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Book of Abstracts

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Table of Contents

Topic 1
Academy-industry collaboration

Design and manufacturing of the universal calibration device for brake tester, brake pedal force gaugeand axle load scale

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Brake safety of the vehicle is the most important aspect of its safety. Periodic brake system inspection is a part of mandatory vehicle inspection throughout the world, ensuring that vehicles are safe, reliable and that they meet all the required standards set by national regulations. The roller brake tester is used equipment for the inspection of the vehicle brake system performance. In the inspection process, a vehicle is tested on the rotating rollers driving its wheels. When the driver steps the brake pedal, brake forces are transferred from the vehicle left and right wheels to the force sensors connected to the rollers. Simultaneously the pedal force gauge is used to inspect the force acting on the brake pedal and scale is used to inspect the axle load of the vehicle.

Calibration is the effective way to ensure the precision of the brake tester, pedal force gauge and axle load scale directly

and enhance the brake performance of the vehicle indirectly. Calibration could be mandatory periodical calibration or voluntary calibration conducted, usually, after failure of crucial parts and assemblies and its repairs. Calibration methods should be static ones if the calibration force is performed on a few points of the calibration curve or dynamic ones if the calibration force is performed continuously along the calibration curve.

This paper deals with design and manufacture of the universal device for static calibration of equipment used in inspection of the braking system. Design task is defined by the company Pro Tool doo from Podgorica, Montenegro. The scope of this company is maintenance of equipment for vehicle inspection. The calibration device would be used by the employees of the company Pro Tool doo during their regular working tasks.

Keywords: *axle load scale, brake taster, brake pedal force gauge, calibration device, design*

Design and rapid prototyping of the blind corner cabinet mechanism for G shaped kitchen layout

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Ergonomics and human comfort are among the most important aspects of the furniture design. Therefore improvement of the current mechanisms, which are used in the widely produced types of furniture, is of great importance.

The design of the mechanisms that provide the desired function is considered within the kinematic synthesis of the mechanisms. The kinematic synthesis of mechanisms is consisted of three main categories: function, trajectory and motion synthesis. It is expected that mechanisms follow the desired trajectory throughout their movement simultaneously utilizing available area and/or volume.

Kitchen cabinets are the built-in furniture installed in kitchens for storage of pots, pans, dishes, cutlery, food, etc. Design of the functionality of the kitchen cabinets must provide adequate utilization percentage of the cabinets, as well as, the access for the user to the storage space. In order to fulfill these design requirements for the kitchen cabinets, special mechanisms must be designed to provide access for the user to the storage space of the blind corner kitchen cabinets. This mechanism is usually used to pull out the shelf of the blind

corner kitchen cabinet enabling easy access for the user to the stored pots, pans, dishes, cutlery, food, etc.

This paper deals with design and rapid prototyping of the blind corner kitchen cabinet mechanism for G shaped kitchen layout. Design task is defined by the company Rekant doo from Podgorica, Montenegro. The scope of this company is furniture manufacturing. Rapid prototype of the mechanism would be used for functional testing. Based on the test results further improvement of the mechanism would be carried until the final design would be reached. Developed mechanism would be manufactured and built in the blind corner kitchen cabinets.

Keywords: *blind corner cabinet, rapid prototype, design, kitchen, mechanism*

Optimization and rapid prototyping of the discharge frame of bladeless propulsion system for VTOL UAS

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According to US Federal aviation administration registered drone population was around 900 thousands in June 2022 with 20% growth rate per year. Similar growth rate is registred throughout the world. At this number of drones and growth rate there are many safety hazards that the human population will be exposed to.

The concept of a bladeless propulsion system for Unmanned Aerial Systems (UAS) addresses a few hazards involved with conventional multi-rotor UAS. The propellers on a conventional multi-rotor UAS create a hazard to life, property, and the environment. The bladeless propulsion system developed for multi-rotor UASs aims to minimize those risks in order to protect the people, property,and the environment from exposion to the propellers.

The idea of a bladeless propulsion system was inspired by the tech manufacturer Dyson and its the Air Multiplier fan. This fan consists of two parts, an electric ducted fan and a discharge frame.

This paper deals with optimization regarding output thrust and rapid prototyping of the discharge frame of bladeless

propulsion system for Vertical Take-Off and Landing for Unmanned Aerial System (VTOL UAS). Design task is defined by the company M-Code doo from Podgorica, Montenegro. The scope of this company is multicopter and drone manufacturing.

Rapid prototype of the optimized discharge frame would be used by the company M-Code doo for experimental thrust test of the bladeless propulsion system. Based on the test results, decisions on further improvement and development or giving up of such a bladeless propulsion system for VTOL UAS would be made.

Keywords: *discharge frame, optimization, rapid prototype, VTOL UAS*

Sustainable innovation in the field of process automation

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Through writing a master's thesis on the topic of the development of an automated tire regrooving machine, I gained very useful experience in several areas, some of which are the development of innovative products in the field of process automation, product lifecycle assessment, development planning, and project management and I improved my technical and soft skills. The automated tire regrooving machine extends a tire lifespan and reduces a vehicle's fuel consumption. This machine represents a sustainable innovation for tire reuse. During the development of the machine, I communicated with several companies in Bosnia and Herzegovina and abroad, and thus found the supply chain necessary for the development and production of the machines. I have discovered the capabilities of domestic companies in the field of machine elements manufacturing. I encountered some obstacles because some of the machine parts were not available in Bosnia and Herzegovina. This caused losses in the form of waiting and the inability to plan production without adequate supplies. In addition to all the above, I felt great support from local companies. I would like to point out that in addition to financial support for the project, the companies also offered support in the form of consulting and parts manufacturing. What's more, they offered their production and spatial capacities to make the automated tire regrooving

machine. Through communication with the companies, opportunities for further cooperation were discovered. In addition to the industry sector, the Department of Industrial Engineering and Management of the University of Sarajevo - Mechanical Engineering Faculty provided great support and contribution to this work. Through the knowledge acquired during schooling, as well as the advice and suggestions of professors, opening a company for the development of process automation machines was facilitated. One beneficial factor that encouraged me for this step is the international experience gained during my studies at two European universities: Technical University Bergakademie Freiberg, Germany, and the Lappeenranta-Lahti University of Technology, Lappeenranta, Finland. Through the professors' mentoring from these three universities, I got a broader picture of possibilities and opportunities. After completing my master's thesis, I decided to start a company. Considering that the development of the tire regrooving machine took a lot of time and resources, I realized that for such a step I needed partners. I found partners very quickly, and the opening of MHM Robotics company and the process of developing another machine (CNC plasma tube cutter) took less than three months. At the time of founding the company, I was afraid that there would be no demand, given that the company had just been founded, and there are already companies in the market dealing with similar products. Most of the strong companies involved in the production of machines are foreign companies, and I hoped that with a differentiation strategy in the field of machine servicing, we can achieve a competitive advantage in the domestic market. The availability of the service encouraged customers to cooperate with our company, and the aforementioned hope was eventually fulfilled.

Keywords: *Academic entrepreneurship, green innovation in tire industry, innovation in process automation, product sustainability, venture formation*

Challenges of Universities-Industry cooperation in Albania

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Universities are not only the main generators of knowledge, but they also represent an important instrument of economic growth, especially when they effectively interact with business and industry. Scientific research is considered an important source of knowledge that can be used both locally and globally, but at the same time good research ideas can be considered as a source of income for universities. Albanian universities have a rigid experience especially when it comes to their effort to become competitive and respond to market demands. Today, it is a necessity for Albanian universities to become dynamic academic units, to go on an entrepreneurial path and to affect innovation in the region and beyond.

This paper aims to measure the perception of university management staff regarding the challenges and barriers that appear in university-industry cooperation. Using qualitative methods of data analysis of questionnaires and interviews distributed on behalf of Erasmus + CBHE KALCEA[1] project, this study tries to identify the main factors that increase and hinder the cooperation of universities and industry. Also, it shed light to the identification of factors that motivate the academic staff toward such cooperation. The findings of the paper have interest in universities, industry, and politicians.

Keywords: *university-industry collaboration, challenges, scientific research, universities, Albania*

1 Project number 618109-EPP-1-2020-1-EL-EPPKA2-CBHE-JP

Making generations of engipreneurs – Boost entrepreneurial competences, intentions, and mindset of STEM students in a bootcamp

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In the frame of the project Reconnecting universities and enterprises to unleash regional innovation and entrepreneurial activity – KnowHub, co-financed by the European Union through the Erasmus+ programme, two weeks STEM (Self) employment Bootcamp concept has been developed and piloted. The target group is STEM students from all three cycles of tertiary education. The format: work in diverse teams (by gender, educational, ethnic, geographic background, etc.), one week of the theoretic input and mentoring, one week of intensive work with daily coaching on the development of the business concept. The training concept in week one is determined based on the key EntreComp competencies that are needed for the target group, based on assessment

from panel of experts. The second week is concluded with pitching event, creating positive competitive environment as a motivation and dedication booster. The impact of the bootcamp concept on the entrepreneurial competences, ambitions and mindset was measured using a customised evaluation tool in two stages (entry and exit level), based on the HEInnovate's EPIC tool. The concept was piloted in May 2022 at the University of Girona, with 53 students from five Western Balkans' universities. The evaluation has shown significant improvement of key entrepreneurial competences such as: anticipating and identifying business opportunities, finding different ways to implement and assess ideas, and drive people to support them. The concept has proven to also develop socially relevant mindset and competences, such as applying sustainability values and assessing social and ecological impact of ideas, and fostered by the work in international teams, high level of further development of skills for working with different groups of people. In the evaluation of the change in their mindset, also important progress has been noticed especially in their confidence in their own abilities of inventing new solutions based on quality and unique ideas. In the intentions, the greatest progress was measured in the key aspect, the intention to start their own businesses. Based on these results the concept deserves further implementation in a regular setting in higher education institutions and beyond. Adaptation for a different sub-target-group is advised for developing efficient and interesting concept for making generations of engineers entrepreneurs – engipreneurs.

Keywords: *Entrepreneurial education, Engipreneur, EntreComp, EPIC.*

Contribution of Know-Hub project in the University - Businesses relations. The case of University of Vlora

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Since 2015 in Albania is implemented a new law in Higher Education (Law Nr. 80/2015). Except teaching and scientific research, the new law put a new dimension, that of collaboration and provision of services to third partners. This is something "old" for many Western European Universities but very new for Albania due to a lack of an entrepreneurship culture as well as due to a formal pre-existing collaboration. Based on the Law, the University ofVlora (UV) developed a detailed strategic plan. One of the three axes of this plan is the collaboration and provision of services to third partners. The Know-Hub project came at a very critical moment for the University with the aim to provide new knowledge and skills as well as to improve human capacities and the infrastructure. Based on the project, we better understood which is the status-quo for the knowledge transfer, innovation and entrepreneurship of the academic and administrative staff, students and external stakeholders. Some professors received comprehensive training on different entrepreneurship concepts while some of them started integrating these in the curricula. Active involvement of students both on training activities and in

implementation of the project was an added value. The most important benefit of this project for UV was the establishment of the Vlora Hub with contemporary equipment. This Hub gives the opportunity to professors, students and stakeholders to generate their innovative ideas as well as to establish start-ups. Additionally, the existence of the Hub will try to change the status quo with a new mentality and culture by focusing also on the third mission of the University. Moreover, UV will use the Hub to increase financial resources that could be used for the sustainability of the Hub but also for other University needs.

Role of academia in the innovation ecosystem. A case of Albanian Universities

Ornela Klosi

The postmodern society in which we are all part of, is being characterized by a drastic and rapid iteration of the so-called status quo in connection to the innovation ecosystem. This paper aims to familiarize the interested reader with the role of academia in the innovation ecosystem. Following the respective literature, there is a laundry list consisting of well justified reasons on why academia remains the primordial source of innovation. The research is narrowed down by being strictly focused on the Albanian Universities. The core research questions responds to the issue of which are the underpinning problems in Albania that make students unwilling to proactively develop their skills and translate their passions into profession as well. In addition, in this paper is applied qualitative research method, while as means are used semistructured interviews. By and large, this paper goals to serve as a driving force towards a change in the legal system and, eventually a more breathable, independent ecosystem for students to change actual means of innovation and give birth to personalized ones.

Keywords: *academia, innovation, ecosystem, personalization, law, academic freedom*

Influence of KnowHub project to the HEInnovate results and priority areas for improvement through the Commercialisation Hub

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The project “Reconnecting universities and enterprises to unleash regional innovation and entrepreneurial activity / KnowHub” is co-funded by the European Union under the Erasmus + programme KA2 – Cooperation for innovation and the exchange of good practices – Capacity Building in the field of Higher Educationand implemented by the lead of FH JOANNEUM, Graz, Austria with the support of 10 more partners from Spain, Finland, North Macedonia, Albania, Bosnia and Herzegovina, and Montenegro. The project focuses on research, technology transfer and teaching, with an overall

objective to develop cooperation between enterprises and Higher Educational Institutions (HEI). The project is based on the development and functioning of Commercialisation Hubs at each of the Partner Countries Universities (PCU).

HEInnovate is an initiative of the European Commission's DG Education and Culture in partnership with the OECD. HEInnovate is a self-assessment tool for all types of HEIs, developed as an online platform which enables assessment of various statements related to HEI's entrepreneurial activities, including leadership, staffing and links with business.

TheKnowHub methodology for the self-assessment processincludes the following steps: introductory workshop, delivering the HEInnovate self-assessment questionnaire, discovery and verification workshop and analysis for identification of priority areas for improvement through the Commercialisation Hub. Firstly, the main goal of the introductory workshop is to introduce participants to HEInnovate, its benefits and limitations, including the objectives of the self-assessment committee. Afterwards, the self-assessment questionnaireis delivered to the targeted participants through the HEInnovate online platform. After receiving the pre-defined number of answers, the discovery and verification workshop is organised with representatives from the industry,university academic and non-academic staff, students, alumni, university management and other stakeholders, who verify the results of the self-assessment. The main goal of the verification process is to ensure that the results reflect the realstatus of the HEI and to confirm the validity and consistency of the answers from all roles/participants included in the self-assessment process. The final step and possibly the most important one includes identification of priority areas for improvement, thus supporting the design process of the activities that can be implemented through the Commercialisation Hubs, established within the Know Hub project. This methodology was implemented twice during the project, at the beginning in the year 2020 and after completing significant number of project activities, in the

year 2022. This research provides clear picture of the HEI improvements in the area of entrepreneurship and innovation as a result of the implemented project activities and other relevant achievements that boost those institutions towards innovative and entrepreneurial approaches. The entire self-assessment process is facilitated and led by external experts, in this case NCDIEL, as an independent project partner which is not from the Partner Country Universities that were included in the self-assessment process. The research and the self-assessment process with the described methodology has been implemented at the following HEIs: European University of Tirana and University of Vlora “Ismail Qemali”, Albania, University of Sarajevo and University of Mostar, Bosnia and Hercegovina, and University of Montenegro.

Keywords: *Entrepreneurship, HEInnovate, higher educational institution, innovation, self-assessment*

Topic 2
Entrepreneurship education

Embedding Entrepreneurship Education in Engineering Curricula – REBUS project impact at Mechanical Engineering Faculty Sarajevo

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REBUS (REady for BUSiness – Integrating and validating practical entrepreneurship skills in engineering and ICT studies) was an exceptionally ambitious Erasmus+ project, with the aim to develop, test, validate and mainstream open learning modules to promote entrepreneurship competences of engineering graduates at the Mechanical Engineering Faculty of University of Sarajevo.

In order to achieve this aim, project identified specific training needs for the lecturers (need to strengthen capacities of university lecturers to deal with such entrepreneurship topics was also noticed, since some professors did not have practical experience with private sector), developed different forms of entrepreneurship training modules, tested a

validation system based on the Level-5 approach, comprising a suite of entrepreneurship-related competences descriptions, context-related reference systems to assess and evidence these competences, and validation system, and piloted the tailored entrepreneurship training modules and competence validation system, resulting with the final integration and mainstreaming into existing curricula at bachelor and master level fostering innovation and entrepreneurship. The main idea was to combine existing courses upgrade with blended learning oriented towards achieving the “non-engineering” competencies like inter-cultural communication, conflict resolution or networking.

Such background was the basis to decide on the project content, having in mind the overall objective to build entrepreneurship competencies of the students at Mechanical Engineering Faculty. After REBUS project decided on key competences, including defining a reference system which clusters knowledge, skills and attitudes along 5 competence levels, some of them were found to be “coursable” meaning being able to be upgraded into the existing courses (as example Problem solving, Project Management, Planning and Resource Management, even Critical thinking or Creativity, besides of course the basis of Field competencies in engineering), while some of them are in general not perceived as “engineering disciplines” and need to be trained also with the extended blended learning concept combined of supervised self-learning using project developed course materials and practical exercise (e.g.Intercultural Communication, Communication, Flexibility/Adaptability, or Networking). Students achieved much better understanding and perception of entrepreneurship and innovation and increasingly build own positive attitudes towards business and entrepreneurial competencies development, both leading them to improved employability at the labour market.

Keywords: *Curricula enhancement, entrepreneurship competencies, entrepreneurship education, innovation education*

Service related competences development through implementation of eVIVA project

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University of Sarajevo - Mechanical Engineering Faculty participated as a partner in the implementation of the European Union ERASMUS+ CBHE project with the title Enhancing and Validating service related competences in Versatile learning environments in Western Balkan Universities (short title: eVIVA). The project involved 16 partners from 9 countries: Albania, Austria, Bosnia and Herzegovina, Germany, Kosovo, Montenegro, North Macedonia, Portugal and Serbia. Service related competences have been getting an important attention in non-formal and informal types of education, while the integration of service related competences in HEI learning system is new and these competences are rarely paid attention at HEI. Inventory of service related competences was developed and workshops and trainings for academic staff were organized. Trained academic staff delivered workshops and trainings for academic staff, students and businesses at home countries. Two courses were chosen to implement eVIVA concept with embedded certain entrepreneurship and innovation topics with regard to service related competences development. Trainings and workshops for students were organized out of the formal education. Also,relevant materials

were uploaded on the eVIVA platform for individual learning. Level5 reference systems were used for validation of selected competences of students which were described in terms of three components: knowledge, skills and attitude. Validation of selected competences was done for each student at the beginning and at the end of the learning process, so each student could see own progress with respect to all three components: knowledge, skills and attitude, which was visualized by Level5 cube. Two generations of students were involved during eVIVA project. Since eVIVA platform number of licences was limited to 30 students at the time, total number of involved students was 60. Each student who finished validation process received Level5 Certificate. Results of eVIVA competence validation method had connectivity with other European validation systems, so students were able to enrich their EUROPASS CVs. Workshops with businesses were organized with goals to inform businesses about the concept of service related competences, Level5 methodology, certification, practical examples, as well as to get opinion and suggestions from businesses for improving development of service related competences of students in order to get better staff for modern markets. Through the learning process and the projects students gained understanding about service related competences, entrepreneurship and innovation in general which helped them to be more competitive at both domestic and international labour market.

Keywords: *Entrepreneurship, innovation, service related competences, validation, certification*

Innovation and Technology in the Entrepreneurship Education

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Transforming an idea into action has been done since the beginning of civilization around the globe. It has really transformed the world. Businesspersons have been creating ventures for masses based on such ideas materializing them into useful actions Entrepreneurs have a vision for doing things in a better way, thinking beyond the constraints of current rules and resources. Entrepreneurship education is becoming more and more important everywhere in the world and research in entrepreneurship are growing and getting legitimacy in the scientific communities, however a few scholars have focused on the subfield of entrepreneurship education. Although the key to a successful entrepreneurship education is to find the most effective way to manage the teachable skills and identify the best match between student needs and teaching techniques The paper tries to facilitate an understanding about 'entrepreneurial teacher and training institution' and emphasizes the active role of teacher as a 'facilitator'. For this new role teachers have to be ready initially by going through rigours of teacher training and by continuing professional development. This paper aims also to provide an understanding of the nature of enterprise and entrepreneurship and introduces the role of the entrepreneur, innovation and technology in the entrepreneurship education.

Keywords: *entrepreneur,entrepreneurship education, innovation, technology*

Enhancement of Innovation and Entrepreneurial potential at the University of Sarajevo – Mechanical Engineering Faculty– KnowHub project impact

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KnowHub project (Reconnecting universities and enterprises to unleash regional innovation and entrepreneurial activity) is Erasmus+ project, which tackles the lack of systematic and sustainable cooperation between universities and economy in the Balkan countries: Bosnia and Herzegovina, Montenegro and Albania. The project is aligned with EU vision of development of the entrepreneurial and innovative higher education institutions as a major source of the skills and knowledge that drive growth and innovation in economy. The main idea of the project is establishment of Commercialisation Hubs in each partner country universities. Commercialization Hubsare the interface between the university, enterprises and society which will connect enterprises, especially start-ups and SMEs to the university. Universities may provide enterprises with the knowledge and skills of its staff,as well as with its valuable technology. The Hubs will serve to speed up commercialization of ideas and applied research, foster entrepreneurial activities in the country and support innovative idea of the staff and the students.

The Hub at the University of Sarajevo – Mechanical

Engineering, besides of commercialization of ideas and innovations, offers training programs in the fields of entrepreneurship, innovation and lean manufacturing, and will serve as research center for students and academic staff as well as for enterprises. It will serve for practice oriented education of students at University and will be an interface for practical work on projects for companies. The Hub is equipped with the equipment mainly related to Lean manufacturing purchased within the KnowHub project. The Hub will be supported also with the other technology and equipment available at laboratories of the Mechanical Engineering Faculty, such as Laboratory for material testing, Laboratory for welding, Laboratory for mechatronics and robotics, etc.

In order to explore entrepreneurial and innovative potential of the University of Sarajevo,HEInnovate self-assessment tool, developed and adopted by the European Commission, is used. According to self-assessment results,trainings for Hub staff conducted by project partners are conducted, and curricula is upgraded after consultations with stakeholders.A new subject Lean management is introduced, and within three other subjects, at the bachelor and master study programmes, new modulsare introduced, with following topics: generation and evaluation of business ideas and Business planning, Business Canvas Model and Elevator Pitch, continuous improvements of production processes, study cases in decision making processes dealing with uncertainty.

After the Hub was established, nine pilot projects are nominated to enterprises, according to Hub's instrument and services. Seven of these projects have been completed successfully before the end of the project.Students had been involved in these projects through their master theses.

Keywords: *Commercialization Hub, University innovation potential, HEInnovate self-assessment tool, Curricula enhancement*

Artificial Intelligence and Entrepreneurship

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AI has a huge growth and influence in many fields as well as in the entrepreneurship. There exists the discussion if AI enable or hinders the development of enterprises and businesses. Can enterprises benefit from the further progress of AI? What are the benefits, opportunities or possible risks that could appear in this journey? There is a clear lack of systematization in academic literature pertaining to this correlation. That´s why I decided to explore and aim to study the impact of AI on entrepreneurship, its role in the development of future businesses.

AI is enabling machines to process large unstructured data sets using complex, adaptive algorithms to perform tasks normally requiring human intelligence. This has led to reflect on the generativity of AI, with suggestions that the technology may not only represent a method of achieving cost and productivity benefits, but a fundamental innovation to the tools by which we innovate. Equally, these innovations have wider, potentially negative effects to which entrepreneurs must adapt. The future of many businesses depends on the relationship they have with AI and IoT. What kind of investments will be made based on AI technologies? We examine how AI will augment and replace tasks associated with idea production, selling, and scaling.

The radical changes entail new ways of working, implications in the organizational design of entrepreneurial ventures. This empowers new economic activities that introduce new

products or services via entrepreneurial means. What are the opportunities or obstacles for their implementation? In order to be ready for this new global stage, especially if we want machines and AI to support humans rather than humans run after machines, it is important to understand how intelligent machines and humans can coexist with each other. The humans will be relieved of hard work and daily activities which are long and boring, through the creation of new values;enabling the provision of only those necessary products and services to the people who need them when they are needed, optimizing the whole society. Big Data collected by the IoT will be transformed into a new form of intelligence using AI and it impact severy field.

Keywords: *artificial intelligence, entrepreneurship, innovation, opportunity, technology*

Topic 3
Forward looking innovation ecosystems

Technology in information and communication using evaluation models in "social capital"

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A new concept that is widely talked about today is the so-called process of Internetification and the impact it has on the "social capital".Recent technological innovations and the Internet have influenced how people communicate, work and spend their free time. Statistics show that the Internet is included in the rhythm of everyone's life and is used for a variety of purposes, such as information search, electronic games, communications and many other services. It is also a significant part of people who make important life decisions through Internet services.

The paper aims to reach local conclusions for the city of Vlora regarding this phenomenon, it will be attempted to discover important links between the attributes of Internet users, the time spent on the network and the impact on "social capital". The paper succeeded in formulating an evaluative

statistical model for the frequency of Internet access/use by the individuals of the sample of 1000 respondents. The 72% of those interviewed by the ICT questionnaire admit that they look for work through the Internet, 75% use it as a good source of information to complete their studies, 48% create personal web-sites that they manage themselves, 84% are informed about the issues of currently, 85% of them are an active part of social networks. The results are useful for internet companies that can see and arrange the needed internet services that the population need.

Keywords: *social capital, VIF test, correlation matrix, game theory*

For a new approach of the University in the development of the entrepreneurial mentality

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Entrepreneurial competence is nowadays widely accepted as a basic competence, which can be provided through lifelong learning.

The development of entrepreneurial skills requires from the university such approaches in imparting knowledge that it can form individuals capable of the labor market and innovative professionals capable of solving problems and articulating solutions.

This paper focuses on exactly this approach of the university in the development of entrepreneurial mentality among students as well as in the policies that the university follows to become an entrepreneurial university.

The entrepreneurial university is a university that provides knowledge in a classical way, but at the same time approaches and brings other fields of knowledge such as economy, politics, society, governance, etc. This new approach allows many actors to meet in the university: academics, students, entrepreneurs, business people who collaborate by exchanging ideas, successful practices that help in a better university and a better society.

The current approach of the university consists of interweaving the classical approach to the distribution and

transfer of knowledge with dynamic interactive methods that include the student, with the use of an ecosystem to support the transfer of knowledge, so that it is carried out as quickly as possible. as active as possible, to encourage the student's creativity, to make him feel part of this transfer of knowledge, to put the student in front of businesses, in front of reality; to put the student in front of the institutions with which he will give and receive as a potential employer in the future.

Key words: *lecturers, students, entrepreneurial mentality, entrepreneurial competence*

Implementation of reverse engineering, metrology and 3D print within the learning factory concept

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With the increased focus over the recent years in digitalization of the factory, reverse engineering, metrology and additive manufacturing has become very significant. Failures of parts and tools in industrial settings cost money and hurt output. Usually, the problem arises when the tooling being used is one of a kind and repair or replacements come with long lead times. Other problems are encountered when the original part or tool engineering drawing is not available and costly redesign is needed. This paper demonstrates the successful integration of reverse engineering, additive manufacturing (3D printing) and metrology to address such problems in industry and its implementation within the learning factory of the Faculty of Mechanical Engineering, Computing and Electrical Engineering, University of Mostar (FSRE Learning Factory). The concept of mentioned technologies integration within the FSRE Learning Factory and different examples of project realisation with companies is presented. This concept demonstrates how to incorporate these technologies in the teaching and learning of students and workers from the company and its integration within the existing production process in the FSRE Learning Factory.

Keywords: *3D print, Metrology, Learning Factory, Reverse Engineering, Transfer of Knowledge*

Concept of the Learning Factory - the key to the sustainability of the Commercialization Hub

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Strengthening the cooperation between the University and the economy is one of the most important goals of both local and international politics. Therefore, today a large number of international and EU projects emphasize the need for better connection and cooperation between universities and the economy. One of the steps is the establishment of Commercialization Hubs that represent the link between the two parties. Such Hubs within the framework of universities attract companies (especially start-ups and small and medium-sized enterprises) with their activities, i.e. research, technology transfer and teaching. The establishment of a Commercialization Hub is not so much a problem as the sustainability of such a center after the completion of the project that financed the center itself. In order to sustain such centers, it is necessary to direct activities to the real needs of companies, because only in this way will companies benefit and the need for mutual cooperation. In order to understand the needs of the company, it is necessary to establish an environment in the Hub that will be largely similar to the real environment, i.e. real production and business conditions. In response to

this problem, the concept of the Learning Factory is imposed, because this very concept represents an environment for learning, research and technology transfer in which processes and technologies are based on real industrial conditions. This allows direct access to the product development process (product development, production, quality management, logistics). Therefore, this paper describes the concept of the learning factory as the key to the sustainability of the Commercialization Hub. Also, the paper deals with a case study on the example of the Commercialization Hub within the University of Mostar, which was developed on the concept of the Learning Factory and describes the development of the very idea for the implementation of the Learning Factory concept and the cooperation with other universities that are part of the International Association of Learning Factories - IALF.

Keywords: *Commercialisation Hub, Learning Factory Concept, Sustainability*

Mechanical design optimization for a 3D printed prosthetic leg

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The manufacturing process has changed over time, mostly in response to the desire for more flexible, creative, and effective production. This paper aims at the additive manufacturing (AM) of intricate geometrically structured components from a prosthetic leg and explores the possibilities of additive manufacturing technology when tolerances for fitting, surface quality, printing orientation to minimize support structures, topology optimization, and design consolidation of a component are required. Topology optimization is a method for reducing the mass of structural parts and it serves as a substitute for geometric or form optimizations, which provide considerable increases in product efficacy. Applications of additive manufacturing in orthopedics will develop fast in the future. An orthopaedist may turn an idea into a reality by using analysis and computer-aided design (CAD) tools. A wide

range of options to generate medical services are therefore provided by AM. For instance, in the biomedical sector, lighter prosthesis components provide weight reduction. The optimization of a prosthetic leg consisting of the knee, upper leg, lower leg, hydraulic support, and oil support is carried out. This paper is shown how the original design of every component is modified and optimized. Topology optimization's final result with maximum displacement during simulation is generated by forces, constraints, partitions, and minimum-maximum thickness. Moreover, the position of screw holes is keeping their original size and position. Open areas to allow free movement of the hydraulic mechanism are taken into consideration. The workflow procedure for additive manufacturing, nesting, printing settings, printing, and post-processing are all discussed. MetcoAdd 316L-A stainless steel gas atomized was the material utilized in this project.

Keywords: *AM, additive manufacturing, topology optimization, prosthetic leg, austenitic stainless steel 316L*

Product development using design thinking approach

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Design thinking is a relatively recent, very efficient, team-based approach to innovations. This methodology motivates entrepreneurs to focus on their consumers' needs, resulting in inventive solutions. It is divided into five stages. Innovators engage with consumers, collect various ideas to meet their needs, then choose only one or two successful ideas to test in the final step of Design thinking.

The subject of this study is the application of Design thinking methodology to the problem of excessive amounts of wood residues in the lumber industry in Bosnia and Herzegovina. Wood processing or lumber industry encounters the problem of large amounts of wood residues remaining after production. Through five steps of Design thinking, this study examines the development of numerous concepts suitable for solving the problem of sawdust residues that in large quantities remain unused in companies within the wood industry.

It has shown to be a very effective strategy for recognizing a problem and determining an appropriate solution. The primary benefit of this strategy applied in lumber industry in Bosnia and Herzegovina is that it uncovered multiple solutions to a

problem. Finally, it is safe to declare that all of the proposed ideas have potential and should be further investigated. Different solutions were presented. However, one of the ideas presented stood surely above the others in solving the sawdust residue issue within the lumber industry – the eco-packaging solution.

The idea of mycelium eco-packaging as a substitute for Styrofoam in transportation matters is one that has stuck to the end of the research. Besides the environmental benefits of mycelium eco-packaging over Styrofoam the cost-benefit analysis demonstrated the financial benefits.

Keywords: *design thinking, wood industry, wood residues, sawdust utilization, eco-packaging*

Development of a relational database management system for high school students

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With the large amount of data and advances in information technology in recent years, it is more than appropriate for an educational institution to use existing technology to facilitate the process of managing student data and grades.

Student management is becoming a basic necessity in education in the modern-day age and it is to automate all functions performed on a daily basis in the school.

Student Management System is a software which is useful for students as well as for a teacher, secretary and school authorities. In the current system, all the activities are done manually. It is very time consuming and costly. Our Student Management System deals with various activities related to students from their data, grades, absences, the construction of various reports as well as the generation of letters automatically. In software we can register as a user which has four types: student, teacher, secretary and administrator. Each of user types can log into the system and have the relevant activities, the secretary deals with the management of the general data of the students and the teaching schedule, the teacher deals with grades and absences, the student can see the semester evaluation as well as the corresponding report card, while the admin has access to all parts of the system

becoming its main part.

The system can only be used localy within the school institution and for its construction are used JAVA programming language and MySQL database server.

The objective of the system is to reduce the paper work and to eliminate manual processes and to save significant staff time.

Keywords: *Data, Educational Institution,JAVA, MySQL, Software, Student Management System,Technology.*

Is there a need to reframe what innovation means in healthcare? Prospective future education and research implementations - lessons from the literature.

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Nursing education and research usually do not educate nurses to innovate, despite the fact that the nursing workforce is an essential component of the healthcare system and healthcare innovation. However, the pandemic-induced circumstances offer nurses the chance to become even more innovative and entrepreneurial. A literature review study was carried out to explore the current situation in relation to nursing innovation centers and initiatives around the world, with a particular focus on mid-low income countries and Western Balkan countries. The words "nursing and healthcare innovation," "partnership and enterprises in nursing care," "capacity building and innovation development," "innovative nursing centers," etc. were all used in an electronic review. The research revealed that there is not much information in relation to healthcare innovation centers in the targeted areas. The only innovative nursing centers were based and active in the USA. According to the literature review, redefining what innovation in healthcare implies, especially how it might be included in education and research, is necessary. To address

the innovation competency gap, it is also necessary to train nurses and nursing students in the terminology, processes, and skills of innovation, including inter-professional activities. Creating partnerships as a key driver of innovation, particularly in the implementation of operational research products from nursing research, is the future of healthcare transformation. Results suggest that to create innovative, successful, and competitive enterprises, we must include innovative science in the core curriculum of all degree programs. Finally, in order to improve health and well-being in a variety of situations, such as the family, workplace, and community, it is necessary to encourage innovation and innovative behaviors among undergraduate students and professionals.

Keywords: *building capacity, development, education, health-care innovation, research*

Public debt and financing in the economy, including the public debt/GDP ratio - The case of Kosovo

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The paper addresses issues related to the budget and public debt in the Republic of Kosovo. The importance of the paper consists in addressing issues related to the budget and public debt in the Republic of Kosovo. The main purpose of this paper is to analyze the performance of the budget deficit and public debt in recent years in the Republic of Kosovo, also reflects the level of public debt in Kosovo and in the countries of the region.

To achieve the objectives, the method of analysis was used mainly, tabular and graphic separately, comparative method, analyzing in dynamics the issue of state budget and public debt in the Republic of Kosovo. Through this study, the results and recommendations given are considered to be taken into account by relevant institutions in the Republic of Kosovo. The budget system is part of the financial system, which are closely related to each other. In addition to the development of the public finance system, the budget system has also been developed. Within the competencies of state institutions, regarding the responsibility for coordination and management of public finances, respectively of the Kosovo Budget, the Ministry of Finance is competent. In cases where expenditures are greater than revenues, the difference is the

state budget deficit. To cover the budget deficit, governments are forced to borrow. The government can borrow domestically and abroad to finance the budget deficit. In other words, the national debt consists of accumulated deficits minus surplus throughout the history of the country. The Government through the Ministry of Finance, in addition to the basic legislation on public debt has drafted relevant Rules and Procedures, to increase the transparency of management and the definition of management responsibilities. Currently, public debt is a general phenomenon, not only within the economy of a country, but also on an international scale. Public debt in particular is present in underdeveloped countries, which burdens, already faced with many problems, the economy and population of these countries. Government debt represents a burden on the economy and population of the country that owes this debt.

Keywords: Budget deficit, budget, public debt, Gross Domestic Product

Exploring relationships between product innovation, digital technologies, and sustainability: Evidence from European manufacturing

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The objective of the research is to analyse the relation between digital technologies in the context of Industry 4.0, sustainable performance, circular economy, their impact on business model elements such as value proposition, competitive advantage, and organizational development.

Adopters of digital technologies in European manufacturing companies will be studied, determining their characteristics, barriers/drivers they perceive in adoption of digital technologies, impact that the digital technologies generated on their sustainability performance and business model innovations. Proposed digital technologies are Big Data Analytics, Artificial intelligence, and Additive manufacturing (3D print). It will also contribute to a better understanding of the determinants of digital technologies' configurations conducive to product innovation.

The presentation at the conference will include general framework of the research with preliminary results of the study: "Big Data as enabler of the circular economy – exploring the relationship between Big Data adoption and product innovation with environmental impact", where the empirical evidence from the European Manufacturing Survey 2018 is used, an international survey combining innovation, production,

organizational, and technological innovation in manufacturing. The study aims to contribute to the debate on the interplay between sustainability and innovation. Particularly, whether there is a relation between the sustainability and product innovation, and we examine the mediating role of Big Data implementation in manufacturing companies in this relation. In addition, it was tested, whether implementation of Big Data alone or a critical level of usage has a more significant impact on improved sustainability of the new products.

Keywords*: Manufacturing, Digital technologies, Big Data, Sustainability*

Birth photography as an innovative venture in Albania

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Photography is globally recognized as a highly expressive and diverse form of art throughout its history. As in all other fields, the novelty and innovation here are elements of everyday life, which are not easily welcomed by the masses and that need to be widely elaborated in as more in media as possible.

The birth photography is an industry that dates back no longer than 20 years ago in its country of origin, USA, which was initially used as a passion from midwives and later turned into a widely supported profession, currently categorized as a Freelancer.

In finding its place in global markets, a creative industry needs to adapt to all the legal, ethical and cultural perspectives each country shares.

Nowadays, even Albania has a representative lobbying to practice this profession freely, with the same standard as in the United States of America and the European countries. In proving the appropriateness and positive impact that this form of art may bring in to the cultural and medical aspect and in the concept of family, the need for its study and interpretation arises. This is due to the fact that in a small and developing country, but quite often even in large countries, the best way of promoting an innovation starts with information and continues with its implementation in the public. This idea is undoubtedly

embraced in case of birth photography, which is a highly revolutionary form doing business, creating memories and representing a new window of cooperation among the social groups.

Keywords: *Developing Countries, Freelancer,Innovation, Photography,Public Implementation*

Role of Academia in European Innovation Ecosystems

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Innovation is seen as a source of social development, and its promotion on a global scale has been encouraged. The development of innovation ecosystems is essential to the prosperity of regions. The university plays an essential role in the evolution of any ecosystem. In addition to being a source of knowledge, the university must engage in effective interaction practices with other actors in the innovation ecosystem. The purpose of this paper is to define the university's role in the innovation ecosystem. The university has a significant impact on the environment. The objective of the EU is to create more connected and efficient innovation ecosystems in order to support companies, promote innovation, and enhance cooperation among several innovation actors. An innovation ecosystem is a setting in which all actors, such as academia, public sector organisations, and other organisations collaborate to develop innovative solutions to challenges and opportunities.[1]

Keywords: *EU, academia, innovation, ecosystem.*

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[1] *Gonzalez Fernanadez, Sara; Kubus, Renata; Perez-Inigo, Juan Mascarenas, Innovation Ecosystems in the European Union: Towards a Theoretical Framework for Their Structural Advancement Assessment, Croatian Yearbook of European Law and Policy, Vol. 14, pp. 181-218*

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