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UNIVERSITY PIM BANJA LUKA
UNIVERZITET PIM BANJA LUKA

**VIII INTERNATIONAL CONFERENCE ON SOCIAL
AND TECHNOLOGICAL DEVELOPMENT**

THE BOOK OF ABSTRACTS

**VIII MEĐUNARODNA KONFERENCIJA O
DRUŠTVENOM I TEHNOLOŠKOM RAZVOJU**

ZBORNIK IZVODA RADOVA



Trebinje, November 08-09, 2019
Trebinje, 08. i 09. novembar 2019. godine

UNIVERSITY PIM BANJA LUKA



**VIII INTERNATIONAL CONFERENCE ON SOCIAL
AND TECHNOLOGICAL DEVELOPMENT**

THE BOOK OF ABSTRACTS

&

CONFERENCE PROGRAM

Co-organizers:



Fakultet
ZA MENADŽMENT
HERCEG NOVI

**FACULTY OF MANAGEMENT
HERCEG NOVI, MONTENEGRO**



**HIGHER AGRICULTURAL SCHOOL OF
VOCATIONAL STUDIES IN ŠABAC, SERBIA**



**SCIENTIFIC-EXPERT ASSOCIATION
"FUTURA", ŠIBENIK, CROATIA**

Trebinje, Hotel „Leotar“, November 08 & 09, 2019, Republic of Srpska, B&H

VIII INTERNATIONAL CONFERENCE ON SOCIAL AND TECHNOLOGICAL DEVELOPMENT

BOOK OF ABSTRACTS

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NOTE:

The authors have full responsibility for the originality and content of their own papers.

VIII INTERNATIONAL CONFERENCE ON SOCIAL AND TECHNOLOGICAL DEVELOPMENT

CONFERENCE PROGRAM

THURSDAY, NOVEMBER 7th

ČETVRTAK – 7. NOVEMBAR

17⁰⁰ – 20⁰⁰ **Registration of participants (Hotel „Leotar“ – in Lobby)**
Registracija učesnika (Hotel „Leotar“ – u holu)

FRIDAY, NOVEMBER 8th

PETAK – 8. NOVEMBAR

8⁰⁰ – 15⁰⁰ **Registration of participants (Hotel „Leotar“ – in Lobby)**
Registracija učesnika (Hotel „Leotar“ – u holu)

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*DJELOVANJE ALTERNATIVNIH INSTITUCIJA U DRŽAVAMA BIVŠE
JUGOSLAVIJE*

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PATTERNED POLYMERIC SCAFFOLDS**

13³⁰ – 14⁴⁰ **COCTAIL - Hotel „Leotar“ (Restaurant)**
KOKTEL - Hotel „Leotar“ (Restoran)

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UPROŠĆENE PROCESNE FORME U KRIVIČNO-PROCESNOM PRAVU
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OSNOVNA OBILJEŽJA I NASLJEDNO PRAVNO DEJSTVO UGOVORA O
DOŽIVOTNOM IZDRŽAVANJU**

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KOLEKTIVNI SISTEM BEZBJEDNOSTI - CRNA GORA U NATO-u

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TECHNICAL SPECIALISATION OF HUMAN RESOURCES AS A
CONDITION FOR DEVELOPMENT OF SME'S IN SERBIA

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Diskusija

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STANDARD ISO 27001 – SIGURNOST INFORMACIONIH SISTEMA, RAZVOJ, TRENDOVI, TEHNIČKI I EKONOMSKI IZAZOVI

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Diskusija

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- 20⁰⁰** **GALA DINNER, Hotel „Leotar“ (Restaurant)**
SVEČANA VEČERA, Hotel „Leotar“ (Restoran)

SATURDAY, NOVEMBER 9th

SUBOTA – 9. NOVEMBAR

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Chairs of the Session: Predrag Raosavljević, Tamara Erceg and Nikša Grgurević

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10⁰⁰ – 10³⁰ Tatjana Ćitić
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KAFE PAUZA

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POSTER SEKCIJA (sala za konferencije)

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- 11³⁰ – 11⁴⁵** *Canan Karakus, Ayse Zehra Aroguz*
FABRICATION OF AEROGEL FROM KOMBUCHA BACTERIAL CELLULOSE INVESTIGATION OF SOME PROPERTIES
- 11⁴⁵ – 12⁰⁰** *Nebojša Kuduz, Saša Salapura*
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PERCEPTIONS AND ATTITUDES ABOUT THE ORNAMENTAL CHARACTERISTICS AND THE USE OF ORNAMENTAL INDOOR FLOWERING PLANT SPECIES, AS WELL AS CACTUSES AND SUCCULENTS
PERCEPCIJE I STAVOVI O UKRASNIM KARAKTERISTIKAMA I PRIMJENI CVJETNO-DEKORATIVNIH VRSTA SOBNOG BILJA TE KAKTUSA I SUKULENTI
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IoT BASED RIVER WATER LEVEL MONITORING
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- 13⁰⁰ – 13³⁰** **CLOSING CEREMONY (Conference Hall)**
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Turistički obilazak Trebinja

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- EKOL2** *Ljiljana Tanasić, Milan Glišić, Bojan Damnjanović, Vesna Teofilović*
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- EKOL3** *Ljiljana Tanasić, Saša Spasojević, Milan Glišić, Vladan Mičić, Vera Rašković*
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- EKOL4** *Munir Mehović, Sejit Bobar*
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- EKOL7** *Milica Stojanović*
“DEEPWATER HORIZON” – Student paper
- EKOL8** *Anja Ristić*
RENEWABLE ENERGY RESOURCES – Student paper
OBNOVLJIVI ENERGETSKI RESURSI – Studentski rad

- EKOL9** *Dejan Bajić*
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TEKTONIKA PLOČA – Studentski rad
- EKOL10** *Snežana Komatina*
GEOPHYSICS AND SOCIETY – HUMANITARIAN EXPERTS PROJECTS
GEOFIZIKA I DRUŠTVO – HUMANITARNI EKSPERTSKI PROJEKTI
- EKOL11** *Igor Golja*
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***PLENARY LECTURERS
PLENARNA PREDAVANJA***

THE EFFECTS OF ALTERNATIVE INSTITUTIONS IN THE FORMER YUGOSLAVIAN COUNTRIES

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ABSTRACT

Identifying basic theoretical schemas (as images of real reality) with ideological doctrines (as subjective images of reality) has always been fraught with many dangers, and has often led to catastrophic consequences, sometimes visible to the naked eye. The post socialist transition is a good example of this claim. The subject of this paper is to explain the wide gap between the model of neoliberal rhetoric and the establishment of quasi-neoliberal reality, which has caused enormous damage to the peoples and state resources through alternative institutions in the countries in which it was applied. Unfortunately, monistic neoliberal instrumentalizations and institutional improvisations and operationalizations are still present in some transition countries, especially in the region of Southeast Europe (SEE). In theory, they manifest through apologetic elaborations, and in practice through various quasi-forms of socio-pathological type. The aim of this paper is a) to point out the need to reconcile the interests of government and business elites with the interests of society in the considered countries, viewed as the real functioning of various institutional types (formal, informal, and alternative), and b) to try to explain how total domination of politics over all areas of life and work has prevented real democratization and institutionalization, as well as social and economic development. The paper is based on two hypotheses: *the first*, the epicenter of all post-socialist transition problems was an institutional vacuum, which eventually turned into institutional nihilism, with highly unfavorable ownership structure as its key component, and *the second*, in the conditions of institutional nihilism (realized through alternative institutions), the consistent development strategy and successful economic policy cannot be created nor implemented. Using standard methods of economic science and social sciences, the research in this paper showed that government structures throughout the post-socialist period deliberately maintained and reproduced institutional nihilism and forced alternative institutions.

Keywords: institutions, alternative institutions, neo-liberalism, transition, former Yugoslavian countries

BIOTECHNOLOGICAL APPLICATIONS OF SYNTHESIZED PATTERNED POLYMERIC SCAFFOLDS

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ABSTRACT

Recently, there has been a significant progress regarding the biotechnological applications within the field of tissue engineering. One of such applications concerns the preparation of patterned polymeric scaffolds for patterned cell growth. Cell growth systems that make use of surface micro structuring and patterning have been gaining important traction as a result of their capacity to finely control cell growth and promote substrate adhesion. Being one of the numerous micro structuring techniques, soft lithography is a simple and sound technique for the preparation of nano-patterned polymeric scaffolds and was used in several studies to create patterned biopolymers on lamellas. In these studies, various lamellas were covered with different biopolymers and patterned using PDMS stamps which were prepared by passing UV light through a printed photomask that contained the desired pattern. The stamp replicates the opposite of the master. The same polymer master can be used many times without degradation. In Cell viability was observed on the prepared materials in this work. Viability of cell growth on these biopolymers was then studied with L929 mouse fibroblasts using Neutral Red Uptake Assay. The results showed a significant increase in cell growth on the patterned surfaces of the biopolymers.

Keywords: biopolymer, scaffold, tissue engineering, cell growth

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BRAINS IN A VAT?

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ABSTRACT

Our brain is what make us human. It gives rise to our thoughts, movement and desires, store our memories and enable us to navigate our world every day. In the past twenty years neuroscience has made significant progress on understanding human brain function. Yet despite decades of research-the brain remains largely unknown. The computational powers of computers have increased exponentially in this same period. It is of no surprise that research advancements in brain-computer interface (BCI) technology are developing. This technology till now is confined to the rehabilitative medicine (where is use to support mobility and communication of severely disabled persons) and the computer gaming industry (where is use for passive assessment of cognitive state). Prominent examples of BCI that use stimulation include the cochlear implant and deep brain stimulators. Does the brain is a computer? Does the computer has its own intelligence? Connecting our brains directly to technology may be a natural progression of how humans have augmented themselves with technology over the ages? At the end or is it at the beginning: how do we know we are not brains in a vat?

Keywords: brain-computer interface

CONTEMPORARY RADIO-TELEVISION SYSTEMS AND CONTENTS PLACEMENT

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ABSTRACT

Ever since the very beginning and the evolutionary process of electronic media, the cornerstone of contemporary life, the application of new technologies in contents production and placement has not undergone a revolution as much as in the modern age. Technological innovations employed during the analogue radio and television era, along with the subsequent ones, had the basic goal to improve the user experience in terms of vision and sound while presupposing high quality contents constantly challenged by the ever-growing user demands. The second decade of the 21st century is marked by the worldwide media industry expansion which is partly due to the new media influence. The aim of this work is to analyse media systems and other media service providers in the business model adaptation to the new technological possibilities so as to keep and gain some new contents consumers -viewers and listeners - from the national as well as from the global market of media offer and demand by building personal connections through personalised experience. The key role in this process belongs to the rapid growth of data centralisation and its planned usage.

Keywords: contemporary electronic media, television, radio, contents placement, OTT platform

***INVITED LECTURER
PREDAVANJE PO POZIVU***

ART AS A RESULT OF THE IDEOLOGY OF POWER

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ABSTRACT

Is the war over? Is its success measured by the number of victims or the consequences it has caused? Is art the only winner of any war because it is the only one showing both sides of the coin? It is ideologically colored, but not conflicted. It is rebellious, but not destructive. It is a luxury of leisured, but not just the empty decoration. It is a living ideology, but not politics. Philosopher Jacques Rancière claims "Art is an act of collective intelligence that should not be politically active. Artists should be at aesthetic distance because there is virtually no art outside the gallery institution." However, Lucy Lipard clarifies "There is no neutral zone. Every artist must ideologically choose, otherwise they will be manipulated." However, artist Alfred Jaar states that there is a huge gap between reality and its presentation. It is the artist who fills this void with intellectual and creative engagement.

Keywords: Art, ideology, power, politics, war

***ECOLOGY, ENERGETIC EFFICIENCY AND
GREEN ENERGY
EKOLOGIJA, ENERGETSKA EFIKASNOST I ZELENA
ENERGIJA***

ANALYSIS OF THE SERBIAN PUBLIC PRIVATE PARTNERSHIP PROJECTS IN THE FIELD OF ENERGY EFFICIENCY

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ABSTRACT

Energy efficiency is one of priorities defined in the Energy Sector Development Strategy of the Republic of Serbia. For the successful realisation of any strategy, including energy sector development strategy, it is necessary to allocate financial resources. In the times recession and limited state budgets, it became necessary to look for new modalities in an era of increasing demand especially where financial resources are limited. One of the models often utilized by the public sectors across the world is Public-Private Partnership (PPP).

The purpose of this paper is to identify potential difficulties in the preparation and contracting of PPP projects in the field of energy efficiency in Serbia, considering the fact that only a limited number of public contracts have been signed and much more have been approved as a PPP project proposal. Considering the findings of the research, energy efficiency has proven to be one of the key drivers for the development of PPP projects in Serbia. The projects in the area of energy efficiency experienced an exponential increase in the past period, although difficulties were identified with their preparation and contracting.

Keywords: energy efficiency, public – private partnership, projects.

GOALS AND ASPECTS OF WASTEWATER TREATMENT AS A GREAT ENVIRONMENTAL PROBLEM IN SERBIA

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ABSTRACT

The increase in population and the development of industry lead to an increase in water consumption, which leads to an increase in the amount of used, wastewater. Along with the urbanization and development of industry and agriculture, the level of wastewater pollution has increased. Due to the discharge of wastewater into the recipients, catastrophic consequences have occurred in the recipient (watercourses and water accumulation, land), that is, into the ecosystem as a whole. Regardless of how and where they are generated, the wastewater must be treated if its quality falls outside the scope of the law.

The competent state authorities adopt wastewater quality standards, with the primary objective of protecting water resources and land from potential pollution, which can occur if standards and norms are not respected.

The quality of the treated wastewater should comply with the requirements of the Regulation on limit values for pollutants in water and the deadlines for their attainment ("Official Gazette" RS, No. 67/11, 48/12) and the European Council Directive on urban wastewater treatment (Urban waste water treatment Directive 91/271/EEC and 98/15/ EEC).

Keywords: Waste water, treatment, limit value.

A MULTIDISCIPLINARY APPROACH TO THE USE OF GEOTHERMAL ENERGY FOR THE REMOTE HEATING SYSTEM

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ABSTRACT

The potential of geothermal energy sources and their evaluation in the energy sense is the basis of a sustainable management strategy in a way that does not endanger the resources, while maximizing their potential.

Geothermal energy represents one of the most promising potential for renewable energy in the region. The possibility of using warm, geothermal water depends on the temperature and the abundance of the source. The advantage of a particular area is reflected in the fact that sources for use are already available. Geothermal water is characterized by a very favorable chemical composition in terms of use for heating and the absence of aggressive properties.

Resource characteristics on the one hand (temperature, pressure) and thermal requirements of facilities on the other, with certain restrictions on existing installations, and the distance of wells from users, determined the type and heating network of the geothermal remote system, which provides for the use of locally available and renewable energy sources.

The effects of this system are multiple, ranging from savings, through increased energy efficiency and sustainable use of geothermal resources, to environmentally positive environmental effects due to the reduction of greenhouse gas emissions.

Keywords: Geothermal energy, Renewable energy, Environment.

CONTENT OF WATER SOLUBLE AND INTERCHANGEABLE FORM OF LEAD IN THE ROADWAY DUST ALONG THE MAIN ROAD M-17 THROUGH THE CITY OF MOSTAR

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ABSTRACT

One of the most significant contributors to the heavy metal concentration growth, especially lead metal concentration growth in the soil is traffic. The main objective of the study was to determine the lead content and its concentration in water of soluble and interchangeable forms of lead on the M-17 road in Mostar has been done. Observing this road, five different locations had been chosen for exploring the defined task. Road dust samples were taken in the first cycle, fall 2018. The specified metal is identified according to EU standards. The AAS-flame method was used to determine total lead level and AAS-plow technique was used to determine soluble and exchangeable lead forms. According to the obtained results, the following conclusion. The results of the research show large oscillations of lead concentration on different locations. The highest concentration was found at location 5: Bišće field 498.33 mg / kg and lowest at location 3 Brankovac at 6.12 mg / kg.

Keywords: lead, road dust, M-17 highway, exchangeable lead forms.

ZINC (Zn) CONTENT IN THE SOIL AND BLATINA GRAPES PRODUCED IN THE REGION OF MOSTAR

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ABSTRACT

Blatina grapes is fruit crop characteristic of the Herzegovina region. The amount of grapes produced for consumption and processing, greatly exceeding the Herzegovina population needs, and produced fruit has an impact on the quality of the diet to a wider geographical area. The aim of this work is to determine the content of zinc (Zn), as microelement, as well as potentially toxic metal in soil samples and grapes blatina produced in the Mostar region, that consumption in raw form or in form of products, zinc may be involved in human metabolism.

Soil samples were taken from a depth of 30cm and 60cm in locations with different modes of production (extensive, intensive - plantation farming and plantation near anthropogenic sources of pollution). From the same locations is taken representative samples of grapes. In soil samples and grapes samples were determined physicochemical properties and the content of zinc. Zinc content was determined by atomic absorption spectrophotometry, flame technique (FAAS).

Zinc content in the grapes blatina is in range of 0,677 to 0,840 mg/kg and is not noticed relation with zinc content in the soil, but it is observed relations between blatina fru in zinc content, cultivation methods and the presence of anthropogenic pollution sources.

Keywords: soil, grapes, blatina, zinc, microelement, diet.

ENVIRONMENTAL PROTECTION IN THE REPUBLIC OF SERBIA AND THE REPUBLIC OF SRPSKA

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ABSTRACT

The paper deals with the analysis of environmental protection in contemporary conditions of life and environment, when its pollution is increasingly present due to industrialization in which dirt technologies are often used, as well as human negligence towards nature and others. The aim of the research is to define the concept and goals of environmental protection, the legal basis for its regulation, the principles of protection, the concept of sustainable development, through the analysis of regulations related to the field of environmental protection in the Republic of Serbia and the Republic of Srpska. The conclusion reached by the research is that one of the key problems in the modern world is the protection of the environment and its improvement by applying appropriate mechanisms and measures. Also, it was concluded that the objectives of environmental protection are: preserving and protecting the health of people, ecosystems, genomes of animal and plant species, fertility of the land; natural beauty and spatial values; cultural heritage and goods created by man; providing conditions for a limited, reasonable and sustainable management of living and non-living nature; preserving ecological stability of nature, quantity and quality of natural resources; prevention of hazards and risks to the environment. Bearing in mind the current activities in our country on the implementation of modern environmental standards, one can conclude that an important step has been made, which requires even greater efforts to achieve an enviable level of progress in this area.

Keywords: environment, pollution, ecology, health, protection

CORPORATE SOCIAL RESPONSIBILITY AND INTERPERSONAL COMMUNICATION DISORDERS IN TERMS OF ENVIRONMENTAL CRISIS

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ABSTRACT

Corporate social responsibility (CSR) in doing business of successful companies is the increasingly used in the world. The business of such organizations characterizes the responsibility for events and activities of a broader social significance. Organizations that want to create a successful competitive position on the market must apply modern methods and techniques of management because the business of organizations in a socially responsible way has become a key topic that captures the attention of management. The aim of this paper is to show how many employees are familiar with the significance of CSR concept in Serbia. In order to make organizations more successful in used many advantages of socially responsible behavior for the needs of this paper, a survey was conducted that included opinions and attitudes of employees in different organizations in Serbia. The obtained results indicate that the aforementioned concept is still in its infancy. The research results indicate that the concept of corporate social responsibility more familiar APOL who have a higher degree of education. On the other hand, about 80% of respondents almost never heard of this concept, which is somewhat understandable because as such it still does not apply in our region. Thus the results of knowledge of the importance of the concept of CSR management can help organizations to streamline financial and organizational resources in the direction of those responsibilities, which will contribute to organizational strategy and will increase competitive advantage. Knowledge on how employees perceive CSR efforts of organization and involvement of employees in the implementation of these activities can help in initiating the program, which would increase awareness of employees about the results and benefits of certain activities, and thus achieve a positive impact on the performance of the organization. In order to solve a number problems which community facing in which the organizations doing their business activity, they undertake various initiatives for the wellbeing of the society.

Keywords: corporations, companies, corporate social responsibility, image, management, ecological security, sustainable development

„DEEPWATER HORIZON”

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ABSTRACT

The oil spill in the Gulf of Mexico is considered to be one of the largest oil and environmental disasters that hit this planet. An oil platform called Deepwater Horizon was located in the Atlantic Ocean near the US state of Louisiana. British Petroleum was in charge of exploration and exploitation of oil. The platform exploded in April 2010. After the sinking of the platform, the oil uncontrollably poured into the sea for the next 87 days. During that period, more than 4.6 million barrels of crude oil had leaked. The aim of this paper is to raise the level of awareness for all generations of how important it is to preserve our planet by preventing these and similar disasters. As well as presenting difficulties due to the scheduling of the computer system that was encountered by workers on oil platform “Deepwater Horizon”. In order to cope with these disasters in the future, we need to learn from the mistakes that have occurred in the past. What we can still conclude is that computer systems are not always 100% reliable. In addition to manage the system, knowledge and experience are required.

Keywords: oil disaster, consequences of oil disaster, Deepwater Horizon.

PLATE TECTONICS

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ABSTRACT

Even in the XVI century, there was an idea of the existence of one giant, ancient continent that fell apart as a result of forces that were unexplainable at that time. This hypothesis was scientifically proved not earlier than four centuries later, by research and hard work of experts.

Plate tectonics theory exists thanks to a big number of processes that are happening at the same time. Their importance lies in the fact that they began to happen in the period of forming of oceanic and continental crust, they are happening right now, and they will be happening during the next few billions of years.

This paper is based on references that are spread and accepted worldwide. The paper is about forces that move whole continents, ways of moving of tectonics plates, moreover consequences of that movement, formation of some forms of relief, as well as some of natural phenomena. Something about relief of seabed, constant creating of new oceanic crust and smelting of an old one will also be mentioned.

Keywords: plate tectonics, convergency, divergency, subduction

FIRE PROTECTION IN THE OIL INDUSTRY

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ABSTRACT

With improvement of industry thus oil and gas industry, started to chain problems which are linked with preservation of material goods and human lives from fire occurrences. Every company has duty to teach its workers to control the fire till the firefighters come. According to research, in the world daily 200 people get damaged by fire and explosions. Damage to human lives can't be measured while material damage is measured by bookkeeping path and "real" path.

Keywords: fire protection, fire.

RENEWABLE ENERGY RESURES

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ABSTRACT

According to data from the energy consumption in the period from 1850 to 2000 it was observed a constant increase in consumption of all forms of energy. The reason for this growth is the rapid technological development especially in the second half of the last century. Processes of production, transportation and use of energy leave a large footprint on the environment and the ecosystem itself due to emission and emission of substances that exert their effects in different ways and can cause a major ecological disaster. All energy sources can be divided into renewable and non-renewable. Non-renewable energy sources are those that are on or can be found in soil and their age of exploitation is limited in time and that includes oil, gas, coal, fossil fuels. Renewable energy sources are those that are renewable in a short period of time and are more environmentally friendly. These include biofuels, wind, solar and geothermal energy etc. Today the emphasis is placed on five main sources of energy: hydropower, solar, wind and geothermal energy and biomass. We can say that nowadays we can get about 18% of world's energy from renewable sources. Renewable sources must be more and better used because they are environmentally friendly and have a big role in reducing CO₂ emissions, and even more because of the fact that it is expected that in the future it will be economically competitive with traditional sources.

Keywords: energy, renewable sources, non-renewable sources, ecology, world energy.

GEOPHYSICS AND SOCIETY – HUMANITARIAN EXPERTS PROJECTS

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ABSTRACT

Geoscientists have the tools necessary to effect positive change in communities coping with environmental hardships and natural hazards. That is why many places around the globe facing severe water shortages, earthquakes, tsunamis and other hazards have benefited from the humanitarian efforts of geoscientists who have offered their specialized knowledge and technical skills to those in need.

International program *Geoscientists Without Borders* serves as a catalyst bringing capable scientists together with communities to solve their problems. The program provides funding for these projects and assists geoscientists and their teams in collaborating with multidisciplinary and community-based partners. Data is collected, processed, and interpreted to provide resources that result in a sustainable humanitarian benefit to the community. In the paper, two-years humanitarian *GwB* project related to investigations of landslides occurred in Serbia and BiH after the floods in May 2014 are presented.

Keywords: Humanitarian projects, Geophysics, Society, Geoscientists without Borders, Serbia, BiH.

WIND GENERATORS AS ALTERNATIVE SOURCES OF ENERGY

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ABSTRACT

Wind energy is one of the most actual renewable energy sources (RES), or so-called alternative sources for electricity production. Wind energy has proven to be the most serious alternative source of energy from several aspects: due to its immense amount, a slightly higher electricity price than the price of electricity obtained from hydroelectric power plants, obtaining clean and renewable energy that does not pollute or emit CO_2 into the environment. This paper describes the operating principles of wind turbines, types of their structures, types of wind turbine systems. An overview of electricity generators suitable for the operation of wind turbines, scheme of realization of wind power plants, ways of connection to the grid is given. The dependence of the rotor diameter on the installed power is shown. Wind energy projects in Montenegro based on wind generators have been analysed.

Keywords: wind, wind generators, alternative sources, electricity, grid

PERCEPTIONS AND ATTITUDES ABOUT THE ORNAMENTAL CHARACTERISTICS AND THE USE BOTH OF ORNAMENTAL INDOOR FOLIAGE AND ORNAMENTAL INDOOR FLOWERING - FOLIAGE PLANT SPECIES

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ABSTRACT

Ornamental foliage plants are species that are grown because of their foliage, although some may even bear flowers. Flowering-foliage species are plants with attractive foliage and are hence ornamental also after flowering. The specific objective of the paper was to study the perception of ornamental characteristics and the use both of the selected ornamental foliage and ornamental flowering-foliage species of indoor plants. A survey research was conducted in the area of the cities of Šibenik and Knin as a primary source of information during the preparation of the paper. The survey research was conducted in April and May 2018. The research findings have shown as follows: the attractiveness of the use of the selected species in different interiors was graded from 3.61 to 3.81 for ornamental foliage plant species and from 3.77 to 4.02 for ornamental flowering-foliage plant species. The ornamental characteristics of ornamental foliage plant species were graded from 3.54 to 3.90, as opposed to ornamental flowering-foliage plants from 3.77 to 4.13. The effect of different species of indoor plants on human mood was graded from 3.67 to 3.95 for ornamental foliage plant species and from 3.77 to 4.12 for ornamental flowering-foliage plant species.

Keywords: Perceptions and attitudes, visual impression, use, ornamental characteristics, selected species.

PERCEPTIONS AND ATTITUDES ABOUT THE ORNAMENTAL CHARACTERISTICS AND THE USE OF ORNAMENTAL INDOOR FLOWERING PLANT SPECIES, AS WELL AS CACTUSES AND SUCCULENTS

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ABSTRACT

Ornamental indoor flowering plant species are species that flower for more than one season, as well as those that are grown primarily for the beauty of their flowers. On their thickened stems, cactuses bear tufts of wool. They do not have foliage and most of them have thorns. Succulents are Xerophytes that survive drought by storing water in their organs. The specific objective of this paper was to study the perception of ornamental characteristics and use of the selected species of indoor plants, ornamental flowering species and cactuses and succulents. A survey research was conducted in the area of the cities of Šibenik and Knin as a primary source of information during the preparation of the paper. The survey research was conducted in April and May 2018. The research findings have shown as follows: the attractiveness of the use of the selected species in different interiors was graded from 3.63 to 4.03 for ornamental flowering species and from 3.71 to 4.03 for cactuses and succulents. Ornamental characteristics of ornamental flowering species were graded from 3.84 to 4.13, as opposed to cactuses and succulents, which were graded from 3.42 to 4.06. The effect of different species of indoor plants on human mood was graded from 3.87 to 4.17 for ornamental flowering plant species and from 3.57 to 3.97 for cactuses and succulents.

Keywords: Perceptions and attitudes, visual impression, use, ornamental characteristics, selected species.

THE IMPORTANCE OF "ICT" ON OPG-E IN THE RUAL AREA

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ABSTRACT

Information and communication technology is a 21 st century technology that enables the collection,storage,transmission and processing of information,finding applications in every branch oft he economy.

The aim of this paper is to encourage OPG-s to apply information and communication tehnology in order to optimize business by integrating business activities,strengthening market position,increasing competitiveness and business efficiency.

The use of information and communication technology helps to develop and becomes an indispensable basic factor for the production and sustainability of OPG in rural areas.

Keywords: information communication technology, OPG, competitiveness.

MOUNTAINERING AS A PART OF TOURIST MEGATRENDS

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ABSTRACT

Tourism and mountaineering are world megatrends and mutually dependent and compatible activities. Mountaineering is organized sports activity and is an integral part of physical culture. Mountaineering activities are mostly related to trips outside the permanent place of residence and movement in nature, so these trips can be considered special forms of tourism. Beside sporting, aesthetic and health motives, hikers are encouraged by cultural, historical, anthropological and other motives. Mountaineering has a multiplier role in the development of tourism in a particular destination, whether it's about specific forms of tourism or the addition of a classic tourist offer. It consists of a whole set of different sports disciplines from recreational, through competitions to extreme. Mountaineering organizations take care of the construction and maintenance of hiking infrastructure, which is also a touristic one. Mountaineering organizations provide hiking guides and rescuers without which it is impossible to develop a quality offer of mountain tourism. This work discusses the contribution of mountaineering to the tourist valorization of montenegro mountain.

Keywords: Mountaineering, Tourism, Megatrends, Montenegro.

***ECONOMY AND MANAGEMENT
EKONOMIJA I MENADŽMENT***

INTERNATIONAL TRANSPORT OF GOODS IN ROAD TRAFFIC ACCORDING TO THE CMR CONVENTION

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ABSTRACT

The paper analyzes the very important Convention on the Contract on the International Transport of Goods in Road Traffic - CMR, examining, first of all, the documents used in this type of traffic, as well as the liability of the carrier. The paper presents the area of application of the convention, the conclusion and execution of the transport contract, the bill of lading (function and content), complaints and lawsuits, successive transportation, etc. At the end of the work, in conclusion, it points to the importance of the Convention that it has for international road freight and goods transportation.

Keywords: convention, commodity, comrade, responsibility, lawsuits.

GLOBALIZATION OF THE WORLD AS A PREREQUISITE OF ECONOMIC IMPERIALISM

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ABSTRACT

The world of the new millennium shaped by globalization, liberalization and technological development. The concept of globalization began to be used more intensively only in recent times, and different authors have variously defined it. The whole world is deepening poverty, because the rich get richer and the poor poorer. Globalization accelerates the process of impoverishment of the population in nerazvijeniim countries and even in some developing countries and creates new requirements that states must adapt if they want to survive or survive economically. The boundaries are not entirely disappeared, because the nation-states still have a reason to control the movement of people and goods in accordance with the needs of state security. However, looking at four important factors affecting the business of life, the world is already in many ways become a place without boundaries. These factors are referred to as the "four C" (communication, capital, corporations and consumers). Globalization is a process that is started and that can not be stopped, the developed world is the bearer of this process and it is best used on a global circumstances and created the preconditions for a new economic imperialism.

Keywords: Globalization, Poverty, The "four C", "Economic Imperialism".

VALUABLE LEADERS STAND OUT WITH A SURPRISING COMPETENCE FOR THE DIGITAL AGE: "HUMILITY IN LEARNING"

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ABSTRACT

Humble leaders are not, as one might think at first sight, servile, humble, with low self-confidence and modesty which implies the denial of their own worth. On the contrary, they know exactly what their value is, but do not trump it. They know where their place in the organization is and what their purpose is in their lives and that of others. Moreover, their responsibility is to encourage the autonomy and uniqueness of others, creating their own sense of conscience and responsibility. Starting from this sketch, we will find the answer to the question: "does the humble leader in Romania look different from the universal one?"

Mark Zuckerberg, the founder and CEO of Facebook, is one of those who are experimenting with this concept in the "year of travel", which started in 2017. He combines engagement with humility learning. It seems that precisely this slightly anachronistic concept, drawn from theology books, makes a leader successful and maintains its value in highly volatile business environments, in the full disruptive era of digitalization, in which you are now at the top, tomorrow you can reach the bottom, falling exactly from the height you climbed. Because the power is intoxicating on itself. And the wisdom of such a leader lies precisely in the ability to stay at the high levels of success, without deceiving himself and then pushing him into the abyss. Because as it is known, the higher the height the climb, the worse the fall, if you do not know how to maintain balance.

According to this study, the humble leader is highlighted by attributes such as: wisdom, ability to adapt, vision and a high level of relationship with internal and external stakeholders.

Keywords: humble leaders, competence, digital age, learning.

ENTREPRENEURIAL ECOSYSTEMS AND INTERMEDIARY ORGANIZATIONS

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ABSTRACT

The main goal of this article is to indicate the role of entrepreneurial universities and intermediary entities as a success factor of small and medium enterprises. Entrepreneurial universities represent institutions that undertake entrepreneurial activities with the objective of improving regional or national economic performance. On the other hand, intermediary entities advance the commercialization of science by providing a set of specialized services. The article points out the role and significance of three types of intermediary entities, such as university technology transfer and licensing offices, physical space intermediaries (incubators, accelerators and co-working spaces) and specific financial providers intermediaries (venture capital firms, angel investors and crowdfunding platforms). We explore how these various intermediaries function and how they provide complementary and related services in support of scientific commercialization through entrepreneurship. The basic purpose of the aforementioned types of entities is to serve as the factors of survival, growth and development of small and medium enterprises.

Keywords: entrepreneurial university, intermediary organizations, technology transfer, incubators, accelerators, financial providers.

MATERIAL - STORAGE BUSINESS OF THE REPUBLIC OF SRPSKA RAILWAYS, JSC DOBOJ AS PART OF THE ACCOUNTING SYSTEM

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ABSTRACT

Scientific approach in defining material and warehouse business in the r system of Republic of Srpska Railways, JSC Doboj makes a great contribution to the arrangement and presentation of the actions and procedures in the material and warehouse business specific to the mentioned system. The importance of establishing these operations is of great importance primarily because of the large definitions of the spare parts of the present equipment and vehicles used by Republic of Srpska Railways JSC Doboj. Warehouse business and the records match with the material bookkeeping concerning both the quality and value.

The material and warehouse business is regulated through the following chapters: Procurement, storage and exclusion to use of spare parts and materials; Characteristics of spare parts and materials; Reception and control of spare parts and materials; Plan of procurement of spare parts and materials; Technical specifications of spare parts and materials; Exclusion of spare parts and materials from storage; Regenerated spare parts; Disposal of unusable spare parts and materials; Ordering spare parts via "H" and "Hr Forms "; Spare parts management; Exchange of information related to the maintenance of freight cars.

The high value of inventories and their turnover directly affect the economic parameters of individual indicators of ratio analysis in business. Only a precisely defined and regulated system of material and warehouse business ensures a regular annual inventory of spare parts and equipment, and a reliable presentation of their values.

Keywords: Material Business, Accounting System, Republic of Srpska Railways

ELEMENTS FOR THE PREPARATION OF A BUSINESS PLAN OF THE REPUBLIC OF SRPSKA RAILWAYS

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ABSTRACT

A brief scientific review of the given topic is focused on the processing of basic elements in the preparation of the Business Plan of the Republic of Srpska Railways, JSC Doboj, with all the projected planned sizes of the railway traffic in the period of one business year. They are parameters through the economic effects participating in the realization of planned tasks. They are presented through the economic effects participating in the realization of planned tasks. The general approach in defining the planning emphasizes the process of operationalization of future accomplishing the set tasks should be realized.

It represents the anticipation of future events, as well their presentation and realization. Elementary principles are expressed through the scientific character, complexity, concreteness and participation of all participants of planning in the system of the Republic of Srpska Railways, JSC Doboj. The plan establishes goals, strategies, tasks and priorities in the business, harmonized with the real services.

System planning achieves the following: Designing economic sizes of all resources, Directing all business activities towards the achievement of set goals.

Keywords: Business plan, Railway traffic, goals, strategies.

TECHNICAL SPECIALISATION OF HUMAN RESOURCES AS A CONDITION FOR DEVELOPMENT OF SME'S IN SERBIA

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ABSTRACT

Available human resources are one of the potential conditions for the development of SMEE sector in Serbia. Nevertheless, there is an unfavorable structure of human resources, in which technical specializations for a higher technological level do not dominate, which causes the expansion of the technological gap. It is characteristic that in recent years in Serbia there is a disparity of supply and demand on the managerial market, regardless of which category the companies belong to and what activities do they perform.

There is a mismatch between supply and demand for certain occupational profiles necessary for the MSPP sector functioning. However, the advantage of small companies is in their innovativeness and flexibility, and also, what is the advantage may become a disadvantage.

This paper explains the importance of Human Resources Management, which takes up one of the most important topics and positions in creating the development, functioning and success of the SMEE sector in the European Union and in our country.

Therefore, the first and most important issue of diversity in the structure of employees, as well as differences in management, basically defines and specifically categorizes the success of micro, small medium-sized companies and entrepreneurs. In such a defined concept, which implies competitiveness levels, the focus of management engagement is the strategy of continuous creating the level of highly professional managers and employees.

Keywords: Technical specialization of human resources, SMEE sector, manager, strategy, management, entrepreneurship.

THE ROLE AND IMPACT OF IMF IN MAKING ECONOMIC POLICY OF COUNTRIES IN TRANSITION

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ABSTRACT

The process of transforming the economy of countries in transition is highly dynamic, turbulent and complex. These circumstances make it difficult to successfully define and implement a proper economic policy, which requires continuous monitoring of the situation in the country, as well as utilization of experiences of other countries in preserving the stability and sustainability of the economy. IMF is one of the most influential institutions that monitors the world economic system and plays one of the most significant economic roles in the world. As such, it greatly influences the world economic policy as well as the economic policy of its members, especially the underdeveloped and transition countries. IMF provides advice on economic policies that are not binding. This institution plays an advisory role in economic policymaking. The aim of this research is to point out the consequences of implementing economic policies in countries in transition by relying only on IMF recommendations. Examples of successful and unsuccessful economic transitions of these countries carried out on the basis of IMF recommendations support the confirmation of this thesis. The first part of the paper provides an insight into the basic characteristics and modes of IMF operations. The second part analyzes both the positive and negative sides of cooperation between the countries in transition and the IMF. The last segment refers to the prospective possibility and usefulness for continued cooperation with the IMF.

Keywords: IMF, Economic Policy, Transition

RESEARCH OF DIFFERENCES IN ATTITUDES REGARDING CORPORATE RESPONSIBILITY OF ENTERPRISE TOWARDS THE MARKET IN RELATION TO THE TYPE OF THE EMPLOYEES EDUCATION

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ABSTRACT

In modern business conditions, corporate responsibility must be an integral part of its strategy, and for the implementation of corporate responsibility it is of paramount importance to raise employee awareness of the importance of corporate accountability. The aim of the research presented in this paper is to determine the differences in attitudes on corporate responsibility towards the market in relation to the type of employee education. The results of the research will be the basis for a better understanding and greater commitment to corporatively responsible market activities by employees.

By better understanding and greater dedication to corporate responsibility actions, it is possible to provide greater efficiency in the implementation of the corporate responsibility concept, which results in more successful business operations and better quality of life for the employees and the community.

Keywords: corporate responsibility, enterprise, market, type of education.

IMPLEMENTATION IF INTERNATIONAL SOCIAL SECURITY AGREEMENTS IN MANAGING OF HEALTH INSTITUTIONS

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ABSTRACT

International agreements of social security regulate the transfer of a wide range of social security rights from one state to another, including health insurance and protection, pension payment, unemployment insurance, maternity benefits, and death grants. Although there have been many years of application of international social security contracts, and the rights derived from them, they are not yet sufficiently implemented into health care institutions, they represent ignorant and ignore their application. Public health institutions have greater experience in obtaining benefits from service provision by contracts, but there are also some reservations and unused potentials. From the macroeconomical point of view, providing services to foreign healthcare customers can be equated with the export of health services, which is realized at domestic institution. Benefits from the services under international agreements have also the insured person who needs the service, and a health institution that gets a new customer, and health insurance, which indirectly and, sometimes cheaper, can cover the secured case. The aim of this paper is to point out the need for the application of services through the international agreements, as well as to make the application of the agreement in the most efficient way, and to achieve benefits for the institution and for service users.

Keywords: Agreements of social security, health care, medical institution, medical services

ECONOMIC AND POLITICAL ASPECTS OF BREXIT

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ABSTRACT

The paper deals with the expected economic and political consequences of Brexit. The political consequences have to be analyzed on the basis of the very manner of Great Britain joining the EU and the character of its membership hitherto, considering that Great Britain was the last European power to enter the process of European integration, two decades after it started. From the start, it was described as an odd partner in this process, it had a specific status, and therefore, politically speaking, Brexit was not unexpected. The idea of Eurofederalism and any kind of transfer of national sovereignty to the EU level was completely unacceptable for Britain. It is the root of its giving up the key projects of the integration process, such as European monetary union and The Schengen Area.

According to available studies, the economic effects of Brexit depend on the decision whether the withdrawal will be with a deal or no-deal, whereby it is considered that the no-deal Brexit will cause more damage to British economy. The ultimate effects are conditioned by the manner in which the status of Great Britain will be regulated in the single internal market and by following European regulations. Likewise, fiscal contribution of Great Britain is expected until the end of the existing fiscal framework. Trade contracts with third countries, especially the USA, will also have great importance, and also the manner in which British immigration policy will be conducted.

Keywords: Brexit, economic impact, political consequences.

IMPORTANCE OF BUSINESS MANAGEMENT WITHIN THE TOP MANAGEMENT FINANCIAL DECISION MAKING

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ABSTRACT

Business management can be seen as an important source of improving decision-making in a company. This is especially important for financial management in terms of daily basis decision-making by the company top managers. Besides that, the top management should reconsider the introduction of control mechanisms in companies, because this way enables better management of the company. The goal of using business management as a part of the financial decision-making is more efficient business management that will lead to the maximization of financial and other effects of the company. That increases the company's ability to achieve better results on the market (domestic and international), increasing its value. Business management as an important factor of financial management of a company presents the need to establish management reporting in accordance with the principle of "fair reporting". One of the ways of improving the overall management flows within a company is the process of establishing and implementing the audit process in the companies.

Keywords: business, decision, company, management.

ELV RECYCLING IN THE FUNCTION OF CIRCULAR ECONOMY

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ABSTRACT

The intensive exploitation of available natural resources, their processing, distribution, use and disposal, which most of them end up as waste is known as a linear model of the economy. This type of a model shows the inability for sustainable economic development and protection of the environment. Opposite to this model, in recent decades, there is a model of circular economy, which has been developing intensively in recent years, which with its principles of functioning has become a sustainable model, both from the aspect of economy and environmental protection. The principles that repose the circular economy model are 3R (Reduce, Reuse, Recycle). One of the most important branches of the economy that seeks to use this model is the automotive industry. So, this paper analyzes the flow of motor vehicle materials that come the end of their life cycle (End of Life Vehicle - ELV), through their possibility of recycling and reuse, and all in the function of an adequate circular economy.

Keywords: Circular economy, ELV, Recycling

MANAGER COMMUNICATING SKILLS WITH EMPHASIS ON THE INTERNET

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ABSTRACT

Managerial communication skill is one of the most important skill for a modern manager which contributes to unification and expression of potentials for all other managerial skills. Whether it is the external or internal communication, it is necessary to bear in mind the way in which the organization communicates and what are the dominant channels of communication. The paper points out that the development of information technologies gives more importance to communication for the organization, which is partly conditioned by changing the way in which employees of the organization communicate with each other, but also the perception of the organization by the end consumer. The Internet offers many opportunities for management development, but at the same time has challenges related to competition, spending precious time and the like. Consequently it is necessary to know all the potential of this medium.

Keywords: management, communication, managerial communication skill, Internet

BUSINESS VENTURE: CERTAIN ASPECTS OF ENTRY, GROWTH, TURNAROUND AND EXIT FROM BUSINESS

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ABSTRACT

This paper deals with certain relevant aspects of business venture, that is situations of entry into business, its growth, stagnation and possible turnaround, as well as situation of final exit from business. Essentially different, all these business situations represent potential key aspects of a business venture. Knowing their character and complex challenges following them represent prerequisite for successful entrepreneurial and managerial response.

Keywords: business venture, entry, growth, turnaround, exit from business.

IMPACT OF ECONOMIC INSTITUTIONALIZATION TO THE COMPETITIVENESS OF INDUSTRIES IN THE SEE COUNTRIES

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ABSTRACT

It has been proven that competitiveness of industry significantly depends on the level of development and efficiency of institutions. Topic of research in this paper is impact of social, and within it economic institutions to the competitive capacity of industry. The aim of the research is proving impact of institutional development to the competitiveness of industry, economic growth and sustainable economic development by the use of comparative analysis. In addition to this, institutional capacity vitally impact efficiency of management of intellectual property and intellectual capital, level of national innovation capacity directly depends on. In nowadays economy of knowledge and global market, intangible assets of a company (and industry), or intellectual property (as narrower part of the intellectual equity) represents the factor that makes it successful. Instead of neoliberal, passive and dysfunctional macroeconomic policy in the SEE countries, there is a need for its reorientation to the institutionally active, engaged, equal, propulsive and efficient economic policy with civilization and developmental sign.

Keywords: competitiveness, institutions, intellectual property, efficiency, economic policy.

SOME NEW MATHEMATICAL THEORIES WITHOUT FORMULA

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ABSTRACT

The aim of this paper is to highlight the possibility of interpreting some recent mathematical theories without formulas. First, we will describe these mathematical theories (linear and metric spaces, affine transformations, and groups of transformations) via formulas in the language of modern mathematics. We will then explain these topics without formulas using experiments in mechanics, physics and chemistry, and construction as well as through examples from everyday practice.

Keywords: mathematics without formulas, spaces linear and metric, transformations, transformations.

INDIVIDUAL, GROUP AND TEAM A WORK IN SCIENCE AND MANAGEMENT

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ABSTRACT

Organization different in foundation isolated, group and team a work on various a levels. Contemporary subjects favor team interdiscipline a work. Efficiency and effective the organization of work, reflect is on whole results. Various are possible a classifications, distributions. Groups are transfiguration in teams. Exist a expanses for to be engaged in research.

Keywords: Organization, individual, group, team, classifications, work, transformations.

***LAW SECTION
PRAVO***

BASIC FEATURES AND INHERITED LEGAL EFFECT OF THE LIFETIME SUPPORT CONTRACT

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ABSTRACT

Lifetime support contract is one of the most important Law of Obligation contracts and in Republic of Srpska is regulated by the Inheritance Law. As an **intuitu personae** contract, it represents a legal transaction signed for the sake of personal qualities of one or both contractual parties. It has an inherited legal effect, and it is complex and strict in its nature.

Historically, in the 19. Century civil code rulebooks from this area there were known hereditary law institutes, lifetime support and lifetime rent but there was no lifetime support contract. This contract was not introduced in our legal field until 1955. by adopting the federal, and after that republic and provincial law on inheritance, by which as a part of the contract the determined transfer of the property from the support recipient onto the support giver was postponed until the time of death of the recipient.

The current trend in increase of the number of people who acquire their property by signing the lifetime support contract confirms the practical significance of this contract, as well as the efficiency of the legal guarantee of the human rights in its legal exercise. Simultaneously, considering that this contract is reliable and difficult to refute in court, there are numerous litigations, especially since even though the contract does not have direct hereditary law influence, it has an indirect impact on the potential inheritor's right of ownership. Therefore, the purpose of this paper is to indicate the directions for the innovation of the possible legal solutions, through the use of comparative law analysis of its normative legal and empirical characteristics, especially from the case law perspective, its basic characteristics, possible legal solutions, rights and obligations arising from this contract and the possibility of its termination and legal effect. For that reason, having in mind that the lifetime support contract is not patrimonial but legally-obligated in its nature, it would be completely justified to exclude it from hereditary law and classify it as the other obligational law nominate contracts.

Keywords: obligational and hereditary law legal transaction, lifetime support contract, family, hereditary and notarial law, basic features, recipient and the receiver of the support, obligations of the contractual parties, contract termination and legal consequences

POLITICAL ORGANIZATIONS (PARTIES) AND THEIR CONSTITUTIONAL POSITION

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ABSTRACT

The general aim of this paper is to give an overview of the following topics: the concept, significance and tasks of political organizations, their emergence and development, classification of political organization and relations in the organizational structure of political parties, ideology of political parties, and constitutional position of political parties. The specific aim of this paper is to provide feedback on political parties in B&H and The Republic of Srpska and to answer questions such as: What are the basic elements of these parties and what is their status basis: Program, statute and organization, party base, supporters, sympathizers, candidates; Types of membership, members, activists and executives; Level of organization: local, regional and national; what is the ideology of these political parties and why are there misunderstandings and conflicts between them?

The question is whether it is possible at all to reach a consensus on common values through political parties in B&H based on current constitutional solutions and ethno-cultural differences. The key question is whether the three constituent nations, together with other national minorities in B&H, create political unity through their political parties? Also, in this paper, as well as in concluding considerations, the following questions will be answered: How is it possible that the political goals of political parties in B&H and The Republic of Srpska are so similar and well-structured, while not implemented in practice; why certain parties take over the programs of other parties, and how is it possible for them to go to elections with the same program goals without practically conducting them or forming a coalition after elections with parties of completely different program orientations, without fearing that they will therefore be sanctioned by citizens (voters) in the next elections? It seems that for most political parties in B&H and The Republic of Srpska the most important thing is to "secure livelihood" for their members than to pursue their program goals. The paper also gives a broader overview of the constitutional position of political parties in general, and in B&H and Republika Srpska in particular, and answers how much the work of political parties is in the spirit of the Constitution of B&H and individual laws, and how much the Election Law of B&H contributes to violations of the aforementioned laws. The paper, and especially the concluding considerations, outlines what needs to be done in order for political parties to contribute to the stabilization of B&H as a state and the development of its entities: the Republic of Srpska and the Federation of B&H.

Keywords: political party, Constitution of Bosnia and Herzegovina, Dayton peace agreement, statute and program of political parties, ideology of political parties.

THE ROLE OF THE OMBUDSMAN IN COURT PROCEEDINGS IN THE LIGHT OF INTERNATIONAL PRACTICE

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ABSTRACT

It is beyond any doubt that victims of human rights violations are rarely in position to initiate court proceedings on their own behalf, which makes the role of human rights institutions indispensable. This specific mandate gives rise to numerous questions, such as: to what extent state institution takes the role of the legal representative, what capacities should it possess, on what basis it selects the cases meriting court intervention, is court intervention equally suitable in all areas of human rights protection and which analyzed model from Europe or wider has proved the most effective? Article offers analysis of court interventions in federal states with complex government structure and multiple institutions mandated with human rights protection, be it Ombudsmen Institution or Equality Body, court interventions in states with single human rights institution, comparative practice present in various European states, as well as interventions of human rights bodies before European tribunals. Author outlines the legal framework, human resources, and administrative structure that need to be provided, so that court interventions would have the desired effect and generate positive changes. In this process, it is of paramount importance to respect existing legal traditions and intrinsic practices, which proved their practical applicability over time, while any attempt to use legal transplants, with a view of hastily unifying national legal orders and imposing transnational jurisdiction, can only produce confusion and countereffects.

Keywords: Discrimination; Equality bodies; Judicial protection; Third party interventions.

BY STUDING CRIMINAL-VICTIMOLOGY THE CHARACTERISTIC OF THE VICTIM OF THE CRIME TO A MORE EFFECTIVE INVESTIGATION

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ABSTRACT

The overall complexity of the crime and perpetrator implies a very complex and sometimes very mysterious relationship between the perpetrator and the victim / victim. Current criminal law science does not pay sufficient attention to some aspects of the victim of the crime, especially in the investigation phase, when maximum invocation of the relationship between the perpetrator and the victim is necessary, which can significantly contribute to a more effective investigation.

Criminal science, and in particular victimology, has affirmed the widespread teaching about the victim of a crime, which in the present time gives the opportunity to further get acquainted with a number of relevant circumstances and facts regarding the causes, causes, motives and other aspects of the crime, the perpetrator.

The paper will present theoretical aspects of this issue, with the presentation of segments of relevant research in specific criminal investigative practice.

Keywords: Criminal, victim, perpetrator, investigation.

INCREASED PROCEDURAL FORMS IN CRIMINAL PROCEDURAL LAW OF THE REPUBLIC OF SRPSKA

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ABSTRACT

The basic aim of the criminal procedure is to establish the truth. It should be acknowledged that the most appropriate time to do this work is before the main trial because, as determined by the police or the prosecutor, it often has a higher real value than the material that was later established in the courtroom. On the other hand, one of the more important features of the contemporary science of criminal procedural law, and therefore contemporary criminal procedural legislation, whose solutions follow the tendencies of science, is the requirement for the efficiency of the criminal justice system. The question of the effectiveness of the criminal procedure, that is, the treatment, is an issue that has always attracted the attention of not only the scientific and professional public, but also the public at large, especially for the last decade. The request for the efficiency of the criminal procedure has become one of the more important features of modern criminal law science, and therefore modern criminal procedural legislation whose solutions follow the tendency of science. It is, quite justified, one of the international legal standards of this area as a whole. The author discusses the simplified assessment of the forms in the criminal assessment of the law of the Republic of Srpska related to the achievement of the appropriate level of efficiency in criminal proceedings in the Republic of Srpska.

Keywords: efficiency, simplified procedural forms, simplified process forms

INSTITUTE OF LOSS OF PROPERTY BENEFITS ACQUIRED BY CRIMINAL ACTIVITIES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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ABSTRACT

Nowadays, an increasing number of criminal offenses have been committed in order to gain property benefits, in particular, criminal offenses of corruption and criminal offenses of organized crime or serious forms of economic crime. When analysing the aforementioned criminal offenses, in addition to focusing attention on the perpetrator and the commission of a criminal offense, particular attention should be paid to determining the form and amount of the benefits obtained by the criminal offense. In this sense, the take-over of the seizure activities of those assets acquired through criminal offenses is initiated. From here follows a logical conclusion that it is not enough to punish someone for example. an abusive official position if he will not be deprived of what he has obtained as a benefit of committing a criminal offense. Such a procedure in which the acquired property by the criminal offense would remain untouched by the perpetrator himself would be rewarded for the committed criminal offense. The logical conclusion is that the confiscation of property gain acquired through a criminal offense is the only valid means in the suppression of organized crime and other criminal offenses seeking to obtain material gain or other material gain. The author deals primarily with the legal nature of the seizure of property gain obtained by a private work, and accordingly special consideration is given to the provisions of various positive legal regulations in the Federation of Bosnia and Herzegovina, which treat this area.

Keywords: material gain, seizure

CONCESSION CONTRACT – PUBLIC LAW CONTRACT WITH ELEMENTS OF PRIVATE (CIVIL) CONTRACT

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ABSTRACT

In modern, continental law, division of law into public and private one is generally accepted. Historical root of that division can be found in Ulpian, and its principled concept is also present in modern law systems. That also applies to domain of contract law. Thus, legal theory distinguishes public law contracts and private law contracts. Even though they have a number of elements in common, there are important differences between them and they relate to their subject, subjects, their rights, obligations etc. However, the main difference is in their cause, i.e. goal; in private law contracts, the goal is primarily the realization of certain private interests of the contracting parties, while the public, i.e. general interest is dominant in public law contracts. In this work, the author affirms thesis of a part of legal theory that concession contracts are usually latent administrative contracts and in those legal systems whose positive system does not recognize administrative contract as a separate institute. In accordance with positive law of the Republic of Srpska, concession contracts are public law contracts by their nature, but with certain elements of private (civil) contract.

Keywords: concession contract, public and private law, administrative contract.

INVOLVEMENT OF INTERVENERS IN LITIGATION

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ABSTRACT

Intermediaries or interveners are persons involved in someone else's litigation. While verdicts in litigation between certain parties sometimes have a direct or indirect legal effect and on the legal situation of non-parties to the litigation, they can protect their interests by directly participating in such litigation. The intervention of the intervener may be initiated at the initiative of a potential intervener who has learned of the litigation the outcome of which he is interested in, or on the occasion of informing the court at the initiative of the litigants. We distinguish between three types of mixers: Plain mixer, single co-location mixer and sui generis mixer.

Keywords: intervener, intervention, legal interests, costs.

COLLECTIVE SECURITY SYSTEM - MONTENEGRO IN NATO

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ABSTRACT

About the concept of human security, in the social and scientific public. The UNDP report on human development in the '90s, as a turning point in understanding the purpose and aims of collective security, moving from a focus to a state on to the priority protection of individual human rights and freedoms. A way to synchronize these two goals and to reconcile them with each other in today's relations. Humane or new human security as a new concept, security with a human character instead of exclusively understood collective security. Limits of the concept of human security as a new derivative term.

Keywords: Security system, NATO, Montenegro.

THE CRISIS OF MULTILATERALISM - THE EXPERIENCES OF MONTENEGRO

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ABSTRACT

The crisis of international institutions. Crisis in international relations. Loss of mutual reliance. Obvious misunderstandings about the UN, negative processes in the institutions and the functioning of the EU, replacement of mutual cooperation, putting into focus new national patriotism, implications of radical changes in international relations, to smaller and weaker entities in the international community. Is it a change of priority within the major international players a longer-term perspective in international relations. Problems and doubts of small countries in changed circumstances where a loss of mutual trust between those who influence global processes and perspectives is obvious. Montenegro, with recently restored independence in new international processes. Changed logic in communication in the international community and Montenegrin integration ambitions.

Keywords: Crisis, Multilateralism, Montenegro, International relations.

***IT SECTION
IT SEKCIJA***

SECURITY MANAGEMENT OF WEB AND MOBILE APPLICATIONS: DEMONSTRATION OF ATTACKS AND SYSTEM PROTECTION

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ABSTRACT

This paper examines the basic mechanisms of security and security management in the Cyber Space with an emphasis on specific attacks on web and mobile applications (android, ios and windows mobile platform). The most serious attacks on web and mobile applications are attacks that reveal sensitive data or allow unrestricted access to the system and resources (SQL injection, XSS and CSRF attacks). This approach has developed a number of security mechanisms that applications use to defend themselves against attackers. The basic problem of protecting web and mobile applications is reflected in the fact that all data entries by users are uncertain and should not be trusted.

In this paper, emphasis is placed on attacks that can be used to exhaust the resources of the server on which the application is located, resulting in the inability to access the application by the user. A case study and specific demonstrations of intrusion into the application, as well as possible protection mechanisms are provided.

For many companies, any attack that results in system downtime is a critical event. When it comes to protection and security risks, it must be known that this is a continuous struggle between those who detect flaws and attacks applications and those who make defense mechanisms. What is nowadays actual as an attack method, in the near future can be modified or replaced by some other method.

Keywords: Cyber Security, Web Applications, Mobile platform, Attacks on the Internet, Protection Mechanisms.

THE INNOVATIVE APPROACH TO INTELLIGENT HELPDESK SYSTEMS DEVELOPMENT

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ABSTRACT

The paper examines the current state and the possibilities of using contemporary approaches and tools in HelpDesk systems development with the aim to examine its disadvantages. Disadvantages are accurately analyzed and the paper gives clear guidance how to eliminate them. It has been noticed that current design and development approaches have their own advantages and disadvantages.

The application of the unified approach that combines the best individual characteristics of the existing approaches enables development of an automated HelpDesk system that is capable of expanding its own expertise. By combining unified aspect approach with the zero tolerance model driven approach, a new innovative approach to the development of a wide range of expert systems is obtained. This innovative approach is characterized by the highest possible degree of modularity.

The application of the aforementioned approaches has also enabled expansion and improvement of the existing expert systems used for servicing numerous companies operating in various fields of business.

Keywords: HelpDesk, systems development, object-oriented approach, aspect-oriented approach, intelligent information systems.

CO-CREATING TECHNOLOGY ENHANCED RESPONSIBLE IT SOLUTIONS TOGETHER WITH STAKEHOLDERS: PRACTICAL EXAMPLE FROM V4

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ABSTRACT

IT co-creation seen as the act of creating solutions together brings different stakeholders side by side (e.g. companies, groups of customers, IT developers, innovators, citizens, etc.), in order to develop a co-operatively satisfying and valued output in the IT innovation process. In general, it requires changing the traditional approaches of developing IT solutions behind the doors, and implementing an open, dynamic and up-to-date approach to innovation. The presented article aims to zoom in the IT co-creation process and showcase a practical example of co-creating technology enhanced socially responsible IT solution together with all the relevant stakeholders in the V4 countries.

Keywords: co-creating IT solutions, IT innovation, stakeholders' engagement.

APPLICATION OF ELK STACK FOR ANALYSYS AND VISUALIZATION OF EVENTS FROM THE IOT NETWORK

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ABSTRACT

The paper describes the implementation of an Elasticsearch, Logstash and Kibana (ELK) stack to process, analyze and display of IoT data originating from several types of sensors. The prepared Elasticsearch platform collects and integrates real data generated by various sensors for further processing and publishing the desired information. Storing different format inputs, finding and extracting the desired information is a key issue that we needed to solve in our IoT environment. We used Grok filters within Logstash to parse unstructured data and as a result we got structured data in JSON format. Using Logstash allowed us to route filtered data to Elasticsearch. Elasticsearch simplifies the storage of large amounts of records in a database that can be easily searched. Depending on the type of data received from the IoT sensors, we have applied custom filters to analyze the received data, index it and store it in the database. We have presented the relevant information and introduce it to the user using a Kibana interface. By using Kibana, we achieve the near-real-time display of desired analytical information from the IoT network.

The presented concept and data analytics system can be used in more sophisticated IoT networks to automate the generation of required analytics, giving the IoT system the ability to take automated actions based on analyses of collected IoT information.

Keywords: elasticsearch, logstash, kibana, IoT, sensor.

IoT BASED RIVER WATER LEVEL MONITORING

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ABSTRACT

Flooding is natural disaster which is very frequent and most costly and unfortunately, we were witnessed flood in region in previous years. This paper will describe the usage of Internet of Things (IoT) technology to monitor river behavior in order to prevent or mitigate the recurrence of disasters. The paper also describes development and design of a wireless network, service and service platform, and use of IoT hardware (sensors) we can find on market to establish different application scenarios in the associated hydrological region, highlighting the characteristics of data collection and their use. The wireless network is implemented with LoraWAN technology. End devices are low power sensors that transmit measurement data or events periodically and / or upon LoR modulation to base stations. In this example, ultrasonic devices are used to measure distances to the water surface. Sensors are installed at existing measuring points of interest. Base stations (gateways), installed near sensors, accept packets containing the measured value and forward them to the network server. The network server accepts packets from all base stations, all sensors and devices and, depending on user requirements and platform settings, forward them to the predefined application server. The developed architecture is in charge of transmitting, encryption and security, to send real-time data packets to a server that places the collected data in a non-relational database. As a consequence, accessing, processing and visualizing data through a variety of customized queries and graphical representations is crucial for advanced use in flood and forecasting analyzes. Virtualization capabilities will be presented when processing the collected data

Keywords: IoT (Internet of Things), river flood monitoring, telemetry, LoraWAN.

STANDARD ISO 27001 - INFORMATION SYSTEM SECURITY, DEVELOPMENT, TRENDS, TECHNICAL AND ECONOMIC CHALLENGES

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ABSTRACT

Businesses, government and public institutions have long been facing a great challenge. The use of modern information technology in business requires the introduction of integrated measures for the protection of information. Recommendations and the use of the international standard ISO / IEC 27001 allow the successful planning and implementation of information security management. Great importance in this standard is given the concept of information resource/asset. Information is also an information resource and any information resource has its value. If there is a disturbance value of information resources talking about attacks and security threats to these resources. The security threat is any event that results in a violation of the basic requirements of security: confidentiality, integrity and availability of information. Therefore, implement physical, technical and administrative measures. If it happens some of the attacks on information-resources leads to disruption of operations and reputation of businesses. Modern methodology of information protection includes risk assessment. It is therefore necessary before establishing a security system to determine the optimal level of safety in terms of cost-effectiveness in terms of costs and speed implementation of the necessary security measures. Too large range of system security and over-planned security level can impede the establishment of system security and higher costs compared to a profit of implemented security measures. In this study we explored the dynamics taking place use and application of standards to date. The distribution and implementation of standards by industrial areas. technical and administrative measures. If it happens some of the attacks on information-resources leads to disruption of operations and reputation of businesses. Modern methodology of information protection includes risk assessment. It is therefore necessary before establishing a security system to determine the optimal level of safety in terms of cost-effectiveness in terms of costs and speed implementation of the necessary security measures. Too large range of system security and over-planned security level can impede the establishment of system security and higher costs compared to a profit of implemented security measures. In this study we explored the dynamics taking place use and application of standards to date. The distribution and implementation of standards by industrial areas.

Keywords: security management, ISO 27001

BUILDING INTELLIGENT TECHNICAL DOCUMENTATION FOR INDUSTRY 4.0

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ABSTRACT

Today's production is recognized for its 3D modeling, which should generate documentation for other systems in the procurement of materials and the sale of the finished product. The data coming from 3D models is extremely needed by the ERP and SAP systems used by modern factories. Industry 4.0 requires digital models of products and the production process, the Internet of Things to connect the network of connections of the product itself, as well as Cloud computing to remember large amounts of data and allow access to them. We have been taught that the assembly of several machine parts is connected as a whole and that the set of drawings accompanying the assembly is technical documentation. Before drawing, it is necessary to determine:

- What function does the assembly have,
- What is the role of individual parts of the assembly during operation,
- What is the relationship between the components of the assembly and
- The shape and dimensions of individual parts of the assembly and the material from which they are made.

Translating the original 3D Cad model into technical documentation is an extremely difficult process that takes time and expertise. The designer is wasting time adding value to individual elements and needs to design an innovative new product. Fortunately, software is created to create technical documentation in digital format supported by Industry 4.0. All of this software is moving to the Cloud and setting new requirements for the industry of the future. It is this transition from CAD software such as SOLIDWORKS and other software to manufacturing that is related to the rapid production of documentation required for ERP and SAP software. The goal of the new industrial revolution is a highly flexible, individualized, mass production with little scum. The customer receives a product tailored to his or her custom size for a relatively low price. The production of documentation in such a process must be fast and interactive, and at the same time intelligent, in order for the product to quickly cycle from creation to industrial production. This is exactly what this paper does with an example in the SOLIDWORKS program.

Keywords: Industry 4.0, IT Technology, Technical Documentation, SOLIDWORKS.

IT TECHNOLOGIES IN THE INDUSTRY OF THE REPUBLIC OF SRPSKA IN RELATION TO THE NEW TRENDS OF INDUSTRY 4.0

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ABSTRACT

The basic development of industry in the world is the digital transformation of the same. Industry 4.0 is the foundation that represents the future industrial development in the world, Is this the case in our Republic of Srpska and Bosnia and Herzegovina. All machine management software and production process data cannot be stored on databases of the past and computer centers. Big data analytics, artificial intelligence and networked cloud technology systems are taking the primacy and giving ground to Industry 4.0. The machine has software on the cloud, is digitally monitored, reduces maintenance costs, increases efficiency. Industry 4.0 also delivers sustainability, reduces energy waste, pools resources and ensures security of supply. Increasing digitalization is driving companies to change and change old businesses. Industry 4.0 is divided into 4 classifications:

1. Smart factories,
2. Smart procedures,
3. Smart products,
4. Digital services.

How far we are in the Republic of Srpska and Bosnia and Herzegovina from this approach and how much time do we have to get close to it. Can we invest in such development? It is estimated that in the next 3 years there will be a huge decline in normal production and that it will be exactly the products of Industry 4.0 that will come on the market. The work has the role of alerting us and giving us proper guidance. Small businesses have no chance in Industry 4.0. Medium and large companies are in a better position. Sensor and actuator based information technologies are expanding into a manufacturing system with a smart or connected product. The Strategy for Industrial Development of the Republic of Srpska in the section "Vision and Mission of Industrial Development" said that "the development of industry will be based on knowledge, innovation, development with rational use of resources, application of all standards on environmental protection, energy reduction and the participation of dirty energy in development". Have we achieved It and will are cost us a huge fall in the coming years and what should we do to achieve it. That is the theme of this paper.

Keywords: Industry 4.0, IT Technology, Smart Factories, Digital Services, Smart Products

***ENGINEERING, TECHNOLOGY AND
MATERIALS
INŽENJERSTVO, TEHNOLOGIJE I MATERIJALI***

METHODS FOR THE EPOXIDATION OF VEGETABLE OILS AND THEIR DERIVATIVES

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ABSTRACT

Epoxidized vegetable oils have seen increasing application diversity in chemical and polymer industry. They are mainly used as stabilizer and plasticizer for polyvinyl chloride (PVC). However, they are also promising intermediates for the production of other vegetable oil derivatives. Vegetable oils are epoxidized in the industry with *in situ* formed organic peracid, commonly performic or peracetic acid. The shortcomings of this method include the occurrence of side reactions as well as the necessity for treatment of waste streams. Therefore, other epoxidation methods such as epoxidation with organic and inorganic hydroperoxides and epoxidation with dioxiranes have been studied extensively. Also, enzymatic epoxidation has attracted much attention in recent years. The advantages and shortcomings of the studied epoxidation methods will be discussed in the present work.

Keywords: Epoxidation, vegetable oil, oxidizing agent, catalyst

POSSIBILITIES OF TECHNICAL PROCEDURE CREATION FOR TESTING THE WELD JOINT BY A NON-DESTRUCTIVE METHOD

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ABSTRACT

The continuous increasing of requirements for product quality leads to increased flaw control and evaluation. One of the inspected parts of the product is a welded joint. The flaws should be eliminated as far as possible to avoid the failure or destruction of the product. In the field of weld inspection, there is the most used the non-destructive testing, whose main advantage is that the product remains unchanged for further use after testing. The presented article is focused on the possibilities of technical procedure creation of weld inspection by use of non-destructive testing. The introduction part of this article describes a theoretical approach to non-destructive testing, concretely the ultrasonic testing with the consequent description of materials and methods which were used to create the technical procedure. The main part of the article describes the possibilities of creating the technical procedure for a concrete practical example and it provides a general evaluation of the proposed solution at the end.

Keywords: technical procedure, welding, non-destructive testing.

Acknowledgement

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3D PRINTING IN INTERDISCIPLINARY EDUCATION: EXAMPLE OF MATHEMATICS AND MATERIAL SCIENCE COOPERATION

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ABSTRACT

3D printing is the processes in which material (such as liquid molecules or powder grains) is joined or solidified under computer control to create a three-dimensional object with material being added together layer by layer. The substantial advantage of 3D printing is the ability to produce complex shapes or geometries, and a prerequisite for producing any printed part is a digital 3D model or a CAD (computer-aided design) files. This process is considered viable as an industrial-fabrication technology, whereby the term additive manufacturing can be used also. The most-commonly used 3D printing process is a material extrusion technique called fused deposition modelling (FDM). The leading producers of 3D printers have already developed prototypes for schools to cover educational needs. The importance of the incorporation of 3D printing in professional degrees and in schools is the fact. Since training is essential for the implementation of professional 3D technology, especially for the industry it is a professional necessity. The learning experience for digital media is becoming a priority in school education. The practical application of this can be incorporated into a wide variety of school subjects to simplify the often difficult theoretical concepts for students. 3D technologies are the significant example of collaboration within material science and mathematics but this platform is not formally supported by the high school curriculum, but latest trends propose different approaches and making education close to the contemporary life and science achievements. Building lessons plans and project based learning ideas could help students to learn more about science and potentially chose their careers. It is substantial to support teachers who want to implement the 3D printing in education.

Keywords: 3D printing, education, mathematics, material science.

RUBBER TECHNOLOGY AND PROCESS OF THERMAL HEATING BY CONVECTION OVER THE FLAT PLATE

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ABSTRACT

The heat transfer operation is extremely important in various technologies, especially in the rubber industry for crosslinking and for all the steps in the process of obtaining products from elastomeric materials. The speed at which the heat can be transferred to the rubber compound or taken away from it affects the design of the process equipment as it controls the rate of mixing, shaping and vulcanization. Turbulent heat transfer between the rubber compound and steel equipment is very complex due to the large conversion of mechanical energy into heat. Convective heat transfer with air, fluids or steam is also present in the fabrication of elastomeric products. In this work the heat transfer for the laminar and turbulent region of the boundary layer as well as the variation of the local resistance coefficient and the coefficient of heat transfer in the parallel flow of the fluid over the flat plate were analyzed. The relations are given for the determination of Reynolds and Nusselt numbers for characteristic flow fields, which will allow calculation of the heat flow. Also, a graphic representation of the average heat transfer coefficient for a flat plate in the combination of laminar and turbulent flows is given, which is of particular importance in industry. Relationships in one example concerning the cooling of the heated plate by air flow natural convection in the case of different flow directions are shown.

Keywords: thermodynamic, rubber industry, convection heat transfer, coefficient of heat transfer, heat flow

INFLUENCE OF VARIOUS TURBIN OIL FORMULATIONS ON THEIR COMPATIBILITY

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ABSTRACT

After the turbine oil life cycle has been completed, it is necessary to replace it. The new generation of turbine oils is formulated with Group II and/or III base oils and a package of ashless additives. Such oils are often incompatible with conventional types of turbine oil. The new oil in the system also has the ability to dissolve residual deposits and varnishes. Replacing turbine oil that has been in the system for a long time or adding new oil to the system therefore has some risks.

This paper will present the results of testing/testing the compatibility of turbine oil (used oil) formulated with a classic base (Group I base oil and additive package) and a new turbine oil formulated with an ashless additive package and a mixture of Group II and III base oils (new generation oil).

Keywords: turbine oil, additives, base oil, deposit, varnish, compatibility.

MECHANICAL PROPERTIES HYBRID MATERIALS BASED ON ALIPHATIC POLYURETHANES AND TiO₂ NANOPARTICLES

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ABSTRACT

In this work were synthesized hybrid materials based on aliphatic polyurethanes and small amounts of titanium dioxide nanoparticles (0.5; 2.0 and 3.0 wt.%). From an environmental point of view, this synthesized hybrid materials are significant engineering materials because the products of their thermal degradation are significantly less toxic compared to the products of thermal degradation of aromatic polyurethanes. The presence of uniformly distributed TiO₂ nanoparticles (polyurethane film containing 2.0 wt.% TiO₂) influenced the additional formation of hydrogen bonds as well as the improvement of the mechanical properties of the obtained polyurethane hybrid materials. The good mechanical properties, together with the corresponding thermal stability characteristics, make it possible to apply the obtained hybrid materials based on aliphatic polyurethanes and TiO₂ nanoparticles as mechanically strong and durable coatings or films in biomedicine or as packaging materials.

Keywords: hybrid materials, aliphatic polyurethanes, TiO₂ nanoparticles, mechanical properties.

CURING KINETICS OF EPOXY BASED HYBRID MATERIALS WITH DIFFERENT CONTENT OF SEGMENTED POLYURETHANES

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ABSTRACT

In this paper, the influence of thermoplastic segmented polyurethanes on the curing kinetics of epoxy based hybrid materials was assessed. Samples were prepared with diglycidil ester bisphenole A epoxy resin and different content (10, 15 and 20 wt. %) of thermoplastic segmented polyurethanes with different content of hard segments (20, 25 and 30 wt. %) based on aliphatic polycarbonate macrodiols, hexamethylene diisocyanate and chain extender 1,4-butanediol using the catalyst, dibutyltin dilaurate, and also a sample without added elastomeric polyurethane. All samples were cured with hardener *Jeffamine D-2000*. The curing of the epoxy hybrid materials were investigated by non-isothermal differential scanning calorimetry (DSC). Using data obtained from DSC, five isoconversion models were applied to determine the effect of polyurethane elastomer content, as well as the content of hard segments in polyurethane, on the crosslinking reaction of the material. Results showed that for hybrid materials with a higher content of segmented polyurethanes (10 and 15 wt. %), curing process starts at lower temperatures and the maximal speed is achieved at lower temperatures. The highest change in total enthalpy of the crosslinking reaction is determined for the epoxy based hybrid material with polyurethanes containing 30 wt. % of hard segment. It was concluded, that the knowledge of the curing kinetics is important for the selection of optimal fabrication conditions and processing parameters for epoxy based hybrid materials in industrial conditions.

Keywords: hybrid materials, epoxy resins, segmented polyurethanes, curing kinetics.

DESIGN AND SYNTHESIS OF CHEMICALLY STABLE LUMINESCENT CORE/SHELL UPCONVERTING NANOPARTICLES FOR BIOIMAGING

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ABSTRACT

Luminescent upconverting nanoparticles (UCNPs), which absorb light in the near infrared (NIR) range and emit in the visible region, have attracted a great attention owing to their unique optical properties and a potential for biomedical applications. The main disadvantage in use of UCNPs is a decreased luminescence due to surface quenching effects. One way of overcoming the surface quenching is to use core/shell UCNPs instead of “bare” UCNPs, i.e. to prepare composite nanostructured materials constructed with cores (inner material) and shells (outer layer material).

Here, preparation of novel core/shell NaYF₄:Tm/Yb (a core) / LaPO₄ (a shell) UCNPs that could be more suitable for practical applications was proposed. The used procedure was as follows: 1 ml of bare NaYF₄:Tm/Yb nanoparticles (in water, c ~ 11 mg/ml) was mixed with 30 ml of water. To this solution, first, the mixture of 0.242 ml 0.01M La(NO₃)₃ and 0.242 ml 0.01M trisodium citrate was added dropwise and then 0.242 ml 0.01M (NH₄)₂HPO₄. The obtained mixture was stirred at room temperature for 1h and this was followed by making TEM grids. To see difference in thickness of shell, the reaction time and precursor of phosphates were varied.

Keywords: core/shell, upconverting nanoparticles, synthesis, luminescence.

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5-(4-CYANOPHENYL)-3-AMIDO-6-HYDROXY-4-METHYL-2-PYRIDONE/PVA FILMS: SPECTROPHOTOMETRIC, THERMAL AND RADIATION PROPERTIES

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ABSTRACT

Polyvinyl alcohol (PVA) films with different concentrations of 5-(4-cyanophenyl)-3-amido-6-hydroxy-4-methyl-2-pyridone were synthesized, and their application as plastic detectors for dosimetry was studied. PVA was chosen because it is cheap and readily available, as well as soluble in DMSO.

Arylazo pyridone dyes represent a large class of compounds with wide industrial applications.

The main preference of polymeric films based on arylazo pyridone dyes is a visual color change after exposure to gamma radiation. Also, dosimeters in the form of plastic detectors are cheap and easily portable.

Films containing 5-(4-cyanophenyl)-3-amido-6-hydroxy-4-methyl-2-pyridone show the effect of color change when irradiated with γ -radiation at least up to 25 kGy. The color change was confirmed spectrophotometrically.

PVA/dye films were characterized by FTIR and UV/Vis spectra. Thermal stability of PVA films containing 5-(4-cyanophenyl)-3-amido-6-hydroxy-4-methyl-2-pyridone were investigated with thermogravimetric analysis (TGA), derivative thermogravimetry (DTG), differential thermal analysis (DTA) and differential scanning calorimetry (DSC).

Keywords: Arylazo pyridone dyes; PVA films; Thermogravimetry; Dosimeters

CONDUCTIVE ACRYLIC BASED COATINGS

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ABSTRACT

In the industry, packaging take a very important part in the process of manufacturing and transporting products to final consumers. The packaging is responsible for maintaining the quality of production from the output from the manufacturing facility to the consumers. Lately, research has been focused on getting active packaging, packaging that, in addition to protecting the product and preserving its quality, can provide end consumers with information on product safety, due to the presence of different sensors on the packaging itself. In this paper, the synthesis of acrylate based coatings with the addition of nanoparticles, which can be used as coatings for paper used in packaging, is made. Polyacrylate was synthesized by emulsion polymerization of methylmethacrylate and 2-ethylhexyl acrylate with an initiator concentration in the range of 0.3%, at 70 ° C. For crosslinking styrene was used, 1% of concentration of polymer. To obtain conductive coatings, carbon nanotubes were used as filler. The nanoparticle concentration ranged from 0.5% to 2% by weight of the polymer. These emulsions give coatings on paper with uniform structure, resistant to water and oils. FTIR spectroscopy was used to confirm the structure of the obtained acrylic films. The effect of nanofiller concentration on thermal properties, mechanical properties and conductivity of the obtained acrylic based coatings was investigated. Conductivity measurements have confirmed that this coating on paper can be used for conductive packaging coatings.

Keywords: active packaging, conductive polymers, acrylic coatings

MEASUREMENT OF THE TRIBOLOGICAL PROPERTIES OF COATING FOR MACHINE PARTS

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ABSTRACT

When designing machines that contain dynamic components, it is necessary to consider the tribological properties of the materials used for the functional parts of these components. The movement itself during the operation of the machines has a mechanical impact on these parts, which may result in the performance of the mechanism being affected. Presented paper is focused on measurement of the tribological properties of coating designed for deposition on the surface of functional machine parts. The theoretical knowledge from the material area of the issue is described in the first part of the paper. The experimental part of the paper is devoted to the measurement of tribological properties, such as wear and friction properties by the ball - on - disc method and coating adhesion by scratch test. Obtained results are summarized in the conclusion part.

Keywords: tribology, coating, measurement

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NEW TRENDS IN POLYMER CONCRETE MIXTURES – PROPERTIES, MANUFACTURING AND ITS APPLICATION

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ABSTRACT

The aim of this article is to point out the properties of concrete composite materials based on their composition. Engineering of composite materials requires systematic and interactive approaches that should enable optimal material characteristics to be achieved. This process requires the use of various methods and technologies aimed at examining the physical and mechanical properties of each component as well as the composite material, optimizing the composite properties and predicting the material properties under different working conditions. The newly formed materials have specific properties that cannot be achieved by any component alone. The strength of these materials can be compared to the strength properties of metals. The elastic properties in turn give the material a high degree of flexibility. Compared to conventional materials, polymer composite materials are evaluated not only for their excellent mechanical properties, but also for their low weight and cost. The article describes the characteristics, properties, advantages and disadvantages of composites based on polymer concrete mixtures.

Keywords: polymer concrete, properties, manufacturing, new trends

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THE ANALYSIS OF THE SUBSTRATE INFLUENCE ON THE PRINT QUALITY PARAMETERS OF SCREEN PRINTED TEXTILE

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ABSTRACT

Textile printing is an increasingly important area of the contemporary graphic industry, and screen printing represents a dominant technique in this field. The quality of the print depends on many parameters, such as the type of substrate material or the type of printing ink. The usual way to evaluate print quality consists of an objective assessment of the color and tone of the printed image. Quality parameters, such as contrast, sharpness, and macro nonuniformity, are not associated with color reproduction, but certainly affect print quality. These parameters are directly related to the quality of the lines and raster points, which is an integral part of any image. Therefore, when evaluating print quality, it is necessary to analyse these elements. The aim of this paper was to investigate the influence of the textile substrate on the quality of print obtained by the screen printing technique. Digital image analysis of the scanned image of the print, appropriate software application and visual evaluation of the print, were used to determine the print quality. The obtained results show the importance of interaction between the textile material and printing ink and its influence on the print quality parameters.

Keywords: screen printing, print quality, textile materials, digital image analysis.

NANOTECHNOLOGY IN MEDICINE

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ABSTRACT

Nanotechnology, the manipulation of matter at the atomic and molecular scale to create materials with remarkably varied and new properties, is a rapidly expanding area of research with huge potential in many sectors, ranging from healthcare to construction and electronics. In medicine, it promises to revolutionize drug delivery, gene therapy, diagnostics, and many areas of research, development and clinical application. Imagine, for example, being able to stretch out a section of DNA like a strand of spaghetti, so you can examine or operate on it, or building nanorobots that can "walk" and carry out repairs inside cell components. Nanotechnology is bringing that scientific dream closer to reality. Another interesting thing to mention are nanofibers. Nanofibers are fibers with diameters of less than 1000 nm. Medical applications include special materials for wound dressings and surgical textiles, materials used in implants, tissue engineering and artificial organ components. Scientists have also succeeded in creating nanoscale robots that seek and destroy cancer cells. In summary, recent years have seen an explosion in the number of studies showing the variety of medical applications of nanotechnology and nanomaterials, but great as it may be, there are also high risks involved.

Keywords: Nanotechnology, Medicine, Nanomaterials, Robots, Cells.

FABRICATION OF AEROGEL FROM KOMBUCHA BACTERIAL CELLULOSE: INVESTIGATION OF SOME PROPERTIES

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ABSTRACT

Aerogels with large surface area, are very light due to the filling of pores with air (99%). Due to these features scientific studies on aerogels have increased at great speed. Aerogels are obtained using many material as inorganic substances like silica as well as cellulose as biodegradable organic polymers. Bacterial Cellulose is eco-friendly material, and it can be produced in economic ways with simple processes.

The aim of this study is to investigate the importance of the bacterial cellulose obtained by Kombucha scoby in order to fabricate aerogels with some properties such as heat resistance and electrical conductivity properties. Kombucha bacterial cellulose has been used as skeletal structure to increase heat resistance by sol-gel process with TEOS and increase the electrical conductivity by in-situ and simple diffusion methods with Fe_3O_4 . Morphological and structural characteristics of these aerogels were investigated by SEM, FT-IR and TGA. Electrical conductivity was tested with multimeter device and total inorganic matter analysis was performed.

The results obtained in this work showed that, the resistance of the bacterial cellulose aerogels using TEOS with the sol-gel process increases the degradation temperature. And using Fe_3O_4 in the preparation of aerogel, the electrical conductivity of the prepared material was increased, the electricity was transmitted and this was best achieved by the in-situ method. This study showed that Kombucha bacterial cellulose can economically be obtained by various techniques and use in different fields of aerogels.

Keywords: Aerogel, Kombucha Bacterial Cellulose, Properties.

THE EFFECTS OF MODIFIED CLAY ON CONTROLLED DRUG RELEASE SYSTEMS

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ABSTRACT

In recent years, controlled drug release systems have been garnering a lot of attention as they allow a more targeted and effective approach for delivering drugs to a specific tissue. Furthermore, as a result of their naturally formed structure, clays began to be used within these systems to increase the efficiency of the latter in a low-cost manner. In this study, controlled release kinetics of the drug active substance 5-Fluorouracil was studied using halloysite clays. For this purpose, the clays were initially modified with cetyltrimethyl ammonium bromide (CTAB). Following this modification, drug carriers were prepared by adding halloysite clays with different quantities in mixtures of polyvinyl alcohol (PVA) and sodium alginate and mixing each clay-polymer solution using the ultrasonification technique. Next, the freeze-thaw process was carried out on the prepared solutions by keeping them at -80°C for 12 hours and then at room temperature for 8 hours. Some of the prepared samples were then used as blanks whereas the rest were loaded with 5-Fluorouracil and their drug release kinetics were observed under a UV-spectrophotometer at 266 nm. Release profiles of the drug active substance were obtained by studying its release in buffer solutions at different pH. The results showed that the prepared drug carriers were suitable for carrying the 5-Fluorouracil drug active substance.

Keywords: Controlled drug release, halloysite, 5- Fluorouracil, polymer, clay.

APPLICATION OF MANGANIC SEGMENT INSERTS TO THE WORN SURFACE OF RAMMED GENERATOR PILES ON PLASERS MACHINES

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ABSTRACT

The paper presents a new, modern, technical-technological procedure for maintenance of working surfaces of the rammed generator piles of a railway construction vehicle. The essential concept of this new technical-technological procedure for maintaining the vital mechanical element of the rammer aggregate, refers to the application of a manganese segmented insert to the worn surface of the piles that have been in contact with the stone during the process, which by now has been maintained by the restoration-welding process. The current process of maintaining working surfaces-piles by welding is performed by an out-of-date technological procedure, by putting the railway or construction-purposed vehicle out of service, proceeding to the dismantling of the piles (32 pcs) and then, without detailed welding analysis and technological instructions and procedure, accessing to a regeneration of working surface - by manganese electrode welding. This technological procedure is usually carried out in unconditional technical-technological railway workshops, which are not adequately equipped, without a well-defined rammed measuring parameter for each pile individually, with an inadequate electrode, and for such variable cases it is not possible to prescribe welding technology for each pile individually. This technological process is: outdated, not reliable, with low quality and not economical. The development of purpose-built manganese segment inserts, which will be easily installed by the technological operation on the worn surface of the piles on-site without any need for disassembly, will greatly improve the maintenance process, extend the exploitation time and improve the economic effect.

Keywords: Manganese segment inserts, wear, feasibility, technical characteristics and economic justification.

ANALYSIS AND SELECTION OF PNEUMATIC TRANSPORT WITHIN THE POWDER LIME PRODUCTION LINE

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ABSTRACT

This paper discusses the selection of the most technically suitable method of transporting lime powder within the existing plant at the lime factory. From the production line, lime powder must be transported to the factory silo. Of the more technically feasible variants analysed, flying pneumatic transport was chosen as the most favourable variant within the existing technological process of lime powder production. Based on the given transport capacity, a calculation of the pressure drop in the transport pipeline was made, and then the selection of installation and equipment. Technical and technological analysis of the transport system was performed.

Keywords: Pneumatic transport, lime powder, two-phase flow, transport pipeline, pressure drop.

TRANSFER OF THE IDENTITY AND MORPHOLOGICAL CHARACTERISTICS OF ART WORKS TO TACTILE 3D MODELS FOR THE BLIND AND VISUALLY IMPAIRED AND USE OF PRINTED ELECTRONICS

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ABSTRACT

The reinterpretation of classical art into digital art was taken as the basic framework within which I moving with using two concepts: classic and digital. Both terms represent different epochs, in which the notion of classical art implies a much longer period of time, making it more difficult to use without opting for a shorter period of time in which the visual cue is imposed as dominant over some other iconographies of the wider classical heritage. Old terminology became unusable, so one can logically conclude that the inheritance of the old visuality can be more difficult to use. My research is based on classic beauty that doesn't show man as he is, but portrays him as some special ideal that aligns with what is outside and what is inside, but I am particularly interested in the aesthetics of classical art and possibility of its transfer into digital.

The term appropriation can be better used here, basically, how the aesthetics of the classical are used in the digital age. We define appropriation as the instrument of transferring elements from one to another a system of meaning or artistic discourse, respectively as an act of creation that strategically reaches for existing, artistic or not artistic, creations as a material for the constitution of a new art of creations. Appropriation is a creative procedure that involves a heterogeneous set of languages, genres, techniques, media as well as cultural ones requirements in the creation of new works of art. The term appropriation is new in the artistic vocabulary, it was introduced through postmodernism, when digital platforms were already being built, and also networks, and the expansion of the internet. Our body and body of art began to settle within new platforms. The apparent similarity of the term appropriation and interpretation in this text is intentional, therefore that the text builds on the alignment of two historical epochs, one based on Pigment and the other defined as Pixel.

Idea of the alignment of Pixel and Pigment and the invention of flaxseed oil, which enabled a triumph the painting aesthetics and the Amiga, which is the machine that created the Pigment, exhibits complex processes of appropriation, reinterpretation, politics of using aesthetic material of old art in today's post-consumerist era, where art is emancipated through screen images.

Keywords: pixel-pigment implementation, digital art, classical art, reinterpretation

***PSYCHOLOGY, PEDAGOGY AND ANDRAGOGY
PSIHOLOGIJA, PEDAGOGIJA I ANDRAGOGIJA***

PSYCHOSOCIAL CHARACTERISTICS AS THE PREDICTORS OF THE ELEMENTARY SCHOOL STUDENTS' CHOICE OF A FUTURE OCCUPATION

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ABSTRACT

Professional orientation of students as a form of 'early intervention' on the choice of future profession comes under the influence of various psychosocial predictors. Therefore, by applying transversal research and a differential-psychological approach, we have tried to explore the correlation between the individual characteristics of students (including intelligence, motivation, interests) and the socioeconomic status of parents as a predictor in the choice of students' future interest.

The research has been conducted among ninth grade students from eight elementary schools from the Lukavac municipality. 324 pupils and 324 parents in the school year 2017/2018 were included in the statistical processing. The second group, used for comparison, is a sample of 85 pupils of the Primary School "Lukavac Grad" Lukavac, which is a control group itself, but observed at another point of time, precisely, in the first grade of secondary school in 2018/2019.

In the process of data collection, the following have been used: Checkbook for the assessment of students' multiple intelligences (Gardner), questionnaires for students and parents created by the Pedagogical Institute of the Tuzla Canton with the aim to determine and analyze the student's professional intentions. In the process of data processing the following statistical procedures have been used: frequency analysis, correlation analysis, F-test, regression analysis and nonparametric statistical methods.

This paper presents an overview of the psychosocial characteristics of the predictors explaining the choice of the future occupation of elementary school students. The results indicate a significant correlation between the socioeconomic status of parents and intelligence in the professional intentions of students. Understanding the expectations of their parents in the choice of a future occupation is evident in the previously obtained results, which indicate similar tendencies in choosing a future occupation to a large extent. The results of statistical analysis of the results indicate that there is no statistically significant difference in students' professional intentions and parents' expectations.

The socioeconomic status of parents is one of the predictors of the students' professional intentions and is based on the concept that parents of different socioeconomic statuses develop and pass different values onto their children about

particular professions and it has been shown that there is a statistically significant difference in the student's professional intentions taking into the consideration the work status of parents.

Furthermore, the results of the conducted hierarchical regression analysis with various subject groups as criteria variables show that intelligence is a significant predictor of student achievements at school. Moreover, the analysis has showed that the success of pupils at the level of acquired knowledge in elementary school, intellectual abilities as a predictor of success at school, determines the possibility of enrolling a certain secondary school in the final process of student selection.

Keywords: multiple intelligence, success at school, socioeconomic status, professional intentions.

