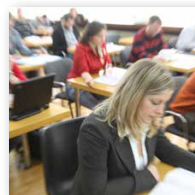
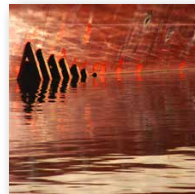
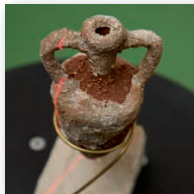
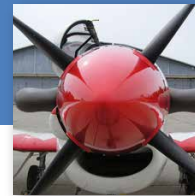


Strategija razvoja

Fakulteta strojarstva i brodogradnje
Sveučilišta u Zagrebu
(2014. – 2025.)

Strategy on the Development of the Faculty of Mechanical Engineering and Naval Architecture University of Zagreb (2014 – 2025)





Sveučilište u Zagrebu
Fakultet strojarstva i brodogradnje
University of Zagreb
Faculty of Mechanical Engineering and Naval Architecture

Strategija razvoja
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Strategy on the Development
of the Faculty of Mechanical Engineering and Naval Architecture
University of Zagreb
(2014 - 2025)



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SVEUČILIŠTE U ZAGREBU
FAKULTET STROJARSTVA
I BRODOGRADNARSTVA



340
godina

Sveučilište u
Zagrebu



Predgovor

Fakultet strojarstva i brodogradnje Sveučilišta u Zagrebu (FSB) već gotovo cijelo stoljeće kontinuirano i odgovorno obavlja svoju zadaću u obrazovanju i odgoju mladih naraštaja, ali i u cjeloživotnoj izobrazbi stručnjaka iz mnogih područja hrvatskoga gospodarstva. Od samih početaka rada ova visokoškolska ustanova izvodi studijske programe strojarstva i brodogradnje, a unazad sad već gotovo dvadeset godina i studij zrakoplovstva.

Uz odgovarajući doprinos domaćem i svjetskom industrijskom razvoju, FSB je rasadnik stručnog znanja iz područja konstruiranja, energetike, proizvodnih tehnologija, inženjerstva materijala, industrijskog inženjerstva, brodogradnje i zrakoplovstva. Na Fakultetu se neprekidno njeguju i razvijaju te u nastavu uključuju najnovije znanstvene spoznaje iz područja motora i vozila, termotehnike i procesne tehnike, računalnog inženjerstva i simulacija, mehatronike i robotike, medicinskog inženjerstva, nanotehnologije, vojne tehnike, mjeriteljstva, osiguranja i upravljanja kvalitetom i dr. U okviru nastavnih, znanstvenih i stručnih aktivnosti razvija se stalna suradnja s brojnim akademskim institucijama u i izvan Hrvatske te s predstavnicima gospodarstva.


U ostvarivanju svoje vizije i provođenjem strateških ciljeva, Fakultet strojarstva i brodogradnje sustavno će se i ubuduće baviti unaprjeđenjem svih svojih aktivnosti, kako bi u suvremenoj Europi te u ukupnim svjetskim istraživačkim i obrazovnim procesima i dalje ostao ravnopravan, prepoznatljiv i konkurentan.

Foreword

The Faculty of Mechanical Engineering and Naval Architecture (FMENA) of the University of Zagreb has been performing competently its role in the education of the young generation as well as in organizing and carrying out lifelong learning programmes for experts from the Croatian industry for almost a century. Since the very beginning, this higher education institution has been offering university programmes in the fields of mechanical engineering and naval architecture, and, for almost twenty years now, in the field of aeronautical engineering as well.

In addition to making a significant contribution to the national and global industrial development, the FMENA has been spreading expert knowledge in the fields of design, energy, production technologies, materials engineering, industrial engineering, naval architecture, and aeronautical engineering. The latest scientific knowledge, gained at the FMENA and in the world, has been constantly introduced into the teaching of courses in the fields of IC engines and motor vehicles, thermodynamics and process engineering, computer aided engineering and simulations, mechatronics and robotics, medical engineering, nanotechnology, military engineering, metrology, quality management and quality assurance, and many others. In the framework of teaching, scientific, and research activities, a great emphasis is placed on promoting cooperation with a number of universities in Croatia and abroad as well as with representatives from industry.

Besides promoting its vision and achieving its strategic goals, the Faculty of Mechanical Engineering and Naval Architec-



Takav strateški pravac podrazumijeva promišljeno ulaganje u sve resurse, ljude a posebno laboratorijske prostore i mogućnosti za znanstveno-istraživački rad radi ostvarenja svog plana i programa te stvaranja što primjerenijih uvjeta za kreativno učenje i rad studenata kao i svih djelatnika Fakulteta.

Strategija razvoja FSB-a usvojena je na 7. sjednici Fakultetskog vijeća održanoj 15. travnja 2014. U njoj su oblikovani temeljni ciljevi koji se u narednom razdoblju žele postići, ali je otvorena i za promjene u skladu s potrebama i vremenom koje je pred nama.

ture will systematically deal with improving all of its activities so as to remain an active and competitive participant in the research and education processes in contemporary Europe and in the world.

Such a strategic direction implies sound investment in all resources, people and particularly in laboratory facilities and the realisation of research potential in order to implement the plan, carry out the programme, and create favourable conditions for creative learning of students and for work of both students and the faculty staff.

The FMENA Development Strategy was adopted by the Faculty Council at its 7th session held on 15 April 2014. The document contains the main objectives set for the next period but it still remains open for changes to be made in line with future requirements and the times.

Dekan / Dean

Prof. dr. sc. Ivan Juraga

Vizija

Fakultet strojarstva i brodogradnje Sveučilišta u Zagrebu se dugoročno (do 2025. godine) mora istaknuti kao jedna od vodećih institucija u području strojarstva, brodogradnje i zrakoplovnog inženjerstva u jugoistočnoj Europi, te svojim znanstveno-nastavnim potencijalima osigurati ključnu ulogu u pokretanju razvoja, te osiguravanju napretka hrvatskog gospodarstva temeljenog na inovacijama.

Misija

Fakultet strojarstva i brodogradnje ima ulogu povezivanja istraživačkog i nastavnog procesa u svrhu stvaranja inovativne i kreativne društvene elite, kao i kreiranju nove vrijednosti transferom rezultata istraživačkog rada za dobrobit gospodarstva. Fakultet u svakodnevnom radu mora slijediti načela inovativnosti kao bitne sastavnice nastavno-istraživačke djelatnosti, koja će kreirati nove znanstvene vrijednosti kao i obrazovati stručnjake sposobne za aktivno i uspješno cjeloživotno usavršavanje.

O Strategiji FSB

Svojom dugom tradicijom Fakultet strojarstva i brodogradnje zauzima posebno mjesto u hrvatskom znanstvenom i visokoškolskom prostoru u području brodogradnje, strojarstva kao i zrakoplovnog inženjerstva. Štoviše, u brojnim područjima FSB ima ekskluzivnost budući da je jedina ustanova u Republici Hrvatskoj (RH) koja ih znanstveno i stručno pokriva. U svim svojim djelovanjima Fakultet mora slijediti načela na kojima se zasniva ustroj modernih tehničkih sveučilišta u Europi i svijetu: integraciju obrazovanja i istraživanja u svrhu podupiranja održive

Vision

The Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb is to distinguish itself as a leading institution in the fields of mechanical engineering, naval architecture and aeronautical engineering in the South-East Europe. Through its research and teaching potentials, the Faculty is to assure its key role in the development and progress of an innovative Croatian industry.

Mission

The mission of the Faculty of Mechanical Engineering and Naval Architecture is to integrate research and teaching in order to create an innovative and creative social elite as well as value added, for the benefit of Croatian industry, through the transfer of research knowledge and results. In its everyday operation, the Faculty has to act on the principle of innovativeness, both in its research and teaching activities, which will create new scientific value and educate experts capable of proactive and successful lifelong learning.

On the Strategy of the FMENA

In its long history, the Faculty of Mechanical Engineering and Naval Architecture has had a unique place in the Croatian scientific and higher education area in the fields of naval architecture, mechanical and aeronautical engineering. In numerous fields, the FMENA holds an exclusive position, being the only institution in the Republic of Croatia (RC) involved in their scientific and professional development. The Faculty operates in accordance with the fundamental principles underlying the organisation of modern technical universities today, both in Europe and across the world, i.e. the integration of education

i inovativne privrede. Kao kruna ovih nastojanja, Fakultet treba stalno podizati razinu svojih istraživačkih rezultata, vidljivu kroz broj objavljenih radova u najkvalitetnijim časopisima, razmjer suradnje s privredom ili kroz broj istraživačkih projekata na kojima je predvodnik ili sudionik. S druge strane, u svakodnevnom funkcioniranju FSB treba voditi računa o sve težim uvjetima financiranja, te stoga kontinuirano raditi na poboljšanju financijskog stanja korištenjem različitih izvora. Istovremeno, treba biti svjestan uvjeta u kojima FSB djeluje. Ovdje je vrlo važan čimbenik ulazak RH u Europsku uniju, koja već ima vrlo precizno definirana pravila djelovanja u kojima RH, a time i FSB, tek trebaju pronaći svoje mjesto. Često puta ovaj sustav djeluje zatvoreno, budući da su unutar EU ljudski i prostorni kapaciteti izgrađivani desetljećima, dok se FSB u njemu tek treba afirmirati.

Ovo je prije svega zadaća mlađih suradnika, posebice onih koji tek ulaze u sustav, koji trebaju biti svjesni promijenjenih uvjeta rada, ali i svih mogućnosti koje im se integracijom RH u EU pružaju. Iznimno je važno na koji će način FSB prići njihovom istraživačkom i stručnom razvoju, kako bi se osigurao kvalitetan kadar s velikim potencijalom razvoja i istraživačke produktivnosti tijekom njihovog radnog vijeka. Iako se na FSB-u nominalno provodi velik broj projekata, često se radi o projektima koji uključuju vrlo mali broj istraživača, te se tako već postojeći kapaciteti troše neracionalno i neravnomjerno. Pored toga, u definiranju ovog dokumenta treba biti svjestan trajno promjenjivih društvenih uvjeta na koje najveći utjecaj imaju financijsko stanje društva, te različiti društveni čimbenici, od kojih najveći utjecaj ima brzo starenje populacije uz sve manji udio mladog stanovništva. Zsigurno jedan od najnepovoljnijih utjecaja na funkcioniranje društva predstavljaju svi negativni procesi koji su doveli do gotovo pot-

and research, aimed at supporting a sustainable and innovative industry. The Faculty has to constantly improve the level of its research results, visible through the number of scientific papers published in the most distinguished scientific journals, the extent of the Faculty's cooperation with industry, as well as through the number of research projects in which it is involved either as a project leader or a participant. On the other hand, in everyday life, the FMENA has to take into account the constantly deteriorating financing conditions, and, therefore, keep striving to improve its financial status through seeking funding from various sources. At the same time, one should be aware of the conditions in which the FMENA operates today. In this respect, a very important factor to be considered is the accession of the RC to the European Union (EU), the organization that has a set of precisely defined rules of action, in which both the RC and the FMENA have to find their niche. Quite frequently, this system seems to be rather self-contained, as human and material resources have been developing for decades in the EU, while the FMENA has yet to establish itself within this environment.

First and foremost, this is a duty of younger associates, especially those entering the system. They have to be aware of the significantly changed working conditions, as well as of all the opportunities that have been opening up for them since the integration of the RC into the EU. It is highly important how the FMENA will approach younger associates' scientific and professional development, in its effort to ensure high quality staff with a great potential for development and research productivity throughout their professional life. Although numerous projects are carried out at the FMENA, quite often they include a limited number of researchers. As a result, the existing resources are utilised uneconomically and unevenly. Thus, this document cannot be drawn up without taking into consideration ever-changing social conditions, largely affected by financial constraints imposed on the society, as well as different

pune deindustrijalizacije društva. No, ovo otvara mogućnost FSB-u da se svojim najboljim istraživačkim i stručnim potencijalima aktivno uključi u nužnu reindustrijalizaciju društva. Pritom, treba se rukovoditi principima istraživačkog rada koji će pomoći privredi u stvaranju nove vrijednosti, o čemu treba voditi računa pri osiguravanju istraživačke infrastrukture, ali i pri prijavi projekata, bez obzira na izvor financiranja.

U tako otežanim uvjetima funkcioniranja gospodarstva, veza između FSB-a i gospodarstva je još važnija, jer može pomoći privredi u reindustrijalizaciji kroz razvoj, ali i transfer visokih tehnologija. No, nemjerljiva je i važnost uključivanja gospodarstva u projekte kao ravnopravnog partnera koji definira ciljeve istraživanja, ali i aktivno uključuje svoje postojeće resurse.

Ulaskom RH u EU zacrtan je politički i društveni okvir u kojem će se naše okruženje razvijati u sljedećem razdoblju. No ovo ne treba priječiti aktivnosti FSB-a u kontaktima s drugim akterima na globalnoj razini, što će FSB-u omogućiti aktivnije sudjelovanje u sredinama u kojima može prednjačiti svojim kapacitetima i sposobnostima. Pored toga, FSB može iskoristiti svoje velike komparativne prednosti, kao europska ustanova duge i bogate tradicije, u odnosu na slabije razvijene sudionike ili one koji se tek razvijaju, a raspolažu znatnim financijskim sredstvima. U ovim istraživačkim i stručnim aktivnostima važno mjesto zauzimaju doktorski studiji, kao sredstvo privlačenja najtalentiranijih mladih ljudi, bez obzira na zemlje iz kojih dolaze, koristeći iznimne prednosti RH kao srednjoeuropske i mediteranske zemlje. S druge strane, treba produbljivati partnerski odnos s najkompetitivnijim srodnim sveučilištima u svrhu podizanja vlastitog istraživačkog, nastavnog i stručnog potencijala.

social influences, especially a rapidly aging population with a constantly decreasing share of younger people. Without any doubt, all those negative processes, resulting in almost total deindustrialisation of Croatia, have had a disastrous influence on the society. However, this opens up opportunities for the FMENA to get proactively involved in an urgent reindustrialisation of the society, using its best research and professional potentials. This process should be based on research principles because that will help Croatian industry to create new value, something that should be taken into account not only when procuring research infrastructure, but also in grant applications, regardless of the source of financing.

In this complex business environment, the relation between the FMENA and industry has become even more important, since it can enhance the process of reindustrialisation and the transfer of advanced technologies. It is, however, extremely important for industry to be included in different projects as an equal partner that will define the objectives of research, while bringing in its own existing resources.

The accession of the RC to the EU has defined a political and social framework within which our environment will be developing in the future. Nevertheless, this should not prevent the FMENA from getting in contact with other stakeholders globally, thus enabling an active participation of the Faculty in research and educational contexts in which it can be a forerunner, due to its resources and abilities. In addition, the FMENA can take its great comparative advantages, being a European institution of a long and rich tradition, over less developed parties involved, or the ones that are still developing, but possess substantial financial assets. Among the FMENA's research and professional activities, doctoral studies hold an important position, as a means of attracting the most talented young people from all over the world, thus taking an enormous advan-

Nastavni proces, kao jedan od osnovnih stupova razvoja FSB-a unutar Sveučilišta, mora biti neraskidivo povezan i sa svim ostalim aktivnostima. Zasigurno, problemi nastali deindustrijalizacijom društva izravno utječu na nastavni proces, budući da bitno smanjuju mogućnosti praktičnog rada povezanog s gospodarstvom, kao i kvalitetne mogućnosti zapošljavanja naših studenata. S druge strane, FSB mora trajno pratiti procese koji se događaju u gospodarstvu RH te aktivno i učinkovito na njih reagirati promjenama u sadržaju studija, kao i metodama poučavanja. Od iznimne je važnosti za FSB cjeloživotno obrazovanje kao proces koji će omogućiti trajnu razmjenu ideja svih sudionika, a u svrhu konstantnog podizanja razine stručnog znanja, ali i trajnog unaprijeđivanja nastavnog procesa. Izniman tehnološki razvoj, kojega smo svjedoci, događa se i u nastavnim tehnologijama, u čemu FSB mora biti aktivan sudionik. Ovom procesu treba pristupati kritički i selektivno, kako se u njemu ne bi izgubili oni potencijali i sposobnosti koji su dugotrajno razvijani unutar ustanove. Visoke tehnologije trebaju biti sredstvo za stvaranje novih metoda podučavanja, no pri tome se ne smije izgubiti izravan kontakt sa studentima, te je vrlo opasan proces potpune informatizacije i postupne depersonalizacije nastavnog procesa. Nagrađivanje i poticanje, kako nastavnika tako i studenata, treba i nadalje biti jedan od važnih aspekata djelovanja FSB-a u svim područjima, pa tako i nastavnom. Nadalje, interdisciplinarnost treba biti važan aspekt nastavnog procesa, budući da su u modernim industrijskim tokovima izdvojene tehničke discipline gotovo u potpunosti nestale, te je integracija i sustavno promišljanje njihov sastavni dio.

FSB mora trajno razvijati sustav vlastite promocije kako bi što je moguće više naglašavao svoju prisutnost u društvu kao jedna od iznimno važnih sastavnica Sveučilišta. Ovo

stage of the RC as a Central European and Mediterranean country. On the other hand, partnerships with most competitive related universities should be deepened, with the aim of increasing our own research, teaching and professional capabilities.

The teaching process, as one of the essential pillars of the FMENA's progress within the University, has to be closely related to all other activities as well. There is no doubt that the problems caused by the deindustrialisation of the society, directly influence the teaching process, significantly decreasing the possibilities of practical work relevant to industry, as well as quality employment opportunities for our students. On the other hand, the FMENA has to constantly monitor processes taking place in Croatian industry, actively and efficiently responding to them by modifying both the curricula and syllabi and the teaching methods accordingly. The FMENA has recognised life-long learning as an important process that will enable a permanent exchange of ideas among all the parties involved. The aim is to keep improving both the level of professional knowledge and of teaching. We are all witnessing enormous advancements in technology, also being introduced in teaching. The FMENA has to be an active participant in this process. However, this process should be approached in a critical and selective way, not to lose those potentials and abilities that have been developed at the Faculty over years. Advanced technologies have to serve the purpose of creating new teaching methods, without breaking a direct contact with students, and avoiding a complete informatisation and a gradual depersonalisation of the teaching process. Rewarding and encouraging, both teachers and students, has to remain one of the major aspects of the FMENA's policy in all areas, including teaching. Furthermore, teaching has to be interdisciplinary because individual technical disciplines have almost completely disappeared from modern industry, giving way to an integrated and systematic thinking.

ima za svrhu predstavljanje rezultata naših aktivnosti, no u isto vrijeme služi i daljnjoj integraciji FSB-a u sve društvene tokove. FSB mora aktivno raditi i na svom pozicioniranju u društvu kako bi što učinkovitije mogao promovirati vrijednosti koje razvija, a koje su od iznimne važnosti za društvo. No, FSB uključivanjem relevantnih sudionika u svoje svakodnevne aktivnosti kroz odgovarajuća tijela (kako postojeća tako i novoosnovana) omogućuje protok ideja od društva prema FSB-u u svrhu boljeg djelovanja FSB-a u skladu sa širim društvenim interesom. FSB treba biti svjestan i svoje uloge u onim dijelovima društva koji su od iznimne važnosti za sigurnost i obranu. Naime, nema niti jednog fakulteta unutar RH osim FSB-a koji pokriva tako široko područje tehnike, pri čemu znatan broj tehničkih grana kojima se FSB bavi predstavlja osnovu za razvoj velikog broja tehnologija u području sigurnosti i obrane, čime je važnost FSB u ovom sektoru još više naglašena.

Razvoj i unaprjeđivanje kadrovskih potencijala predstavlja zasigurno jedan od najvažnijih strateških ciljeva u razvoju FSB-a. Neki od procesa koji se odvijaju unutar znanstveno-nastavnog sustava RH nužno i od nas zahtijevaju korenite promjene, kao sastavnog dijela Sveučilišta. Postupno, ali nužno, prilagođavanje broja nastavnika u svim zvanjima, zahtijeva od FSB-a ustrojavanje vlastitog sustava upravljanja ljudskim potencijalima, pri čemu je kadrovska politika samo jedan njegov dio. S druge strane, potrebno je transparentno i jasno definirati način na koji će se FSB odnositi prema svojim najiskusnijim nastavnicima i prema kojim će kriterijima procjenjivati potrebu za njihovim ostankom na FSB-u nakon definiranog zakonskog roka. Taj proces je neupitno povezan i s brigom o ulasku novih mladih ljudi u sustav, dodjeljivanjem stalnih nastavnčkih mjesta samo istraživački i stručno istaknutim pojedincima. Stoga, oba ova procesa nalažu definiranje vlastitih kriterija

Being one of the most prominent constituent faculties of the University, the FMENA has to keep developing a system of self-promotion, making itself as visible and present in society as possible. By doing so, the results of its activities will be presented and the FMENA better integrated into the community. The FMENA has to strengthen its position in society in order to promote more efficiently the values it fosters, the values that are of the highest importance for the society. By including relevant partners in its everyday activities through respective existing and newly-founded bodies, the FMENA will enable a free flow of ideas from the society to the Faculty. This will further ensure a better performance of the FMENA in accordance with wider social interests. The FMENA also has to be aware of its role in the areas of security and defence. Namely, no other faculty in the RC covers such broad technical areas as the FMENA does. A substantial number of technical disciplines studied at the FMENA make a nucleus of the development of various security and defence technologies, highlighting the importance of the FMENA in this field.

The development and improvement of human resources, without any doubt, represent one of the most important strategic objectives in the development of the FMENA. Some of the processes going on in the Croatian scientific and teaching system definitely require radical changes at the FMENA as an integral part of the University. A gradual, but inevitable, adjustment of the number of teachers at the FMENA, regardless of their rank, calls for the development of a customised system of human resources management, personnel policy being just one of its segments. On the other hand, it is necessary to transparently and clearly define the attitude that the FMENA will adopt towards its most experienced teachers, once they have reached the state retirement age. A methodology and the criteria for evaluating the need for continuing their employment at the FMENA will also have to be established. This

za napredovanje u svim fazama nastavničke karijere, koji moraju uključivati kvantitativne, ali i kvalitativne, pokazatelje uspješnosti u svim područjima djelovanja pojedinca, pri tome prateći i one inicijative koje će potaknuti Sveučilište.

Uz nepobitne prednosti, uvođenje Bolonjskog procesa je posredno ili neposredno uzrokovalo brojne nastavne probleme s obzirom na to da je nastavni sustav postao vrlo razlomljen, što uz vrlo velik broj kolegija, koji su nužni kako bi nastavnici ostvarili potrebno opterećenje, stvara vrlo neravnomjerno opterećenje nastavnika, posebice mjereno prema broju studenata / nastavnih grupa. Ovaj problem Strategija mora vrlo jasno istaknuti. Isto tako, FSB mora otvoriti i mogućnost financiranja i napredovanja nastavnika, posebice onih u najvišim zvanjima, iz fondova ili zaklada, pod istim uvjetima kako to vrši Ministarstvo obrazovanja, znanosti i sporta (MZOS).

Vidljivo je da u sustavu upravljanja FSB-a postoji vrlo velik prostor za napredak. Informatizacija ne znači samo uvođenje novih računalnih programa, nego prije svega zahtijeva sustavno i precizno definiranje pojedinih faza provođenja svih aktivnosti FSB-a, kao i potrebnih ljudskih resursa. To je prvi korak u stvaranju učinkovitog i jednostavnog sustava upravljanja, koji je transparentan i minimalan po zahtjevima za zaposlenike, uz korištenje većeg broja međuradnji nevidljivih krajnjem korisniku. Posebno mjesto pripada organizaciji financijskog poslovanja, koje nužno mora, kroz jednostavan i učinkovit sustav, biti u stanju financijski pratiti i najzahtjevnije projekte, domaće i međunarodne, bez obzira na izvor financiranja.

Racionalno i efikasno upravljanje prostorom i opremom jest, uz ljudske potencijale, onaj dio Strategije koji je čvrsto povezan s učinkovitim ispunjavanjem svih ostalih njezinih

process is, without any doubt, closely related to taking care of young people entering the system, by allocating permanent teaching positions only to those individuals with an exceptional research and educational record. Therefore, for both of these processes, customized advancement criteria in all the phases of a teaching career have to be established. They must include both quantitative and qualitative performance indicators of someone's activities, at the same time complying with the initiatives that will be launched by the University.

Regardless of the undisputed advantages, the implementation of the Bologna process has caused directly or indirectly numerous problems in the educational process as the teaching system has become very fragmented. In addition, the large number of subjects that are necessary for every member of the teaching staff to have the same teaching load, creates rather unequal workload, especially when measured by the number of students and teaching groups. This problem has to be clearly stated within this document. In addition, the FMENA has to open up the possibility of financing and advancement of the teaching staff members, especially of those in the highest ranks, from foundations or trust funds under the same conditions as carried out by the Ministry of Science, Education and Sports (MSES).

It is evident that there is a lot of room for improvement in the management system of the FMENA. Informatisation refers to much more than just implementing new computer programs, it first and foremost requires the systematic and precise defining of each phase of every activity at the FMENA, as well as in the field of human resources. This is a first step in creating an efficient and simple management system, that is transparent and with minimal requirements for employees. Furthermore, the system should utilise a large number of intermediate steps not visible to the end user. Special attention should be paid to

ciljeva, a u svrhu cjelovitog razvoja FSB-a. Ustanova mora trajno raditi na povećanju iskoristivog prostora, te povećanju kvalitete i vrijednosti opreme, naročito one koja će dati vrhunske znanstvene rezultate te pomoći stvaranju dodane vrijednosti hrvatskoj privredi. Istovremeno, od sustava se očekuje visok stupanj koordinacije i racionalizacije u korištenju.

Tako definirana Strategija FSB-a predstavlja osnovni dokument prema kojem će se usmjeravati, ali i vrednovati sve buduće aktivnosti unutar Ustanove. Uspješno ispunjavanje ciljeva Strategije, sa svrhom ostvarivanja ideja misije i vizije, nužno zahtijeva i donošenje te provođenje detaljnog akcijskog plana. Samo tako Fakultet strojarstva i brodogradnje može uspješno izvršavati svoju buduću ulogu kao prepoznatljiva, iznimno uspješna te jedna od stožernih sastavnica Sveučilišta u Zagrebu, kao i odgovoriti svim izazovima koji se pred Fakultet postavljaju.

the organization of financial operations, which have to be conducted within a simplified and efficient system, and have to be able to back financially even the most complex projects, domestic and international, regardless of the source of financing.

The rational and efficient management of the workspace and equipment is, together with human resources, part of the Strategy that is firmly connected with the efficient fulfilment of all of its objectives, which would result in the full development of the FMENA. The institution has to work permanently on enlarging useful workspace, and increasing the quality and value of the equipment, especially those that will lead to top scientific results and help in creating added value to the Croatian economy. Concurrently, it is expected that the system would exhibit a high degree of coordination and rationalisation in use.

The Strategy of the FMENA thus defined represents a fundamental document by which all future activities within the institution would be synchronized and valued. The successful fulfilment of all objectives of the Strategy, with a view of efficient implementing the ideas of the mission and vision, requires the development and implementation of a detailed action plan. Only in this way, the FMENA can successfully perform its future task as a distinguished, highly successful, and one of the essential constituents of the University of Zagreb, as well as respond to all challenges that it would be confronted with.



Istraživačko-inovacijska strategija FSB-a

Opći cilj 1:
Unaprijediti istraživački potencijal Fakulteta

Posebni ciljevi:

- 1.1. Osnaživati položaj Fakulteta kako bi bio jedna od vodećih istraživačkih ustanova u području jugoistočne Europe u disciplinama koje Fakultet pokriva istraživačko-nastavnim djelovanjem
- 1.2. Afirmirati ustanovu kao istraživački fakultet s izrazitom integracijom nastave i istraživanja uz uključivanje studenata u istraživanje, stvarajući efikasan ciklus:
obrazovanje → istraživanje → inovacije
- 1.3. Unaprijediti konkurentnost i znanstvenu izvrsnost istraživača kroz znatno veći udio znanstvenih radova objavljenih u najkvalitetnijim časopisima
- 1.4. Osigurati održivost znanstvenog procesa kroz pozitivne mjere za osiguravanje nužnih financijskih sredstava uzimajući u obzir negativne društvene trendove (nedovoljna istraživačka komponenta u domaćoj industriji)
- 1.5. Povećati financiranje iz svih dostupnih izvora (prije svega međunarodnih, ali i domaćih) u svrhu omogućavanja održivosti visoko kvalitetnih istraživanja
- 1.6. Ojačati djelovanje FSB-a u istraživačkom procesu u uvjetima iznimne konkurentnosti ostalih sudionika iz EU

Research and Innovation Strategy of FMENA

General objective 1:
Improve the research potential of the Faculty

Specific objectives:

- Strengthen the position of the Faculty to be one of the leading research institutions in the South-East Europe in the areas of research and teaching activities the Faculty is responsible for*
- Establish the institution as a research faculty with pronounced integration of teaching and research through the inclusion of students in research, thus creating the efficient cycle:
education → research → innovation*
- Improve the competitiveness and research excellence of researchers through a significantly higher proportion of high quality scientific papers published in the most relevant journals*
- Ensure the sustainability of the research process through positive measures as to provide essential financial resources, taking into account the negative domestic societal trends (insufficient research activities financed by the national industry)*
- Increase the research financing from all available resources (primarily international, but also national) as to enable the sustainability of high quality research*
- Enhance the functioning of the FMENA in the conditions of fierce competitiveness of other EU stakeholders involved in the research process*

- 1.7. Izvršiti okrupnjavanje istraživačkih resursa na FSB-u – okupiti istraživače unutar kuće na manjem broju interdisciplinarnih istraživačkih projekata; u tom smislu ojačati i utjecaj Centra za transfer tehnologija kao mjesta povezivanja gospodarstva i Fakulteta na takvim interdisciplinarnim projektima
- 1.8. Poticati razvoj mladih znanstvenika koji su autonomni, kreativni i poduzetni, koji imaju globalno prepoznatu vrijednost te su sposobni za znanstvenu karijeru kako na sveučilištu tako i na institutima ili u gospodarstvu

Perform the concentration of research resources within the FMENA – to gather researchers within the institution on a smaller number of highly interdisciplinary research projects; within these activities, it is necessary to increase the influence of the Centre of Technology Transfer (CTT) as the focal point in the interconnecting of industry and the Faculty in such interdisciplinary projects

Encourage the professional development of young scientists who are autonomous, creative and enterprising, who have globally recognized results, and are capable of building a successful research career at the university as well as in institutes or industry



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| 1.9. | Razvijati znanstvenu infrastrukturu prvenstveno namijenjenu istraživanjima koja će gospodarstvu pružiti dodanu vrijednost; u razvoju infrastrukture maksimalno se uklopiti u europske instrumente financiranja (težiti kompatibilnosti, pogotovo kad se radi o velikim infrastrukturnim ulaganjima) | <i>Develop research infrastructure which is primarily intended for the high quality research that can provide industry with some added value; in the development of infrastructure, it is necessary to be coherent with the European financial instruments as much as possible (to aim for compatibility, especially if large infrastructural investments are to be realised)</i> |
| 1.10. | Povećati uspješnost doktorskog studija, a time i njegov ugled, pri čemu se uspješnost mjeri udjelom doktoranada koji obrane doktorat u 4 godine studija | <i>Increase the success rate of the doctoral studies and thereby its reputation, where the success rate is measured by the proportion of the students who complete and defend their thesis in 4 years' time</i> |

Opći cilj 2:

Unaprijediti istraživački utjecaj Fakulteta na gospodarstvo

Posebni ciljevi:

- 2.1. Trajno vrednovati utjecaj aktivnosti FSB-a na gospodarstvo kroz broj industrijskih partnera koji aktivno sudjeluju u zajedničkim projektima, broj projekata direktno financiranih iz industrije i broj publikacija u koautorstvu s partnerima iz industrije
- 2.2. Stvoriti i razvijati mehanizme kojima će se smanjiti potencijalne prijetnje za razvoj znanosti i društva u cjelini, kao što su ekonomske, demografske, geopolitičke i druge
- 2.3. Osigurati dovoljan broj istraživačkih kadrova kako bi se stvorila kritična masa potrebna za održivost onih područja gospodarstva koja osiguravaju najveću dodanu vrijednost te imaju najveću društvenu važnost

General objective 2:

Improve the research influence of the Faculty on the economy

Specific objectives:

- Continuously evaluate the effect of activities at FMENA onto the industry through the number of industrial partners collaborating on research projects, the number of industrially funded projects and the dissemination produced in cooperation with the industrial partners*
- Develop and improve mechanisms that would diminish all potential threats to the development of science but also the society in general, such as economical, demographical, geopolitical and other threats*
- Ensure sufficient number of researchers as to create the critical mass necessary for sustainability of those industrial areas that achieve the highest added value, and have the strongest societal impact*

- 2.4. Podizati razine kompetencija inženjera iz gospodarstva i stručnog znanja znanstvenih istraživača usmjeravanjem istraživanja prema potrebama gospodarstva
- Direct the research projects towards solving problems in the industrial sector in order to increase the levels of competencies of engineers working in the industrial sector, as well as the technical knowledge of the research scientists at the FMENA*
- 2.5. Poticati mlade istraživače da rade na proizvodima i inovativnim rješenjima koja odgovaraju potrebama tržišta čime se olakšava njihovo zapošljavanje kao i samozapošljavanje u gospodarstvu
- Encourage young research scientists to develop products and innovative solutions which satisfy the market demand, which facilitates their employment and self-employment in the industry*
- 2.6. Usmjeriti se na primijenjena istraživanja koja će gospodarstvu stvoriti visoku dodanu vrijednost uz veliki stupanj inovativnosti
- Be focused on the applied research that will create high added value for the economy, with a high level of innovation*
- 2.7. Kontinuirano razvijati poslijediplomski specijalistički studij s ciljem da postane fleksibilan okvir za transfer znanja i tehnologija između FSB-a i gospodarstva, a u kojemu bi partneri iz gospodarstva birali najefikasnije načine za ostvarivanje svojih visokotehnoloških ciljeva
- Continuously develop the postgraduate specialist studies with the objective to transform it into a framework for knowledge and technology transfer between FMENA and the industry, where industrial partners can choose the most effective methods for reaching their high-tech objectives*
- 2.8. Osnajivati suradnju s drugim tehničkim i prirodoslovnim fakultetima kroz zajedničku prijavu nacionalnih i međunarodnih kompetitivnih istraživačkih projekata te osnivanjem relevantnih interdisciplinarnih studija
- Strengthen the collaboration with other technical and natural sciences faculties through joint application for national and international competitive project fundings and by founding relevant interdisciplinary educational programs*

Opći cilj 3:
**Unaprijediti međunarodnu istraživačku vidljivost
Fakulteta**

Posebni ciljevi:

- 3.1. Razvijati intenzivnu međunarodnu suradnju radi boljeg međunarodnog povezivanja i time povećanja vlastite istraživačke vrijednosti
- 3.2. Otvoriti mogućnost zapošljavanja najboljih kadrova bez obzira na zemlju iz koje dolaze - ovo mora vrijediti za međunarodne, ali i nacionalne projekte, kako bi se anulirao manjak kreativnih mladih istraživača unutar zemlje radi nepovoljnih demografskih kretanja
- 3.3. Znanstveno se uklopiti u europske istraživačko-inovativne inicijative koje su definirane u Obzoru 2020, kao i one koje će iza toga slijediti
- 3.4. Osigurati internacionalizaciju doktorskog studija te mehanizme za privlačenje najboljih stranih kandidata, čime će se ostvariti doktorati koji rezultiraju znanstvenom izvrsnošću. Poticati mobilnost doktoranada sustavnim okvirom za davanje financijskih potpora za mobilnost. Poticati pisanje doktorata na engleskom jeziku te poticati pisanje doktorata po skandinavskom modelu. Poticati i dati podršku za pokretanje i vođenje dvojnih doktorata
- 3.5. Intenzivirati istraživačku suradnju s izvan europskim područjima gdje, uz najrazvijenije zemlje Zapada, posebno mjesto zauzimaju zemlje BRIK, Bliski i Daleki istok, kao i intenzivirati znanstvenu suradnju sa zemljama u Srednjoj Europi sličnog stupnja razvoja kao RH

General objective 3:
**Improve the international research visibility
of the Faculty**

Specific objectives:

- Develop intensive international cooperation aimed at better international cohesion, and increased in-house research potentials as a consequence*
- Open the possibility to employ the best applicants regardless of the country of origin - this has to be applied to international as well as to national projects, as to reduce the deficit of creative young researchers within Croatia, due to the unfavourable demographic trends*
- Be fully coherent in research with the European research and innovation initiatives defined in the Horizon 2020, as well as those to be developed after its termination*
- Ensure the internationalization of the doctoral studies, and mechanisms to attract the best foreign candidates, which would result in theses of highest scientific value. Facilitate the mobility of doctoral students through a systematic funding framework. Instigate doctoral theses written in English as well as the Scandinavian model for theses. Encourage and support joint doctoral theses*
- Intensify research cooperation with countries outside the EU, where concurrently with the most developed Western countries, particular emphasis should be placed to BRIC, the Middle and Far East countries; it is necessary to intensify cooperation with the Middle European countries on the industrial development level similar to the Croatian*

Nastavna strategija FSB-a

Opći cilj 4:

Kontinuirano revidirati i osuvremenjivati studijske programe

Posebni ciljevi:

- 4.1. Sukladno potrebama društva i gospodarstva, tehnološkog razvoja i napretka, ponuditi spektar novih i revidiranih studijskih programa i profila iz područja strojarstva, brodogradnje, zrakoplovnog inženjerstva
- 4.2. Povećati udio laboratorijskog, praktičnog i projektnog rada studenata
- 4.3. Kontinuirano pratiti i usklađivati stvarno opterećenje studenata i predviđene ECTS bodove po pojedinim predmetima i modulima studijskih programa
- 4.4. Usklađivati upisne kriterije s obzirom na potrebne ulazne kompetencije za svaku razinu studija
- 4.5. Poticati i nagrađivati izvannastavne aktivnosti studenata koje doprinose ugledu Sveučilišta, Fakulteta i akademske zajednice te podižu razinu znanja pojedinca i društva
- 4.6. Kontinuirano pratiti pokazatelje studiranja s ciljem povećanja efikasnosti i uspjeha
- 4.7. Razvijati i nadopunjavati studijske programe prema rezultatima najnovijih znanstvenih istraživanja i novih metodičkih spoznaja, stvarajući inženjere za budućnost u kojoj će tehnologije dominantno oblikovati okolinu
- 4.8. Osnovati združene studijske programe s istaknutim institucijama
- 4.9. Razvijati i pružati različite oblike cjeloživotnog obrazovanja

Educational Strategy of FMENA

General objective 4:

Continuously review and update the curricula

Specific objectives:

- Provide a range of new and revised educational programs and profiles in the fields of mechanical engineering, naval architecture and aeronautical engineering in accordance with the social and industrial needs*
- Increase the proportion of laboratory, practical and project work in the curriculum*
- Continuously monitor and bring the actual requirements into line with the ECTS points assigned to particular courses and modules of the curricula*
- Bring the enrolment criteria into line with the required initial competences at each study level*
- Encourage and award student extracurricular activities which contribute to the reputation of the University, the Faculty and academic society, and which improve the individual knowledge as well as the knowledge of the society*
- Continuously monitor the study indicators with a view to increasing efficiency and success.*
- Develop and complement educational programs according to the results of the most recent scientific research and new methodological insights and educate the engineers of the future in which the technology is dominantly shaping the environment*
- Establish joint educational programs in collaboration with prominent institutions*
- Develop and provide diverse modes of life-long learning*

Opći cilj 5:
Unaprjeđivati nastavne metode i tehnologije

Posebni ciljevi:

- 5.1. Osiguravati poticajno i kreativno okruženje za učenje i poučavanje te mijenjati tradicionalni oblik predavanja u proaktivno poučavanje/učenje
- 5.2. Poticati odgovoran pristup studiranju, usvajanju znanja i vještina te novih spoznaja na svim razinama studija. Vrednovati aktivan rad u studentskim udrugama putem formalnih kolegija i neformalnog priznavanja postignuća
- 5.3. Učenje i poučavanje temeljiti na rješavanju problema u interdisciplinarnom kontekstu struke. Mentoriranim pristupom studente poticati na kritičko promišljanje i analizu problema, timski rad, kreativnost, inovativnost, poduzetnost te profesionalnu etičnost
- 5.4. Primjenjivati suvremene nastavne metode tehnologijama e-učenja, uz kontinuirano unaprjeđenje standarda razvoja nastavnih online sadržaja i sustava njegovog vrednovanja
- 5.5. Razvijati i unaprjeđivati vrednovanje stečenih kompetencija u odnosu na planirane ishode učenja
- 5.6. Sustavno stvarati i održavati okruženje kojime se studente od samog početka studija priprema i potiče na međunarodnu mobilnost
- 5.7. Uspostaviti mehanizme unaprjeđivanja i vrednovanja nastavničkih kompetencija
- 5.8. Poticati i nagrađivati izvrsnost u nastavi i akademskim postignućima studenata i nastavnika
- 5.9. Poticati povezivanje nastavnika i studenata putem izrade zajedničkih publikacija, čime se studenti pripremaju za znanstveni i stručni rad

General objective 5:
Continuously improve educational methods and technologies

Specific objectives:

- Provide the stimulating and creative environment for learning and teaching, and substitute the traditional teaching forms with proactive teaching/learning*
- Stimulate the responsible approach to studying, to the acquisition of new knowledge and competences as well as to new insights on all study levels. Reward the active participation in student associations through formal courses and through informal acknowledgement*
- Learning and teaching activities should be based on the problem solving approach in the interdisciplinary context of the profession. Through mentoring stimulate students to critical thinking and problem analysis approach, teamwork, creativity, innovation, entrepreneurship and professional ethics*
- Apply the contemporary educational methods via the e-learning technologies, and continuously improve the standards of educational materials available online as well as the corresponding evaluation system*
- Develop and promote the evaluation of acquired competences with regard to the expected learning outcomes*
- Systematically create and maintain the environment in which the students are prepared and encouraged from the beginning of the studies to exploit international mobility programs*
- Establish mechanisms for the improvement and evaluation of teaching competences*
- Encourage and reward teaching and academic achievements among students and teaching staff*
- Encourage the collaboration between teachers and students through joint publications whereby the students are being prepared for scientific and technical work*

Strategija FSB-a u odnosu prema dionicima

Opći cilj 6:

Promicati FSB na svim razinama

Posebni ciljevi:

- 6.1. Intenzivirati korištenje svih dostupnih medija i načina promicanja rada i uloge FSB-a na svim razinama
- 6.2. Formirati Savjet fakulteta u kojemu su članovi bivši studenti zaposleni u gospodarstvu, i slična tijela koja će imati istaknutu savjetodavnu ulogu te promicati interese i utjecaj FSB-a, kao i informiranost o njegovim postignućima
- 6.3. Aktivno predstavljati aktivnosti Fakulteta među dionicima iz kojih dolaze kvalitetni budući studenti te aktivno podizati svijest o značenju tehničke struke u stvaranju inovativnog okruženja, a sa svrhom stvaranja nove vrijednosti
- 6.4. Predstavljati tehnologije ili znanja razvijene unutar naših organizacijskih jedinica, laboratorija, radionica, studentskih udruga ili projekata
- 6.5. Informirati o smjerovima razvoja FSB-a u svim područjima njegovog djelovanja, te aktivno pratiti i djelovati temeljem povratnih informacija koje su rezultat ovih aktivnosti
- 6.6. Isticati kvalitete i kapacitete FSB-a u ulozi potencijalnog nositelja razvoja (razvijanje i certificiranje novih proizvoda i tehnologija)

Strategy of FMENA on the Relations with Other Stakeholders

General objective 6:

Promote FMENA at all levels

Specific objectives:

- Make widespread use of all available mass media and ways of promoting the FMENA, its role and work at all levels*
- Establish Advisory Board comprising FMENA alumni working in the industry, and similar advisory bodies which will have a prominent consultative role and promote interests and influence of the FMENA, as well as inform about its achievements*
- Take an active part in presenting the activities of Faculty among stakeholders that educate prospective successful students. Furthermore, raise the awareness of the significance of engineering profession in the creation of an innovative environment with the aim of creating new values*
- Present the technologies or knowledge developed within our organisational units, laboratories, workshops, student associations, and projects*
- Inform about directions of development of the FMENA in all areas of its activity and closely monitor and act according to the feedback*
- Highlight the qualities and capacities of the FMENA as a prospective leader in the development and certification of new products and technologies*

Opći cilj 7:
Intenzivirati aktivnosti AMAC-FSB-a

Posebni ciljevi:

- 7.1. Održavati stalne i aktivne odnose s bivšim studentima FSB-a kroz predstavljanje njihovih aktivnosti, kao i potreba, te područja razvoja njihovih ili sličnih tvrtki/ ustanova
- 7.2. Otvarati mogućnosti nastavka aktivnosti i uključivanja umirovljenih zaposlenika FSB-a (naročito po idejama i uspješnosti istaknutih profesora) u razvojno-istraživačke projekte putem ugovora s FSB-om, ili nekom organizacijskom strukturom unutar CTT-a
- 7.3. Izraditi, obnavljati te objaviti na web stranicama popis najuspješnijih studenata; promicati istaknute pojedince AMAC - FSB-a, uključujući i one koji nisu ostali vezani za matičnu struku, a svojim djelovanjem ostvaruju iznimne rezultate

Opći cilj 8:
Osnaživati suradnju s ostalim dionicima

Posebni ciljevi:

- 8.1. Pratiti statistike o zapošljavanju u RH i odljevu u inozemstvo, kao i zapošljavanju po granama struke te temeljem toga definirati upisne kvote FSB-a

General objective 7:
Stimulate activities of the alumni association AMAC-FSB

Specific objectives:

- Maintain permanent and proactive relations with the FMENA alumni by presenting their activities and needs as well as the development areas of their companies/ institutions*
- Open up the possibility of including retired FMENA employees (distinguished professors known by their ideas and success, in particular) in research and development projects through an agreement with the FMENA or an organisational unit within the Centre for Technology Transfer*
- Create, update and publish a list of the most successful students on the web site; promote outstanding members of the AMAC - FSB, including those who have not remained in the profession but have achieved impressive results*

General objective 8:
Improve the cooperation with other stakeholders

Specific objectives:

- Monitor the statistics of employment in the Republic of Croatia and statistics of emigration, as well as of employment within professional branches. Adjust the FMENA enrolment quotas accordingly*

- 8.2. Provoditi ankete o očekivanjima dionika izvan FSB-a od svih nastavnih procesa koji se provode na FSB-u. Sustavno pribavljati, analizirati i koristiti podatke i statistike o zaposlenima i planovima zapošljavanja u svrhu prilagodbe FSB-a zahtjevima tržišta
- Conduct surveys among the stakeholders outside the FMENA about their expectations regarding the FMENA educational processes. The information and statistical data on employment and employment plans should be systematically obtained, analysed and used as to adapt the FMENA to the labour market requirements*
- 8.3. Istaknuti istraživačke institucije u RH i u inozemstvu s kojima FSB surađuje kao i područja suradnje. Izraditi bazu podataka o uspješnim projektima i istaknuti koristi od realiziranih projekata
- Place emphasis on research institutions in Croatia and abroad involved in cooperation with the FMENA as well as areas of cooperation. Create a database of successful projects and emphasize the benefits of completed projects*
- 8.4. Razvijati mehanizme uklanjanja prepreka (unutarnjih, organizacijsko-administrativnih, kao i vanjskih) za suradnju s dionicima pri čemu u što većoj mjeri koristiti instrumente koje pružaju Sveučilište i MZOS
- Develop mechanisms to eliminate obstacles (internal, organizational, administrative, and external) to cooperation with stakeholders. This should be achieved using tools provided by the University and the MSES as much as possible*
- 8.5. Suradnju tako koncipirati da pružanje usluga od strane FSB-a bude u odabranim područjima, uz zadržavanje ekskluzivnosti vlastitih postignuća; u aktivnostima pratiti svjetska kretanja
- Conceive the cooperation in such a way that the FMENA can provide services in selected fields, while maintaining the exclusivity of its own achievements; in its activities, the FMENA should follow the global trends*
- 8.6. Usklađivati pojedine aktivnosti FSB-a s očekivanjima i potrebama obrambenog i sigurnosnog sustava RH (istraživanja, ispitivanja, projekti, radionice, definiranje profila diplomiranih na FSB)
- Coordinate relevant activities of the FMENA with the needs and expectations of the defence and security systems of Croatia (research, testing, projects, workshops, defining of the FMENA graduate profile)*
- 8.7. Intenzivirati aktivnosti za uključivanje djelatnika FSB-a u strukovne udruge i državna tijela
- Stimulate activities aimed at involving the FMENA employees in professional associations and government departments*

Strategija FSB-a u upravljanju i organizaciji

Opći cilj 9:
Aktivno razvijati kadrovske potencijale

Posebni ciljevi:

- 9.1. Postupno i planski prilagođavati broj nastavnog osoblja u znanstveno-nastavnim i suradničkim zvanjima kako bi kroz dulje vremensko razdoblje sustav postao održiv
- 9.2. Trajno voditi brigu o najiskusnijim nastavnicima definiranjem pravila koja će omogućiti ostanak onih koji iznimno aktivno doprinose istraživačkim i stručnim potencijalima Fakulteta te razvoju mlađih suradnika; istovremeno voditi aktivnu politiku zapošljavanja mladih
- 9.3. Postupno i konstantno povećavati udio nastavnog osoblja u odnosu na nenastavno
- 9.4. Poticati istraživačko i stručno stimulativno okruženje internim sustavom nagrađivanja
- 9.5. Definirati vlastite kriterije za napredovanje koji trebaju uravnotežiti kako kvalitativne tako i kvantitativne pokazatelje uspješnosti istraživačkog, nastavnog te društvenog angažmana
- 9.6. Osmisliti model financiranja nastavnika i suradnika iz izvora neovisnih o MZOS-u; ovo uključuje znanstveno-nastavna zvanja koja uz to dobivaju naziv fonda, zaklade ili dr. iz koje su financirana

Organization and Management Strategy of the FMENA

General objective 9:
Actively develop human resources

Specific objectives:

- Gradually and systematically adjust the number of academic and associated academic staff in order for the system to be sustainable over a long period*
- Take constant care of the most experienced teachers by defining rules which would allow the continuation of their work for those who contribute very actively to research and professional potentials of the Faculty and to the development of junior associates; at the same time, adopt the youth employment policy*
- Improve the teaching staff/non-teaching staff ratio by gradually and steadily increasing the number of teaching staff*
- Encourage a stimulating research and professional environment by means of an internal reward system*
- Define own criteria for career advancement which need to balance qualitative and quantitative performance indicators in research, teaching and social activities*
- Develop a model of financing the teaching staff and associates from sources independent of the MSES; this includes scientific and teaching positions which are named after a fund, foundation or other funding sources*

- 9.7. Trajno analizirati nastavno opterećenje svih nastavnika te provoditi preraspodjelu njihovog opterećenja neovisno o području njihovog najužeg djelovanja. Definirati temeljna nastavna područja, neovisna o studijima i smjerovima, u koja se mogu uključiti odgovarajući nastavnici

Permanently analyse the teaching workload of all teaching staff and redistribute their load, regardless of their field of expertise. Define basic contents to be taught, which are independent of studies and courses and which can be taught by relevant teachers

Opći cilj 10:

Kontinuirano unaprjeđivati sustav upravljanja

General objective 10:

Continuously improve the management system

Posebni ciljevi:

Specific objectives:

- 10.1. Definirati i organizirati sustav upravljanja prema europskim standardima koji će biti pojednostavljen i učinkovit
- 10.2. Provoditi detaljnu razradu svih aktivnosti na FSB-u te precizno definirati postupanje, nositelje i rokove
- 10.3. Unaprijediti elektroničko poslovanje te stvoriti učinkovit i objedinjen informatički sustav vođenja i upravljanja, s minimalnom količinom papirnatih dokumenta
- 10.4. Minimirati opterećenje nastavnog osoblja organizacijskim aktivnostima kako bi se što učinkovitije i aktivnije posvetili nastavi i istraživanju
- 10.5. Razvijati aktivnosti kojima istaknuti pojedinci s FSB-a bivaju postavljeni za članove onih upravnih tijela u privredi i društvu koja donose i provode odluke od interesa za FSB

Define and organize a simple and efficient management system according to European standards

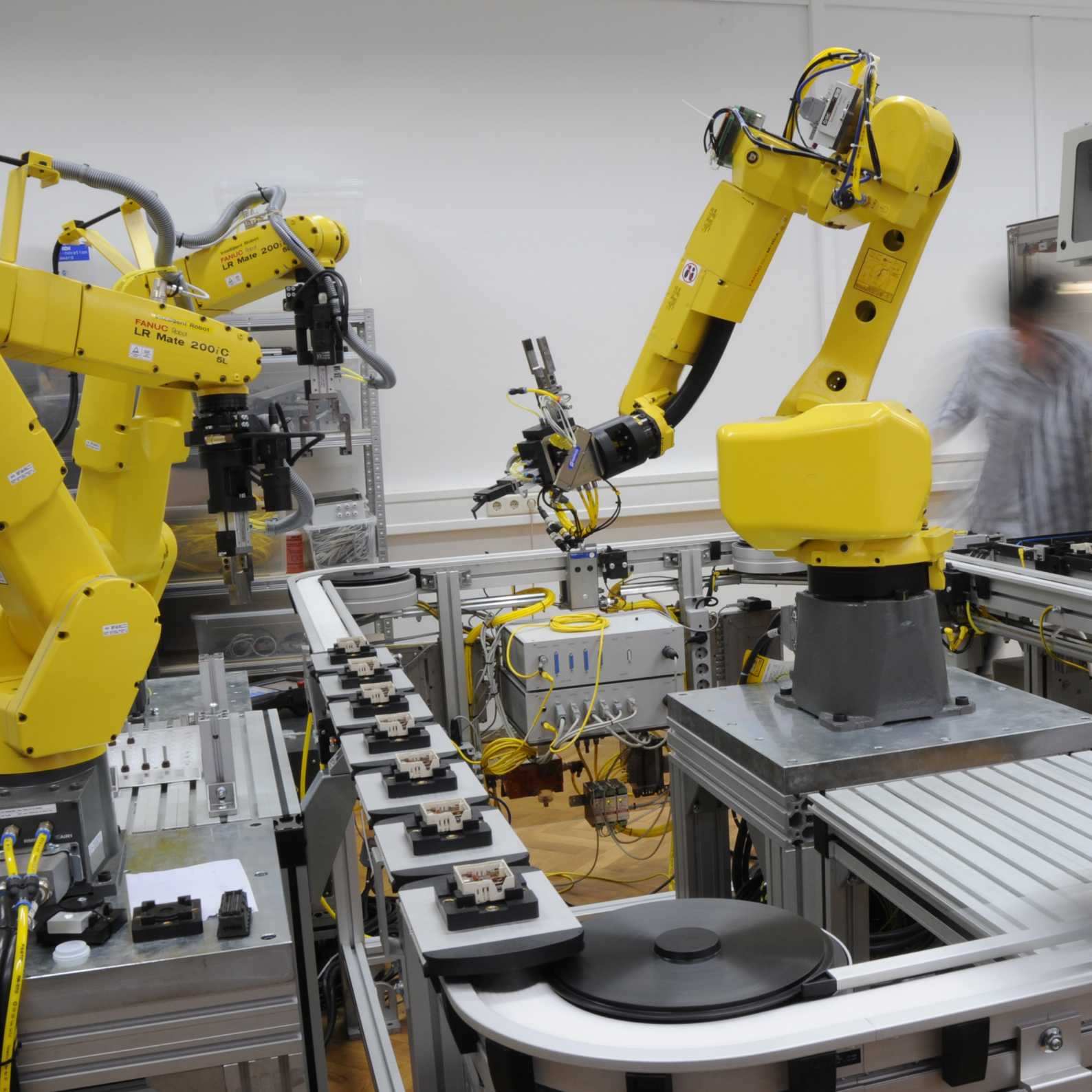
Prepare a detailed breakdown of all activities within the FMENA and accurately define procedures, executors and deadlines

Improve e-business and create an efficient and comprehensive information system of management and control with a minimum of paper documentation

Minimize the involvement of the teaching staff in the organization-related activities in order to enable them to dedicate all their potentials to efficient teaching and research

Develop activities in which distinguished individuals from the FMENA are nominated as members of those governing bodies in industry and society which make and implement decisions of interest to the FMENA

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|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10.6. | U poslovanju FSB-a osnovati financijsko tijelo koje će za projekte osigurati inicijalna financijska sredstva, kao i ona za učinkovito financijsko zatvaranje projekata (posebice za projekte financirane iz europskih fondova) | <i>Establish a financing body within the FMENA which will provide initial funding for projects, as well as funding for an effective financial closure of projects (especially the projects financed by European funds)</i> |
| 10.7. | Sustavno pratiti realne iznose režijskih troškova i njima upravljati u svim aktivnostima FSB-a | <i>Keep track of the actual amount of overhead costs and manage them in all activities of the FMENA</i> |
| Opći cilj 11: Racionalno i efikasno gospodariti prostorom i opremom | | General objective 11: Rationally and effectively manage the workspace and equipment |
| Posebni ciljevi: | | <i>Specific objectives:</i> |
| 11.1. | Trajno raditi na povećanju veličine i kvalitete iskoristivog prostora | <i>Continuously work on increasing the size and quality of usable space</i> |
| 11.2. | Urediti trenutno neiskorištene prostore te ih dodijeliti temeljem objektivne i transparentne analize korisnicima s najboljim rezultatima u istraživačkom i/ili stručnom radu | <i>Redecorate the currently unused workspaces and assign them on the basis of an objective and transparent analysis to those users with the best results in research and /or professional work</i> |
| 11.3. | Na nivou Ustanove provesti sustav raspolaganja radnim prostorima koji se koriste neučinkovito | <i>At the level of the institution, set up and implement a system of space management to deal with inefficiently used workspace</i> |
| 11.4. | Upravljanje korištenja predavaonica treba provoditi na način da nastavne potrebe FSB-a imaju prvenstvo | <i>Management of lecture halls and classrooms should always give priority to satisfying the needs of the FMENA</i> |
| 11.5. | Trajno koordinirati nabavu u svrhu izbjegavanja dvostrukih kapaciteta kapitalne i ostale opreme, kako bi se izbjegla niska iskoristivost njihove upotrebe, a uz znatno opterećivanje ostalih fakultetskih resursa | <i>Continuously coordinate the procurement to avoid the capacity doubling of the capital and other equipment for the purpose of avoiding low efficiency of their use and significant financial load on the Faculty</i> |
| 11.6. | Poticati korištenje donirane opreme koja je od zajedničkog interesa kako za laboratorije (rad na vrhunskoj opremi) tako i proizvođače (predstavljanje budućim potencijalnim korisnicima) | <i>Encourage the use of donated equipment, which is of common interest for the laboratories (work with cutting-edge equipment) and manufacturers (introducing the equipment to potential future users)</i> |



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