

ABSTRACTS

OCTOBER RESEARCH CONFERENCE IN SILISTRA

FRI-229-1-KS(S)

FRI-229-1-KS(S)-01

**THE TEACHER OF THE FUTURE – BETWEEN TRADITION AND
INNOVATION**

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***Abstract:** The profession of the contemporary teacher is a synthesis between tradition and innovation. On the one hand, teachers are trained in the context of traditional pedagogical education, reflecting the classical development of pedagogical science. On the other hand, their training should be aimed at forming competences for orientation in the changing social and technological environment, so that they can be adequate to the contemporary challenges of society and the specifics of childhood. These are serious challenges both to the higher pedagogical education and to the teachers themselves, who are in an extremely dynamic professional working environment, undoubtedly requiring flexibility and readiness for permanent additional qualification.*

***Keywords:** teachers, traditions, innovations*

FRI-229-1-KS(S)-02

OCCUPATIONS IN THE PERSPECTIVE OF VALUES

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Abstract: Research on national and organizational cultures holds considerable cognitive potential. Values are usually seen as the core of cultures. Community cultures function as a set of subcultures of (relatively) distinct groups formed by a specific attribute or group of traits. Studying subcultures through values is a possible approach to specify research knowledge and increase its applied value. The text attempts to show the possibility, necessity and usefulness of studying the culture of typical professions based on building a value portrait of professions and comparing them. Along with presenting concrete examples based on research results, methodological and research problems of studying occupations through the perspective of values are discussed..

Keywords: national and organizational cultures, subcultures, cultural values, professions

JEL Codes:

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FRI-229-1-KS(S)-03

INNOVATIVE TRENDS IN TEACHING AND LEARNING MINORITY LANGUAGES

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Abstract: *Revitalization of minority languages in South-Eastern Europe, particularly Albania, is a sensitive and crucial issue in linguistics, concerning also Balkan linguistics. Yet, there is little academic research in this respect, especially on the development of teaching and learning materials. This paper seeks to address this imbalance by examining minority language pedagogical materials from South-Eastern European countries especially Albania, where minority languages are spoken and recognized, including more traditional resources, as well as new media such as online courses, apps, video, games etc.*

Keywords: *minority languages, teaching, learning, pedagogical materials, revitalization*

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FRI-110-1-PPM(S)

FRI-110-1-PPM(S)-01

**INNOVATIVE MODEL FOR EXPERIENTIAL LEARNING OR HOW TO
BUILD CAPACITIES OF YOUTHS ON THE GROUND**

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***Abstract:** This paper discusses a new model for applying David A. Kolb's Experiential Learning Theory, integrated with Stefano Mancuso's work on plant intelligence, in the Bosco Angimbè Forest and the Zingaro Reserve in Sicily. These biodiverse environments provide an ideal background for field-in approbation of non-formal educational training, part of the BeActive project funded by Erasmus+. Kolb's theory guides our study, emphasizing learning through experience, reflection, conceptualization, and experimentation. We examine how it fosters a deep connection between learners and nature. Mancuso's theory on plant intelligence adds an intriguing layer of conceptualization, highlighting the interconnectedness of all life forms within these ecosystems. Ultimately, applying Kolb's and Mancuso's theories enhances young people's green thinking, motivating and activating them to protect nature and become proactive stewards of our planet.*

***Keywords:** experiential learning, youths, Mancuso's theory, model*

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PRELIMINARY PREPARATION FOR A TOUR GUIDE SPEECH

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Abstract: The human voice is individual and unique when it comes to its tonal range, strength and timbre, it goes through various stages of development. The tour guide works with their voice the whole time during the tour guiding service, provided to tourists. The skill to speak freely in front of an audience requires preliminary preparation by the future tour guides. The preliminary preparation for a speech is aimed at developing the skills to control the voice and acquiring such fundamental qualities as strength and pitch, intonation, timbre, range, resonance, stresses and pause, each of which have their practical significance to make the speaker heard and understood by everyone. Preliminary speech exercises are required to form the voice of the future tour guide correctly; those exercises should be synchronised with their theoretical education in tourist tour guiding.

Keywords: tour guide, voice, speaking, preparation, skills, pitch, intonation, timbre, range, resonance, stresses, pause.

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FRI-110-1-PPM(S)-03

AN APPROACH TO IMPLEMENTING INFORMATION TECHNOLOGIES IN STEM EDUCATION

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Abstract: The purpose of the report is to show the place of information technologies in the widespread idea of STEM education. At first glance, this idea does not assign a significant place to information technologies. Often, however, information technologies is the unifying link between the other components – science, technology, engineering and mathematics. The application of information technologies in STEM education of students from the junior high school stage can be implemented: in the use of electronic lessons that use built-in laboratories; when creating simulation objects, when it is not possible to use physical objects during training; when controlling objects with programmable controllers for performance or gaming purposes. An idea for programming a game with Mitsro:bit is discussed in this report.

Keywords: STEM education, Information technologies, Mitsro:bit

JEL Codes: I20, I21

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FRI-110-1-PPM(S)-04

THE DUALITY OF DUAL EDUCATION IN BULGARIA

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Abstract: *The paper reviews the problem of dual education abroad and in Bulgaria. It has a positive impact on vocational education development – this is the key conclusion from the survey among vocational schools and companies commissioned by the DOMINO Project. Schools and companies are committed to continue participating in dual education, as well as to collaborate in the future. Despite positive results dual education in Bulgaria still faces numerous difficulties and obstacles for both, business and schools. These challenges are elements of a larger concern about the development of vocational education in Bulgaria. It recognizes that effective education often requires more than just theoretical knowledge; it also demands practical skills and real-world experience. By combining classroom learning with hands-on training, dual education aims to produce well-rounded and job-ready graduates. Dual education programs are designed to prepare students for the workforce by ensuring they have both the knowledge and practical skills necessary to excel in their chosen fields. This duality allows students to apply what they learn in the classroom to real-world situations, making them more competitive and prepared for their future careers.*

Keywords: Dual education, Validation, Formal, Non-formal learning

JEL Codes: L10, L11

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FRI-110-1-PPM(S)-05

INNOVATIVE METHODS AND APPROACHES IN LITERATURE TRAINING OF STUDENTS - FUTURE TEACHERS

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Abstract: *The present study seeks a solution to the problems arising during the practical training in Bulgarian language and literature of the intern-teachers. Presenting a personal perspective on what is happening, this text illustrates how modern methodological achievements are applied in literature education or why they are so difficult to apply.*

Keywords: *Innovative methods, future teachers, literary education*

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FRI-110-1-PPM(S)-06

SPECIALISED SPEECH TRAINING FOR FUTURE TOUR GUIDES

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Abstract: The specialised speech training improves the level of spoken language and speech practice of the tour guide. Knowing and mastering the pronunciation and orthoepic rules and norms, as well as speech skills are a mandatory condition for a successful tour guiding practice. Speech training the future tour guides encompasses the correctness, expressiveness, stress, articulation and tempo rhythm of the speech. The conscious desire and strive of the future tour guide to improve, develop, and perfect their voice-speech and orthoepic skills are of utmost importance to achieve a good productive result.

Keywords: tour guide, dialogue, communication, speech, pronunciation, orthoepy, culture, speech technique.

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FRI-110-1-PPM(S)-07

THE PACT FOR SKILLS – A TOOL TO ACCESS UPSKILLING AND RESKILLING NEEDS

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Abstract: *The paper reviews the Pact for Skills in terms of supporting public and private organisations with upskilling and reskilling, so they can thrive through the green and digital transitions. Members of the Pact have access to knowledge on upskilling and reskilling needs, They may receive advice on relevant funding instruments to boost the skills of adults in their regions and countries, and partnership opportunities within our growing community. All members of the Pact sign up to the Charter uphold its four key principles: promoting a culture of lifelong learning for all, building strong skill partnerships, monitoring skill supply/demand and anticipating skill needs, working against discrimination and for gender equality and equal opportunities.*

Keyword: Skills, Formal, Non-formal learning, Upskilling, Reskilling

JEL Codes: L10, L11, J24

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**PHONETIC FEATURES OF THE EASTERN-RHODOPIAN GORNO
KAPINOVO DIALECT, KIRKOVO REGION**

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Abstract: *The paper deals with the phonetic features of the so far unknown East-Rhodopian dialect spoken in the village of Gorno Kapinovo, Kirkovo municipality of Kardzhali region.*

Keywords: *Bulgarian language, Bulgarian dialectology, East-Rhodopes, Gorno Kapinovo.*

JEL Codes: 29

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LEXICAL SIMILARITIES BETWEEN THE BULGARIAN WORD ПРАГ AND THE FRENCH WORD SEUIL

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Abstract: The results presented in this study are obtained from a comparison of translations between the two languages, organized around the concept of limit and its lexicalization in French and in Bulgarian. They are complemented by an account of the history, lexical combination and word-formation capacity of the words and provide further information on the process of colexification, whereby the same word (e.g. 'seuil' for French and 'праз', for Bulgarian) expresses two or more concepts conveyed by different words in other languages.

Keywords: cross-linguistic polysemy, colexification, conceptual system

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FRI-229-1-P(S)-03

CASES OF FUNCTIONAL ELLIPSIS OF A PRONOMINAL SUBJECT ARGUMENT IN FRENCH

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Abstract: The present study examines some cases of unregulated ellipsis of pronominal subject argument in the French language. The aim of the research is to describe and systematize the observed elliptical processes and to analyze the reasons leading to their manifestation. There is a tendency towards standardization of ongoing elliptical processes of an unstressed pronominal argument, which refers to both intrafrsentential and interfrsentential antecedent form, regardless of the semantics, tense or voice of the verb.

Keywords: ellipsis, non-normative, pronominal subject, French

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FRI-229-1-P(S)-04

WHAT WILL THESE BONES TELL? STUDY OF SELECTED RURIK BURIALS USING THE NAA METHOD

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***Abstract:** The purpose of the work is to study the elemental composition of the bone remains of members of the grand ducal family using the NAA method. The study, based on a comprehensive interdisciplinary analysis of the entire corpus of sources, replenishes information about the elemental composition of the remains of the Russian medieval elite and opens up new opportunities for clarifying and sometimes revising established ideas about lifestyle and dietary features, allows us to restore details of everyday life, information about the materials of costumes and cutlery, as well as court rituals.*

***Keywords:** study the elemental composition of the bone remains*

***JEL Codes:** L29*

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FRI-229-1-P(S)-05

**THE SCIENTIFIC MISSIONS OF MIHAIL ARNAUDOV IN THE NEWLY
LIBERATED BULGARIAN LANDS DURING THE WARS FOR NATIONAL
UNIFICATION. (HUNDRED YEARS OF THE PUBLICATION OF THE
COLLECTION "NORTHERN DOBRUJA. ETHNOGRAPHIC
OBSERVATIONS AND FOLK SONGS")**

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Abstract: *The report presents three scientific expeditions of Mihail Arnaudov: in Eastern Thrace in the fall of 1912, in Western Macedonia in 1916 and in Northern Dobruja in 1917, where he collected rich folklore and ethnographic material. They are indicative not only of his interest in the population of these lands in linguistic, historical, folkloric and ethnographic terms, but also of his high public and civic commitment to defend the Bulgarian national cause by means of impartial science.*

Keywords: *Mihail Arnaudov; Eastern Thrace; Western Macedonia; Northern Dobruja; Bulgarian Folklore; Bulgarian Ethnography; Bulgarian Language.*

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FRI-229-1-P(S)-06

MORPHOLOGICAL, SYNTACTICAL, AND LEXICAL FEATURES OF THE EASTERN-RHODOPIAN VISHNEVO DIALECT

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Abstract: *The paper deals with the morphological, syntactical, and lexical features of the so far unknown Eastern-Rhodopian dialect spoken in the village of Vishnevo, Banite municipality of Smolyan region.*

Keywords: *Bulgarian language, Bulgarian dialectology, Eastern-Rhodopes, Vishnevo.*

JEL Codes: 29

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FRI-229-2-P(S)-01

**THE RENAISSANCE SPIRIT AND THE EUROPEAN HORIZON
IN THE WORK OF PIRIN BOYADJIEV**

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Abstract: *The text presents Pirin Boyadzhiev in his various manifestations - as a literary critic, local historian, public figure and poet. The factors influencing the formation of his public and creative views are highlighted. The directions of his scientific research in relation to comparative literature are outlined - the emphasis is on his studies of Bulgarian-Romanian and Bulgarian-French literary relations.*

Keywords: *Comparative literary studies, Bulgarian-Romanian relations, creative dialogues*

JEL Codes: L10, L11

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FRI-229-2-P(S)-02

THE SWAN SINGLES OF PIRIN BOYADZHIEV

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Abstract: The report presents the observations on the short poetic forms in "Swan Song" (1999) - the last creative expression of the prominent Silistra researcher, teacher and public figure Pirin Boyadzhiev (1913 – 2005). His one-line poems - an outstanding example of minimalism - are distinguished by an aphoristic character and deep authorial insights about the truth about the world, man and his spiritual values.

Keywords: Pirin Boyadzhiev, short poetic forms, one-line poems

JEL Codes: L29

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FRI-229-2-P(S)-03

RARE WORDS IN THE WORDS OF KLIMENT OHRIDSKI FROM "ZLATOSTRUY"

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Abstract: The report presents the observations of rare words in three of the alleged Kliment Ohridski's eclogies included in the original Old Bulgarian anthology Zlatostruy. Most often, these are complex words that are not found in other manuscript books and are not noted in the dictionaries of classical Old Bulgarian written monuments. These words enrich the word-formation patterns of the complex words in the Old Bulgarian language and are one of the most indicative features in the language of a given writer or literary school.

Keywords: manuscript book, Zlatostroyi, words of st. Kliment Ohridski.

JEL Codes: L29

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FRI-229-2-P(S)-04

CINEMA IN SILISTRA (1940 – 1958)

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Abstract: *The present study examines the development of cinema in Silistra, as part of the cultural life of Silistra society after the recovery of Southern Dobrudja (1940-1944) and its fate after the communist coup (1944-1958). For this purpose, the institutional attitude of the authorities (local and state) towards the cinema, the purposes for which it is used and the degree of public interest in it have been revealed.*

Keywords: *cinema, films, Silistra, recovery of South Dobrudja, communism, propaganda*

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FRI-229-2-P(S)-05

VAZOV AND EMINESCU – SYMBOLS OF TIMELESS SPIRITUALITY AND NATIONAL CONSCIOUSNESS

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Abstract: *The paper reviews part of the work of the pillars of the Bulgarian and Romanian national culture – the Patriarch Ivan Vazov and the evening star Mihai Eminescu as symbols of timeless spirituality and national consciousness. With the breadth of his creativity, with his works from the high national classics in almost all literary genres - poetry (from epic to sonnet), short stories, novellas, novels, travelogues, dramas, children's poetry and prose, Vazov remains an unattainable author. He was the only one of his contemporaries to show an interest in Romanian poetry, and some of his motifs were influenced by it. Eminescu is a poet, prose writer and journalist, considered by Romanian readers and literary critics to be the most important poetic voice in Romanian literature and defined by world critics as the "quintessence of the Romanian spirit". Their deeds create entire eras. Recognized classics, both authors made a significant contribution to the development of the language of their peoples.*

Keywords: *poetry, culture, national consciousness, symbols, homage*

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FRI-229-2-P(S)-06

LOCAL POLICE, IN THE LINE OF DUTY FOR THE COMMUNITY

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Abstract: *Our research was born out of necessity. Having worked with local police students at Ovidius University, we had had difficulties in finding the right materials to provide them with, in order to develop their skills in English, especially for second year of study students because they need to better prepare for their future jobs. Assessing their needs through discussions and investigations, we have progressively designed some materials to feed their urge to communicate. As local police is meant to serve the community, it is a crucial condition that those employed in its service are excellent communicators, being able to cope with difficult situations, with pressure, with people in fragile conditions or in conflict. Communicative skills have to be exercised to be improved and this is what we have tried with our students supplying them with seminar support to tackle some of their future responsibilities such as ensuring public safety, checking compliance with construction requirements or dealing with environmental issues. In this respect, our materials were conceived as to activate listening skills, reading skills and most of all, speaking skills, adding, at times, vocabulary practice or even translations.*

So, our paper can be regarded as a practical support for all teachers that are engaged in such a process of training university students to use their skills acquired when learning English as a language for specific purposes. It has not been an easy task and we need to confess that the below proposals to be used in class are just suggestions. We strongly believe that only through sharing our ideas and dealing with challenges, we, as educators, can thrive to the benefit of our learners, in the first place

Keywords: *Community, responsibilities, communicative, people, skills*

FRI-229-2-P(S)-07

DOCHO MIHAILOV BETWEEN TRUTH AND MYTHS

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Abstract: *In the struggle for the liberation of Southern Dobrudzha many Bulgarians were involved. Some of them are forgotten and others are glorified. These days, truth is slowly emerging from oblivion.*

One of these people is doco Mihailov. For some, he's a great hero, but for others, that's not true. Many legends have been created around his name. Gani Ganev, Ivan Georgiev, Petar Todorov, Stanka Georgieva have written about him. They all wrapped him in the halo of God.

This post examines the truth and myths surrounding Docho Mihaylov. Everything is based solely on archival documents.

The main thesis, argued through the analysis of unknown archival documents, is the revelation of the historical truth about the place and role of Docho Mihaylov in the national liberation movement in Southern Dobrudzha during the period of Romanian dependence.

Keywords: Southern Dobruja, Docho Mihailov, myth, reality, archival documents

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SOFTWARE MODELING OF A CATALYSIS AUTOWAVE PROCESS

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Abstract: Autowave processes /self-oscillations/ are phenomena in the fields of engineering, biology, chemistry, physics, physiology, economics and sociology. The article examines an important class of catalytic reactions - catalysis. A brussellator model is described and the differential equations are presented with program code and numerical examples in the PTC Mathcad programming environment.

Keywords: Oscillating reaction, Catalysis, Brusselator, Modeling, PTC Mathcad.

JEL Codes: L10, L11

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FRI-216-1-TS(S)-02

OVERVIEW ANALYSIS OF THE TYPES OF HEADERS USED IN THE OPERATION OF GRAIN HARVESTER

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Abstract: The choice of heather is a key moment for the harvest and for the quality of the harvested crops. This review explores the main advantages and disadvantages of different types of headers, focusing on their technical and technological characteristics. The article examines the types of headers used in combine harvesters. The structural and functional types of headers and their application for the collection of various agricultural crops, such as: corn, sunflower, wheat, etc., are distinguished. The different types of headers and their different types of cutting devices are of fundamental importance to farmers and the quality of the harvest.

Keywords: heather, grain harvester, harvest, agricultural crops.

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FRI-216-1-TS(S)-03

OPPORTUNITIES TO INCREASE THE EFFICIENCY OF STREET LIGHTING

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Abstract: The publication examines various possibilities for increasing the efficiency of urban lighting systems. In addition to the improvement of the energy indicators, options for optimizing the technical-economic and operational indicators have also been proposed. Efficiency is divided into two categories: capital and operating costs. Methods and means of increasing efficiency in both categories are proposed. While capital costs have a one-time nature, operating costs can develop over time. It is the application of an information management system allowing remote hierarchical control that would improve the efficiency of lighting installations in the future.

Keywords: Street light, Energy combustion, Efficiency, Protection, Modelling

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FRI-216-1-TS(S)-04

INVESTIGATION ON SOME ELECTRICAL PARAMETERS DURING DUTY CYCLES OF A METALS MELTING ELECTRIC INDUCTION FURNACE

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Abstract: The paper presents an investigation on some electrical parameters during duty cycles of an 800 kW metals melting electric induction furnace. The values of the phase voltages and currents of three phase power supply and of the true power factor are measured and recorded by three-phase power quality analyser MI 2885 Master Q4. The results are analysed and it has been found the values of true power factor vary. The values are lower than the required ones and practical methods for the raising of the energy efficiency are suggested.

Keywords: Electrical parameters, Energy efficiency, Metals melting electric induction furnace, True power factor.

JEL Codes: L61, L94

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FRI-216-1-TS(S)-05

COMPARISON OF ELECTRIC BATTERIES ACCORDING TO SOME OPERATIONAL PROPERTIES

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***Abstract:** This report compares some of the main performance properties of electric batteries used to drive electric vehicles.*

***Keywords:** transport, vehicles, electric batteries*

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FRI-216-1-TS(S)-06

MOST COMMON CAUSES OF DEVIATIONS IN THE HYDRAULIC CHARACTERISTICS OF COMMON RAIL NOZZLES

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***Abstract:** The report describes the reasons for the occurrence of deviations in the hydraulic characteristics of electromagnetic nozzles from the common rail system based on statistical data from bench tests in a specialized workshop for the repair of diesel fuel systems. Bosch, Denso and Delphi brand nozzles were tested. The research was done on a CMX6000X universal diesel fuel system test bench.*

***Keywords:** Common Rail, hydraulic characteristics, electromagnetic injectors*

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OCTOBER RESEARCH CONFERENCE IN RUSE

FRI-2G.204FS

FRI-2G.204FS-01

**EU PROJECTS FOR MODERNIZATION AND COMPETITIVENESS OF
UNIVERSITIES**

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Abstract: *Future-oriented projects* are large-scale activities that aim to identify, develop, test and evaluate innovative approaches (in policy) with the potential for mainstreaming, thereby improving education and training systems. They support development-oriented **ideas responding to key European priorities** that contribute to the improvement of education and training systems, as well as to generate significant innovative action in terms of methods and practices for all types of learning and the parameters for active participation in **European social cohesion**.

The presentation supports the thesis of developing transnational cooperation projects that carry out a coherent and comprehensive set of sectoral or cross-sectoral activities that: promote innovation in terms of scope, innovative methods and practices and/or ensure the transfer of innovations (between countries, policy sectors or target groups), thus ensuring at European level the sustainable use of innovative project results and/or their adaptation in different contexts and audiences.

Successful will be those of them that achieve a systemic impact at the European level, by proving the capacity to implement innovative results on a European scale and/or that **can transfer them to different thematic or geographical contexts**.

Keywords: *Future-oriented projects, European priorities, social cohesion; thematic or geographical contexts*

FRI-2G.204FS-02

ANALYSIS OF CURRENT TRENDS IN MONITORING SUSTAINABLE DEVELOPMENT

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Abstract: Romanian government legislation, investor and stakeholder expectations, as well as international voluntary initiatives have contributed to the growing demand for high-quality information on sustainability issues. The scientific community investigating the problem is expanding rapidly and the need for data is growing significantly. This is a rapidly evolving topic with many different monitoring frameworks, with some criteria overlapping, creating problems with consistency globally. This often causes uncertainty about how the data should be used to produce useful results and science-based resources. The presentation shows current monitoring trends related to sustainability, including specific analysis at the state and corporate level. An updated overview of the sources of sustainability reporting is presented, followed by a focus on well-known tools (ie, the SDG Index and the International Distribution Index) used to monitor and report nations' progress toward the SDGs.

Keynotes: sustainable development; production engineering; business economics and business administration

FRI-2G.204FS-03

THE TRANSITION TO INDUSTRY 5.0 AND ITS IMPACT ON PEOPLE'S LIVES

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Abstract: 5.0 provides a vision for industry that moves beyond efficiency and productivity as the sole goals, and strengthens the role and contribution of industry to society. It puts "...the well-being of human resources at the center of the production process and uses new technologies to ensure prosperity beyond jobs and growth, while respecting the productive capabilities of the Planet," reads the European Commission's (EC) definition of the next industrial revolution. According to the EC, it complements the existing "Industry 4.0" approach by specifically placing research and innovation at the service of the transition to a sustainable, human-oriented European industry.

Industry 5.0 is the first concept that is not so much focused on the optimization of production, but on how to make people's lives better - both in the role of employees and consumers.

The foundations of Version 5.0 have already been laid in 4.0. Smart factories use autonomous vehicles to optimize their processes. Many of the big ports are an example of this - when unloading containers, this activity is performed by automated trolleys that follow the exact route, load themselves, etc. Husqvarna's smart factory in Ruse also uses similar technologies. This is part of Industry 5.0, which is already present in the previous concept. The same applies to the joint work of a person with a robot through the so-called collaborative robots.

Keywords: industrial revolution, industry 5.0, quality of life

FRI-2G.204FS-04

NUTRITION IN THE PREVENTION OF MODERN SOCIALLY SIGNIFICANT CHRONIC NON-INFECTIOUS AND ACUTE VIRAL DISEASES

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Abstract: *The present presentation makes an expert review, analysis and discussion of data from scientific studies regarding the place of nutrition in the prevention of modern socially significant non-infectious and infectious diseases.*

The author analyzes and evaluates scientific information regarding dietary approaches to reduce or eliminate reversible risk factors for the development of obesity, dyslipidemias, hypertension, and low physical activity. Dietary therapeutic principles for minimizing difficult, but still reversible risk factors - insulin resistance, type II diabetes, increased tendency to thrombosis, high levels of homocysteine in the blood - are discussed.

A special topic is the author's analysis and discussion of expert opinions regarding the optimization of the nutritional model in the prevention of viral infections, in particular - of COVID-19.

Keynotes: *nutrition; dietetics; chronic, non-infectious; acute viral diseases*

FRI-8.303b-1-AMT&ASVM

FRI-8.303b-1-AMT&ASVM-01

COMPARATIVE TESTING OF EARLY MAIZE HYBRIDS, CULTIVATED FOR GRAIN UNDER NON-IRRIGATION IN NORTHEASTERN REGION

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Abstract: The experiment was conducted during the period 2019-2021 on the soil type opodzolic chernozem in the area of Osenets village, Razgrad region - Northeastern region. The following hybrids were tested: DKC4949, DKC4590, DKC5031, P8523 and P9537. The aim of the present study is to determine the elements of productivity and grain yield of early maize hybrids grown under non-irrigated conditions in the Northeast region. The analysis of the results showed that the highest yield was obtained from P8523 – 11380 kg/ha, followed by P9537 – 10856 kg/ha and the least – from the hybrid DKC5031 – 9253 kg/ha. Of all the maize hybrids studied, the observed mid-early P8523 is recommended as the most suitable under non-irrigated conditions in the Northeast region.

Keywords: maize, hybrids, elements of productivity, yield of grain, non-irrigated conditions.

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EFFICIENT ENERGY USE IN AGRICULTURAL MACHINERY AND TECHNOLOGIES

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Abstract: This article examines a crucial aspect of agriculture - the efficient use of energy in modern agricultural machinery. Agriculture is one of the largest consumers of energy in the contemporary world, and its sustainable future depends on the skillful management of energy resources. This abstract highlights the importance of efficient energy utilization for cost-effectiveness, environmental preservation, and increased productivity in agriculture. The article explores various methods and practices that can be employed to achieve energy efficiency in agricultural operations. This overview underscores the need for integrating new technologies, education, and scientific research to create a sustainable and future-ready agricultural infrastructure.

Keywords: Agricultural Machinery, Energy Efficiency, Sustainable Agriculture, Farming Technology, Renewable Energy, Precision Farming

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INTELLIGENT RESOURCE MANAGEMENT SYSTEMS IN AGRICULTURAL TECHNOLOGY

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Abstract: *The article focuses on the key aspects of intelligent resource management systems in agricultural technology. Agriculture serves as a cornerstone of the global economy, facing escalating challenges, including climate change and limited natural resources. Intelligent systems offer an innovative approach to managing water, energy, and chemical resources, utilizing sensors, satellite data, and artificial intelligence. These systems assist farmers in making informed decisions, optimizing resource utilization, reducing environmental impacts, and enhancing crop yields. Despite challenges such as data integration and farmer training, intelligent systems represent a key tool for achieving sustainable and successful agriculture in the future.*

Keywords: *Intelligent, Efficiency, Effectiveness, GPS, Agricultural Technology*

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ANALYSIS OF EXISTING SYSTEMS FOR MONITORING BEE COLONIES

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Abstract: Bees, as vital pollinators and indicators of ecosystem health, require constant observation and care. This paper provides an overview and analysis of existing systems for studying microclimatic conditions (temperature, humidity, and acoustic signals) within bee colonies. The variety of technologies and sensors used to monitor these parameters and their role in bee conservation and research are examined. The potential applications of the collected data for beekeepers, scientific researchers, and educational institutions are presented. The advantages of monitoring systems and their potential for future scientific investigations and initiatives aimed at bee conservation are highlighted.

Keywords: Bee Colony Monitoring, Apiculture Technology, Hive Health Analysis, IoT Beekeeping, Hive Data Collection, Bee Behavior Tracking, Beehive Sensors, Wireless Sensor Networks.

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**TECHNOLOGICAL CHARACTERISTICS OF COVERED ELECTRODES
FROM THE NOMENCLATURE OF „ELECTRODES FACTORY” LTD –
IHTIMAN**

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Abstract: *Welding is one of the most important production processes in metalworking, especially in the creation of finished structures and products. In highly developed industrial countries, more than 40% of the steel produced is processed by welding. Manual metal arc welding is the second most commonly used method for making welded structures. In it, the electric arc burning between the product and a melting coated electrode is used as a heat source, serving at the same time as filler metal to fill the welding gap. The results of welding with covered electrodes - properties and appearance of the seam, performance and technological applicability depend primarily on the electrodes with the help of which the welding is carried out. Therefore, the research of new brands of electrodes is a task of particular practical importance. The work presents results for the technological characteristics of covered electrodes from the nomenclature of the company "Electrode Factory" OOD, Ihtiman. The studies were conducted according to ISO 2401:2018.*

Keywords: *Manual Metal Arc Welding, Covered Electrodes, Technological Characteristics*

JEL Codes: *L10, L11*

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INVESTIGATION OF THE INFLUENCE OF CHEMICAL COMPOSITION ON HARDENABILITY BANDS FOR QUENCHING AND TEMPERING STEELS

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Abstract: This report explores the possibility of simulating the influence of the chemical composition of steels on their hardenability. The study includes three grades of medium-carbon steels: C45, 41Cr4, and 42CrMo4. Specialized software products, JMatPro and Simufact, were utilized for conducting the simulations. The simulation study in Simufact was carried out following the requirements for determining hardenability using the end-quench test method (BDS EN ISO 642:2004). As a result of the simulations, hardness change curves along the cylindrical surface of the standard test specimen were obtained. An analysis of the influence of alloying elements on hardenability was conducted. The reliability of the simulation results was assessed by comparing them with the results of real-world experiments. Conclusions have been formulated.

Keywords: end-quench test; steels for quenching and tempering; hardenability bands; computer simulation

JEL Codes: L10, L11

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INVESTIGATION OF THE POSSIBILITY OF MODIFYING A THERMAL PROBE IN NICKEL-ALLOY PROBE TEST METHOD

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Abstract: Currently, there are five standards for determining the cooling characteristics of industrial quenching oils worldwide. In the territory of the European Union, the standard is ISO 9950. The paper examines the possibility of using an alternative material for the manufacture of the standardized nickel-alloy test piece, which is a general tool for determining the quenching ability of the quenching oils according to ISO 9950 standard. The material recommended for its manufacture is INCONEL 600. As an alternative material, X5CrNi18-10 steel was chosen. In order to predetermine its suitability for this application, a comparative analysis of the thermophysical characteristics of the two materials was made based on literature data and through their simulation with JMatPro. After manufacturing the test piece according to the requirements of ISO 9950, an experimental study with a reference quenching oil Bellini FNT was carried out. A conclusion regarding the possibility of using modified test piece made of X5CrNi18-10 steel was made.

Keywords: Heat treatment, Quenching ability, Quenching oils, ISO 9950, nickel-alloy probe

JEL Codes: L10, L11

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METHOD FOR MEASURING THE RELIEF ANGLES OF TWIST DRILLS USING CAD SYSTEMS

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Abstract: The classical method for rapid measurement of the relief angles α_f of twist drills, widely used in enterprises and applied in the exercises of the Cutting Tools course, is compared with a modern measurement method using a CAD system. For this purpose, a device for twist drills sharpening was considered, the action of the device was simulated and analogously modeled with a CAD system. In the SolidWorks CAD system, the action of the sharpening device was simulated, and its kinematic scheme of shape forming was modeled. By using this kinematic model, the relief surface of the twist drill is modeled, while at the same time is firmly proved whether the relief surface is part of a cylindrical, or part of a conical surface. For the thus modeled relief surfaces, the obtained relief angles α_f were measured in the CAD system using the classical methodology for their determination. The publication introduces an original method for determining the actual relief angles α_f . A comparison of the results of the classical methodology and the proposed by the authors' measurement method is presented, and the obtained results are compared, proving the existence of a difference between the two methods.

Keywords: twist drills, sharpening, relief surfaces, relief angles, measuring, simulation

JEL Codes: N/A

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OVERVIEW OF THE RAILWAY SECTOR IN BULGARIA

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Abstract: *The paper reviews the development and the state of the railway transport in Bulgaria. The overview encompasses the main problems in the passenger services sector, statistical information about the railway sector, information about Bulgarian State Railways (BDZ passenger services), and quality management systems standards. As a result of this publication conclusions are made, challenges and opportunities for improvement of the level of services in the railway sector are made.*

Keywords: *Railway Sector, Quality Management Systems, Maturity Model*

JEL Codes: *L15, L92*

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AUTOMATED PALLETIZING OF PACKAGED PRODUCTS

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Abstract: *The article examines issues related to optimizing the operation of a palletizer for single products under different production conditions. A simulation model of operating equipment for palletizing single packages with bulk material has been developed, allowing the study of the influence of certain factors on the operation of the considered system and the possibilities for effective application.*

Keywords: *Automation, Automatic palletizers, Simulation modeling of production systems, GPSS.*

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FRI-1.317-1-MEMBT-07

INVESTIGATION OF THE INFLUENCE OF STRUCTURAL PARAMETERS ON THE NATURAL FREQUENCIES OF A THIN-WALLED BEAM

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Abstract: The paper presents the results obtained by using 3D modeling and a simulation study with CAD software to determine the natural frequencies of a thin-walled prismatic beam model as a function of the wall thickness and the type of material (modulus of elasticity) of the beam. The research aims to evaluate the significance of the impact of the two factors on the eigenfrequencies of the model. The obtained results and conclusions can be used in the development of technological operations for mechanical processing by cutting (for example, front plane milling) of unstable workpieces of an analogous shape, which are established according to a classical scheme of two supports in a special fixture for expert judgment on the possible need for implementation of measures to limit the risk of vibration.

Keywords: Vibration, processing machine parts

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Vitliemov V. G., V. S. Bozduganova, Yu. A. Angelov. Dynamics of mechanical systems with unconventional drive. Ruse, Ruse University Publishing Center "Angel Kanchev", 2023, p. 474, ISBN 978-619-7135-20-6 (**Оригинално заглавие:** Витлиемов В. Г., В. С. Боздуганова, Ю. А. Ангелов. Динамика на механични системи с нетрадиционно задвижване. Русе, Русенски университетски издателски център „Ангел Кънчев“, 2023, с. 474, ISBN 978-619-7135-20-6)

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ANALYSIS AND CLASSIFICATION OF APPROACHES FROM PRACTICE TO LIMIT THE OCCURRENCE OF VIBRATIONS IN THE MECHANICAL PROCESSING OF MACHINE PARTS BY CUTTING

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Abstract: The publication presents an analysis and expert assessment of the advantages and disadvantages of the solutions used in engineering practice to limit the possibility of forced oscillations in the technological system when processing machine-building details by mechanical cutting. Classification features are proposed and based on them, a classification of the considered decisions is made. The conclusions obtained allow to determine an appropriate approach according to the specific production and technological conditions.

Keywords: Processing machine-building details, Classification, Forced oscillations,

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STUDY THE INFLUENCE OF THE GRAIN SIZE ON THE SURFACE MORFOLOGY IN LASER ENGRAVING

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Abstract: *This study describes the effect of grain size on the ablation depth of the material and the resulting roughness. For this purpose, model samples of pure iron were prepared, which were heat-treated in order to obtain a uniform structure with different grain sizes. The samples were engraved with a laser at different parameters (power, speed, raster distance), and with the help of a laser microscope, the depth of removal of the material was investigated.*

Keywords: *Laser ablation, Engraving*

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**OPERATION OF FREQUENCY-CONTROLLED CONED ELECTRIC
HOIST MOTOR**

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Abstract: *The present work shows the exploration of the possibilities and the specialities at frequency control of a cone-shaped electric hoist motor. An experimental installation was designed. It was used for experiments and registering of the kinematic parameters when an electric hoist motor is working. An analysis of the received experimental data has been completed.*

Keywords: *frequency control, cone electric motor, hoist*

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PROBLEMS AND CHALLENGES DURING RESTORATION OF VINTAGE COLLECTIBLES

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Abstract: The paper reviews existing problems and challenges prior and during restoration of vintage collectibles. A short introduction to the most famous manufacturers of pressed steel and die-cast toys is presented as attention is given to Tonka Toys and Buddy L as a producers of pressed steel toys. There is a variety of manufacturers of die-cast toys, but most recognizable and restored brands are Dinky Toys, Corgi Toys and Matchbox. In particular, the redline series of Mattel's Hot Wheels range produced in late 60's to early 70's could be also related to the vintage collectibles and considered for restoration. Complete description of the general characteristics of the toys is presented. The challenges prior and during restoration process are also established.

Keywords: Restoration, collectibles, problems and challenges.

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INVESTIGATION OF THE INFLUENCE OF THE VIBRATION AMPLITUDE ON THE ELECTRICAL PARAMETERS DURING THE VIBRO-ARC WELDING OF CAST IRON DETAILS IN ARGON

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Abstract: The research was carried out on a vibrating arc device for welding in shielding gases "ENTON-60" with an axisless inertial vibrator. The following criteria were used to evaluate the progress of the electric arc process and the formation of the vibro-welded coatings: short-circuit voltage, voltage at the beginning of arc burning, magnitude of the short-circuit current and magnitude of the current at the end of arc burning. It has been established that the vibration amplitude has a significant effect on the vibro-arc process, as the minimum magnitude of the short-circuit current and the lowest voltage at the beginning of arc burning occurs at a vibration amplitude of 1 mm when welding with the low-carbon wire Sv 08G2C.

Keywords: vibrating arc welding in argon, vibration amplitude, electrical parameters

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METHODS OF INCREASING THE RELIABILITY OF AGRICULTURAL MACHINERY

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Abstract: The reliable operation of machinery and equipment in agriculture depends on a number of factors. The purpose of the present work is to present the methods for increasing the reliability of agricultural machinery. According to the stage of the life cycle in which the methods for increasing the reliability of the machines are applied, they are divided into constructive, technological, operational and repair. The main constructive, technological, operational and repair directions for improving the reliability of the machines have been determined.

Keywords: reliability, agricultural machinery

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ANALYSIS OF USED MOTOR LUBRICANTS AS AN ELEMENT OF MACHINES CONDITION BASED MAINTENANCE

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Abstract: Oil analysis is used for laboratory tests to monitor the condition of lubricants and equipment. Oil analysis is performed during routine preventive maintenance to provide meaningful and accurate information about the condition of the lubricant and the machine.

This article examines the role of used engine oil analysis as a means of monitoring engine condition. The various methods of oil analysis are reviewed. The advantages of this method in maintaining the machines are discussed. Conclusions and recommendations for future research are given.

Keywords: Maintenance, engine oil analysis, Preventive Maintenance, Condition monitoring, Time series

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DEVELOPMENT OF MAINTENANCE PHILOSOPHY OF MACHINES

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Abstract: Like any economic sphere, maintenance is also subject to competition or market struggle (demand, application and competition). In the field of technical maintenance, business interests, environmental protection, resource economy, development of application of product services system (PSS) activity and others are included. Many maintenance management solutions are applied within an organization or enterprise, usually containing and conflicting ideas. It is necessary to define a unique philosophy of maintenance that forms the framework of maintenance activities. This philosophy must respond to the purpose, strategies, capabilities of the enterprise and the new technological systems. It must correspond to the maintenance system and its interaction with other departments of the enterprise and its environment. Factors to consider are outlined as part of conceptual models. With this conceptual model, the enterprise can uniquely craft the philosophy of maintaining what fits the enterprise's purpose (aim) and strategy.

Keywords: maintenance, maintenance strategy, maintenance philosophy, product services system

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STUDY OF LOADING INTENSITY OF THE RAILWAY RAILS IN THE RAILWAY DISTRICT OF RUSE

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Abstract: *Often critical rail failures with causes of surface cracks resulting from fatigue in critical rail or wheel areas. The main factor that affects the intensity of rail failure is the volume of transported cargo in tons. The magnitude of the axial loads and the curvature of the line affect this process. Also the construction of the railway ie. whether it is instructional or non-instructional.*

The studies were done on 4 railway lines from Km 0+000 to Km 120+000 and 9 railway lines from Km 0+000 to Km 80+000. The work presented in this paper investigates the load intensity and its possible effect on the occurrence of defects on railway rails. Given are load-dependent on the rails depending on the load over time and defects occur. Analyzes and conclusions have been made.

Keywords: *rail failures, rail defects, non distractive testing, loading intensity of rails, rails defects intensity.*

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RESEARCH ON RAIL DEFECTS DETECTION WITH NON-DESTRUCTIVE TESTING

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Abstract: Rail is one of the main elements of railway transport. As the weight of the trains rests on a very small part of the rail surfaces, railway tracks require considerable monitoring and maintenance. It is well known that:

a) rails are subjected to intense bending and tangential stresses, plastic deformation and abrasive wear, leading to progressive deterioration of their structural integrity;

b) the rails may have internal manufacturing defects not detected by performance control during their manufacture.

All this can lead to the destruction of rails and, respectively, to the derailment of a train with potentially catastrophic consequences (disruption of traffic, possible losses of rolling stock material and even human animals, etc.).

In this work, an analysis of the structure of rail defects and methods for their detection and the tendency to improve these methods is regarded. The results of the research of the railway in Northern Bulgaria in the Ruse region (part of the Gorna Oryahovitsa region) are given.

The results of the ultrasonic non-destructive testing of defects are analysed and conclusions are drawn.

Keywords: rail defect detection; sensory system; railway sensors, ultrasonic non-destructive testing.

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ANALYSIS OF THE QUANTITATIVE AND AGE COMPOSITION OF AGRICULTURAL MACHINES IN USED IN BULGARIA

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Abstract: *The development of mechanization in agriculture and the modernization of production is one of the main priorities in the policy of our country. It is necessary to study and analyses the machine park in terms of the quantitative and age composition for the correct management of the maintenance and extension of the useful life of the machines.*

This article studies issues related to the development of mechanization and the development trend of the quantitative and age composition of machines.

Keywords: *agricultural machinery, maintenance, machinery life cycle,*

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VARIATION OF SLIP FACTOR IN MULTISTAGE CENTRIFUGAL PUMPS

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Abstract: According to Euler's equation, the work done by the impeller vanes of a centrifugal pump depends on the values of the transfer velocity U_2 at the outlet and the its transfer component $V_{U2\infty}$ at an infinite number of vanes. With a finite number of vanes on the impeller, a boundary layer is formed when the vane flows around the rear side, which thickens towards the exit of the vane. This leads to a deviation of the direction of the relative velocity of W_2 from that of the tangent to the blade and a reduction of the transfer component and, accordingly, of the theoretical pump head. It is accepted that the deviation is called "slipping". It results in less energy delivered to the fluid by the impeller and is measured by the so-called "slip factor"

Studies on the slip factor have been published in the available literature, mainly for single-stage volute casing centrifugal pumps. There is no data on the values of the factor in multi-stage centrifugal pumps, where the removal of the liquid after the impeller is made with the use of a guide device and the supply to the next stage with a return device. Since the flow structures are different when the liquid is removed after the impeller, it should be expected that there will be a difference in slip factor values. The results of an experimental study of Bulgarian multistage pumps with $n_s=66$ and 82 min^{-1} were used in the work. The experimental slip factors are determined depending on the operating modes. For these pumps, slip factor calculations were performed using the well-known methods of A. Stodola, Stanitz, Pfleiderer, Wiesner and the newly modeled equations of T. W. von Backström and Xuwen Qiu. The results are presented graphically, establishing a significant difference in the slip factor for the different methods.

Keywords: centrifugal pump, multistage centrifugal pumps, slip factor

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INFLUENCE OF STEAM PARAMETERS ON STEAM TURBINE EFFICIENCY

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Abstract: *In this work, the influence of fresh pressure and initial steam temperature, the influence of final pressure and condenser pressure on steam turbine efficiency and thermal efficiency of the cycle are considered. The influence of the intermediate superheat of the steam has been considered and some operating values have been analyzed in relation to ensuring maximum energy efficiency.*

A comparison of ideal cycles with different initial steam temperatures in T, s -diagram is given as well as the influence of the available heat drop in reducing the final pressure in the condenser.

Keywords: *steam turbines, steam pressure, thermal efficiency, energy efficiency*

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EVALUATION OF THE EFFECT OF USING A DRAINBACK SOLAR THERMAL INSTALLATION TO SUPPORT THE HEATING OF A PUBLIC BUILDING

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Abstract: *In the report, an analysis of the potential effect of using a drain-back type solar thermal installation to support the heating of a public building was carried out. For this purpose, a numerical modelling of the heat removal coefficient and the heat energy obtained from the installation were carried out. It was made comparison on an annual base of useful heat from drain-back solar thermal installation and pressured one. The effect on an annual basis has been evaluated using the f-method for both types of thermal installations, when using identical flat selective collectors.*

Keywords: *Efficiency, Effectiveness, GPS, Seismic Protection Methods, Model*

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INFLUENCE OF THE DIFFUSER LOCATION ON THE VENTILATION SYSTEM CURVE

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Abstract: *There is no area in modern life where fan systems are not used, we apply them everywhere from heavy industry to our home for air conditioning and room aspiration. The task of the fan is to move a certain volume of fluid from one place to another or to expel it into the atmosphere. Almost all the energy required for this work is spent on overcoming the losses in the pipe elements of the fan systems. Minimizing these losses reduces the energy needed to power the fan and, most importantly, saves money. The need to reduce losses in fan systems requires the study of elements of complex shape in these systems. This paper examines the diffusers, exactly what effect they have on the system itself and how energy efficiency is improved depending on their positioning. In the present work, the influence of the arrangement of conical and flat diffusers on the variation of fan the system curve studied.*

Keywords: *diffuser; fan system curve.*

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ANALYSIS OF SIZING METHODS FOR AIR DUCT NETWORKS

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Abstract: Fan systems are very common in all areas of energy, economy and household. A major part of these systems are air duct networks. The correct hydraulic dimensioning of these networks is very important from an energy efficiency point of view. In this work, a comparative analysis of several known methods for sizing complex air duct networks is carried out. The results are based on an analytical study of a real existing fan system.

Keywords: fan system curve, air duct.

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SPEED CONTROL OF PNEUMATIC POWER TRANSMISSION SYSTEMS USING ON-OFF VALVES WITH PULSE WIDTH MODULATION

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Abstract: *To increase the energy efficiency of pneumatic power transmission systems, modern control method for speed control of pneumatic cylinder is applied. This is realised by fast-acting pneumatic valves 2/2 ON/OFF, digital control by computer and virtual instruments with specialised software. This paper presents the possibility of controlling the speed of a pneumatic rodless cylinder with a controller using Pulse Width Modulation PWM. An electronic block implemented with a PWM and an energy saving amplifier is used for control fast acting pneumatic valves.*

Practical realization of PWM controlled electro-pneumatic power transmission system is shown and experimental characteristics for variable speed of the pneumatic actuator are obtained. The experimental results are shown in few graphs.

Keywords: *Pneumatic power transmission system, Energy Efficiency, PWM speed control*

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INTEGRATED SYSTEM FOR AUTOMATED DESIGN OF A STANDARDIZED ISO 5801:2007 FLOWMETER VENTURI INLET NOZZLE UTILIZING 3D TECHNOLOGIES

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Abstract: This study introduces a concept for automating engineering processes by using existing software tools, without necessity of additional specialized software development. In this regard, a system has been designed, integrated within the platforms of Microsoft Excel and Solidworks, aiming for the automated design of a standardized nozzle in accordance with the ISO 5801:2007 standard. The design process components have been automated, including: standard-compliant calculations, integration of tabulated data and coefficients, calibration curve development, determination of the nozzle's structural parameters and accompanying flanges, as well as the creation of functional and assembly drawings. Algorithmic procedures and calculations are performed through Excel, with integrated functions for partial linear and bilinear interpolation based on VBA. The 3D models and drawings are executed in Solidworks, with dimensional data synchronized with Excel outcomes via Design Tables in XLSX format. This structured approach facilitates the completion of all design stages without direct user intervention. The nozzle's fabrication is envisaged utilizing 3D technologies, thus the design accommodates the advantages and capabilities of 3D printing.

Keywords: Standardized Nozzle, ISO 5801:2007 International Standard, Flow Measurement, Calibration Curve, Automated Design, 3D Printing, 3D Technologies.

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MODELING OF HYDRAULIC UNIT IN DYNAMIC OPERATION MODE

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Abstract: The article examines the operation of a hydraulic unit consisting of a volumetric pump and a safety valve. A non-linear mathematical model has been developed, describing the operation of the hydraulic unit in dynamic and established mode of operation, using a single or double safety valve. An analog model was created and the transient processes during load changes in the hydraulic system were simulated. Recommendations have been made for the use of the mathematical model of the hydraulic unit in modeling the dynamic processes in hydraulic systems and automatic electro-hydraulic systems. The simulation results are presented graphically.

Keywords: Hydraulic System, Electro-Hydraulic System, Volumetric Pump, Safety Valve, Mathematical Model, Pipeline,

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ELECTRO-HYDRAULIC ACTUATOR SYSTEMS WITH INTELLIGENT CONTROL - STATE AND PROSPECTS FOR DEVELOPMENT

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Abstract: This article reviews publications on existing conventional and electro-hydraulic actuator systems with intelligent control strategy. The structure and the specifics of the operation of automatic electro-hydraulic systems are presented. The modern methods of control synthesis and the prospects for the development of electro-hydraulic actuator systems with intelligent control strategy and the possibilities for their use in practice are considered.

Keywords: Electro-Hydraulic System, Automatic System, Mathematical Model, PID Controller, Fuzzy Control, Neuro Control, Neuro-Fuzzy System, Intelligent System, Actuator, Pressure Pipeline.

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**ORGANIC FARMING IN BULGARIA. FEATURES AND DEVELOPMENT
PREREQUISITES**

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Abstract: An analysis of the main components of organic farming - essence, principles and rules - are carried out. The current state of organic farming in Bulgaria is reviewed. Based on the past and present, as well as the changes in European and Bulgarian legislation, guidelines for its future development are summarized.

Keywords: organic farming, ecological farming.

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FRI-19.206-1-EC-02

ENVIRONMENTAL PROBLEMS OF SOIL CAUSED BY CLIMATE CHANGE AND AGRICULTURAL ACTIVITIES

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Abstract: An analysis was made of the abiotic and biotic factors that lead to desertification, the loss of biodiversity, compaction and compaction of the soil due to the incorrect use of heavy agricultural machinery in unsuitable soil moisture, as well as the different types of tillage carried out on steep fields.

Keywords: ecological agriculture, climate change, compaction, erosion.

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NOISE CHARACTERISTICS OF THE SOUND SIGNALING DEVICE OF A ROAD VEHICLE

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Abstract: *The paper presents a methodology for measuring the noise emitted by the sound signaling device of a road vehicle. For 5 seconds, a recording of the noise, emitted by several types of cars with different performance with switched on sound device, was carried out. A-weighted sound pressure level of a device is analysed and spectral analysis of noise in octave bands, as noise dynamics. A longer measurement of the sound pressure level is made for a selected car and analyzed statistically. Dependencies are obtained that show the noise hazard of excessive exposure to noise with these parameters and prescriptions are given to limit the use of sound signaling.*

Keywords: *noise, sound signaling device, spectral noise distribution, octave bands,*

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FRI-19.206-1-EC-04

ASSESSMENT OF THE READINESS FOR ACTION OF DIFFERENT TARGET GROUPS IN THE EVENT OF NATURAL OR MAN-MADE DISASTERS

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Abstract: *The attitudes, preparation and readiness of various target groups from the cross-border region of Ruse - Giurgiu to respond to natural and/or man-made disasters, accidents and catastrophes are studied in this paper. The analysis was carried out within the framework of the project "Partnerships for overcoming disasters for a secure region", e-MS code: ROBG-427 by the survey method (voluntary and anonymous) and aims to establish the capacity of one of the interested parties, in this case - of the representatives of the local communities.*

The assessment was made on the basis of the results of a specially developed online questionnaire (survey) in two languages - Romanian and Bulgarian. The inquiry was conducted in a time range lasting one month - from 10.09.2022 to 10.10.2022 in the territorial scope of the Ruse District and the Giurgiu County. The obtained data were entered into tables, and the Microsoft Excel product was used for their analysis, processing and visualization in graphic form.

Keywords: *Natural and man-made disasters, civil protection, attitudes, preparation and readiness, volunteers, spontaneous volunteers.*

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ENVIRONMENTAL RISK ANALYSIS IN A PULP MILL ACCIDENT AND DISASTER PLAN

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Abstract: Commercial companies producing cellulose are classified as "enterprises with high risk potential" due to the presence of dangerous and toxic substances, such as carbon disulfide, concentrated sulfuric acid and concentrated sodium base. The analysis of the emergency plan will indicate the necessary measures to improve the reactions of personnel in the event of industrial accidents or natural disasters and prevent environmental pollution.

Keywords: Efficiency, Effectiveness, GPS, Seismic Protection Methods, Model.

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STUDY OF LEGAL REQUIREMENTS AND REGULATIONS FOR WASTE TREATMENT

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Abstract: This text focuses on the importance of regulatory frameworks for waste management in both the European Union and Bulgaria. In the first section, the objectives of the European Union to create a unified community among its member states are discussed, emphasizing the fundamental principles of environmental policy and significant legal documents such as the Framework Directive 2008/98/EC, the Maastricht Treaty, and the amendments introduced by the Amsterdam Treaty, along with regulations related to waste disposal. The second section analyzes the regulatory framework within the context of Bulgaria and highlights the country's efforts to enforce ecological changes that promote environmental improvement and encourage active participation and responsible behavior, both by businesses and individuals.

Keywords: European Union, Recycling, Waste utilization, Financial responsibility, Waste holder, Waste impact limitation law, Waste definition.

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AN INTEGRATED APPROACH TO MEETING REGIONAL ENERGY NEEDS BY CREATING “WORKING BODIES” (ENERGY COMMUNITIES) TO MAKE OUR MUNICIPALITIES ENERGY INDEPENDENT AND ENVIRONMENTALLY SUSTAINABLE

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Abstract: Significant changes are coming in the structure of the energy system - production and consumption in the Republic of Bulgaria, caused by modern requirements for ecology and energy efficiency. The authors propose an alternative concept for the organization and development of municipal infrastructure. The paper aims to present the legal requirements and regulatory control in the provision of utility services within a separate municipality. The analysis indicates the cases where licensing, certification, provision of services under certain general conditions and rules for working with energy service users are necessary. Main attention is paid to the transition from a market with regulated prices to an organized market with freely negotiated prices. It describes the creation and financing scheme of municipal utility clusters providing energy-efficient services and participation in the balancing market of electric energy under Social Marketing.

Keywords: Efficiency, Energy, Social Marketing, Municipal utility clusters, Market with freely negotiated prices

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Legal requirements from ZE, ZEVI, ZOP, PNIEVIB - program to promote the use of energy from renewable sources and biofuels, NPDEVI - National action plan for energy from renewable sources.

The Municipal Long-term and Short-term RES (renewable energy sources) programs of over 30 municipalities (published on their respective websites) including: Silistra, Sliven, Kotel, Zlatitsa, Slivo pole, Cenovo, etc., developed by Eng. Konstantin Velev.

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**DEFINING PHASES AND CRITICAL POINTS DURING THE FIRST
STAGE OF THE “DESIGN PROCESS”**

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Abstract: *This article explores in detail the phases during the first stage of the design process from a graphic design perspective, during which the design problem and client brief are defined. Brief generation methods, written communication between client and designer and aspects of the contractual relationship are traced. The critical points in this stage are considered and methods for their solution are formulated.*

Keywords: *Design processes, Design thinking, Design Leadership, Design Communication, Design Management, Design education.*

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SPECIFIC FUNCTIONAL, AESTHETIC AND ERGONOMIC ASPECTS IN THE PROCESS OF DESIGNING THE INTERIOR OF A CONFERENCE HALL

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Abstract: The paper reviews one of the many manifestations of interior design – designing a hall in a public building. Emphasis in the report is placed on three main components of the development: 1. Functional construction of the space, by determining the relevant functional and walking areas. The correct selection and placement of furniture in the interior is an important prerequisite for high quality of the final solution. 2. A good aesthetic decision is related to the selection of the appropriate shapes, colors and materials in the interior, which will create the desired experience of the visitors in the room. 3. The comfort of the designed furniture is of prime importance, because its incorrect selection can lead to significant discomfort.

The purpose of this report is to present specific functional, ergonomic and aesthetic aspects of the design process in the organization of the interior space in a conference hall.

Keywords: Design, Interior, Ergonomics, Communication, Space design

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BULGARIAN AND WESTERN EUROPEAN INDUSTRIAL DESIGN IN THE SECOND HALF OF 20TH CENTURY. MODERN PRACTICES IN BULGARIAN INDUSTRIAL DESIGN

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Abstract: *Industrial design, as an innovative design activity in the field of industrial production, having its beginnings in Europe from the middle of the 19th century, experienced a real rise in the first decades after the end of the Second World War due to the strong social attitudes during this period for a better and fairer a world where man and his well-being were placed at the center.*

The subsequent geopolitical changes shook the continent to its foundations, dividing it into two ideological - political and military blocs, heralding a race and competition in all possible areas of the economic life of European countries, especially in the sphere of the processing industry, where the processes of creating products that determine a person's life and work. In order to increase their quality values, the implementation and application of new design methods in the face of industrial design have reached high levels of priority among the countries of the continent in order to give such important additional functional, ergonomic and aesthetic qualities forming the social and market appearance of industrial objects. Aesthetics, presented as the main artistic building block in the design structure, unites in itself the special spiritual and cultural values of the societies, which are the basis of the construction of identity, from where the differences in the visual appearance of the objects come.

The differences between Bulgarian and Western European industrial design appear not from the methodological standards of design, but from public attitudes about need, possession, beauty, aesthetics, production possibilities and level of technological development. Today, in the era of digital technologies, design acquires various forms of manifestation not only in European industries, but also in Bulgarian ones, and it is essential how and on what scale they will be applied so that the native engineering production reaches high levels of technological development and productivity.

Keywords: *Industrial design, industry, production, society, aesthetics*

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VISUAL RHETORIC IN ADVERTISING

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Abstract: When it comes to rhetoric, it is mainly associated with the science that studies the ability to speak persuasively in front of an audience. The need, importance and desire to speak well and eloquently arose in ancient times, therefore there is enough accumulated experience in its study and application. The science of eloquence was brought to our lands in the 9th century from Byzantium. Over time, enough schools arose that developed similar skills and laid the foundations of rhetoric as a science. The dispute about the essence of rhetoric - whether it is a science or an art - dates back to that time. But whatever it was, or is the controversy, the problem of studying rhetoric as a technique for expression and communication becomes even more relevant due to the fact that today in the information space several types of communication channels function in parallel, which create an extremely saturated and often aggressive information environment about us. The methods, methodology and technology by which they function can stand out, and therefore the ways of exchanging information and carrying out communication require a different approach in the preparation of the messages transmitted through them. Thus it becomes clear that rhetoric should no longer be perceived as something inherent only in verbal utterance, with persuasive and argumentative speaking before an audience. And that persuasiveness and argumentation can be applied to written texts as well, i.e. as an art for writing as well as for visual messages, i.e. as an art to visualize a message. The latter is particularly valuable as a skill carried over from photography and cinema applied to advertising messages in the implementation of advertising communication. The aim of this article is to present the view of how, through one of the sign systems used in advertising, the iconic sign system, the so-called visual rhetoric in advertising can be realized. What is the meaning and how its skillful use, as a specific way of expression in messages can ensure effective advertising. And how its successful application depends not only on the gift of the creator, but as with verbal rhetoric, on accumulated knowledge, skills and experience.

Keywords: advertising, advertising communication, sign systems, creativity in advertising, visualization of advertising message, visual rhetoric

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TATTOO CULTURE

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Abstract: *Is getting tattoos a fad, a wild desire or a permanent trend? Is this position aesthetic or can it already be called a vicious urge? A desire for additional uniqueness complementing our existing biological-genetic personification or a desperate senseless action? A way to dominate, attract additional interest to yourself or an obsession? Subsequent processes of a cosmetic and organic nature in the youngest users of this "modern service", as well as gerontological problems with increasing age. Questions and findings to which unequivocal answers and comments are increasingly difficult to find. When would it be possible to say with a higher degree of probability whether this so-called "tattoo culture" has already peaked? And above all, in what way, who would take responsibility for this and what methodology would be applicable, at least to limit this phenomenon, the consequences of which are: social, cultural, and health-related. This phenomenon, from an aesthetic point of view, is of particular importance to limit, as it represents a deep insult to people with a different attitude towards personal and community behavior.*

Keywords: *aesthetics, value orientation, social commitment, tattoo culture.*

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IMPLANTATION OF A STATIONARY COVER IN THE DESIGN OF A SMOKING PIPE WITH AIR CHAMBER AND 9-MILIMETHER FILTER

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Abstract: The pipe with an air chamber and filter, due to its versatility, differs significantly from classic pipes. It is equipped, in addition to a mouthpiece for a 9 mm filter, also with a mobile cap for the air chamber. Very often, when removing the cap from the camera opening, it happens that it gets lost. Fitting a stationary cap will eliminate the danger of cap loss.

Keywords: Smoking pipe, air chamber.

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ENRICHMENT OF THE BASIC GRAPHIC TECHNIQUE “ETCHING” WITH AN ADDITIONAL TECHNIQUE, BASED ON THE TEXTURE OF POLYURETANE FOAM

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***Abstract:** Etching (intaglio) is a drawing technique that deals exclusively with lines, contours and strokes, but gradually additional techniques appear, performed on the etching plate, which complement and enrich the basic technique. This drive to diversify etching by adding additional techniques continues to this day.*

The interesting invoice of the polyurethane foam is that it can be successfully included in the enrichment of the intaglio techniques.

Keywords: Etching, Intaglio, Polyurethane foam.

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A TECHNOLOGY FOR DIGITIZING, REDESIGNING AND MODELING EXISTING FREEFORMS BY DISCOVERING THEIR “IDEAL” SHAPE

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Abstract: In the production of products in the prototyping stage, part forms are created using 3D programs, by CNC machine cutting and subsequent manual refinement and modeling. The tooling equipment for making the forms can be made of fiberglass, which allows them to be quickly made, but does not allow mass production. In the process of working on the prototype and its assembly, inconsistencies and problems are discovered, which can be solved using manual modeling and changing the original shape or equipment.

The modeling technology used accelerates the prototyping process, but leads in most cases to discrepancies of more than 30% compared to the initially developed 3D models, and the need to move to mass production and tooling production from durable materials leads to the required development of digitizing technology, determining the "ideal" shape and 3D modeling.

Keywords: 3D modeling, Design, Ergonomics, Prototyping, Space design.

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SOIL MOISTURE REMOTE SENSING IN AGRICULTURE: A REVIEW

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Abstract: *The accurate and prompt data regarding the water levels of crops and soil moisture are crucially important in the context of contemporary precision agriculture and intelligent farming practices. According to projections from the Food and Agriculture Organization (FAO), the global population is anticipated to reach nearly 10 billion people by 2050. To meet the nutritional needs of this growing population, estimates suggest that current food production must be augmented by 59-98%. Roughly 70% of the Earth's freshwater reserves are utilized by agriculture, and it is estimated that approximately 50% of this water is lost or wasted. Soil plays a crucial role in global food production, with up to 95% of the world's food supply relying on it. However, due to unsustainable farming methods, excessive use of natural resources, and increasing populations, approximately one-third of the world's soils have already undergone degradation. Experts predict that if soil erosion continues at its current rate, crop yields could suffer a significant 10% decline by 2050. Furthermore, soils are teeming with life, hosting approximately 25% of the planet's biodiversity. For a considerable duration, remote sensing (RS) has played a pivotal role in facilitating decision-making in the agricultural domain worldwide. In the current era, the incorporation of RS has become indispensable for attaining elevated productivity and sustainability in agriculture. The scientific works analyzed is categorized in: RS soil moisture on large scale level, RS soil moisture on field level and, RS soil moisture on greenhouse level. The outcomes of this research hold potential advantages for individuals engaged in sustainable agriculture, including researchers, academics, and aspiring students.*

Keywords: Precision irrigation, Smart farming, Remote sensing, Soil moisture monitoring, Non-invasive.

JEL Codes: L60

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AN INVESTIGATION OF THE INFLUENCE OF AN INDUSTRIAL INDUCTION FURNACE ON THE ELECTRIC VOLTAGE QUALITY OF POWER SUPPLY

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Abstract: The paper analyses the influence of the operation of an industrial induction furnace on the electrical voltage quality of the power supply. The measurements of electric quantities have been made in the second side of the furnace transformer and outside of the power electronic converter. The three-phase power quality analyser MI 2885 Master Q4 is used to measurement and to record the results. The results are presented graphically and the electric voltage quality by coefficient of the total harmonic distortion (THD) is analysed. Some characteristic regularities for the values of the THD have been established. The conclusions of experimental results can to use for development of technical solutions to improve the power quality of the power supply of the investigated induction furnace.

Keywords: electric voltage quality, metals melting electric inductance furnace, total harmonic distortion, voltage harmonics.

JEL Codes: L94

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H_{∞} ROBUST CONTROL OF A SERVO SYSTEM

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Abstract: The main objective of the proposed paper is synthesizing of a H_{∞} robust control system for a servo motor. For the purpose of the study, a laboratory modular servo system of the company INTECO was used. The parameters of the H_{∞} controller was determined using the Robust Control Toolbox in the MATLAB using a simulation model. On the basis of a simulation model the system was developed and deployed to the real hardware for testing the synthesized controller. The results of the system were compared with those of a system with a standard PID controller. The system with robust controller shows much better performance in tracking the setpoints compared to the system with a standard one. The main advantage of the system with robust controller is in the processing of disturbances. The peak response in the robust system is about 2.5 times smaller compared to the one with standard controller. As for the steady state error, the system with synthesized controller achieves about 8.3 times smaller error compared to the system with a standard one. The main disadvantage of the controller is the longer duration of the process, intrinsic for PID controllers, which is compensated by the much better other quality indicators. In the operation of both systems (setpoint and disturbance processing) there are acceptable transient processes, which lead us to conclude that the synthesized robust controller not only satisfies the control requirements, but also improves the quality of the processes.

Keywords: H_{∞} controller, PID controller, Servo system

JEL Codes: L60

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METHODOLOGY FOR MODELING THE RELATIONSHIP OF COLOR CHARACTERISTICS OF DIGITAL IMAGES OF SOIL AND AGROCHEMICAL INDICATORS OF SOIL - CONTENT OF ORGANIC MATTER AND PHOSPHORUS

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Abstract: The paper, a methodology is proposed for researching the relationship and deriving a regression mathematical model for determining the agrochemical parameters of the soil - content of organic matter (humus) and phosphorus through color characteristics obtained from digital images of soil from optical devices. The methodology describes the modeling of a regression relationship between the selected color characteristics in a previous study and the indicators of soil humus and phosphorus, measured in laboratory conditions using statistical methods. The stages of research of the studied object are indicated in accordance with the "black box" principle and the need to carry out mandatory checks of statistical hypotheses for the adequacy of the model and the significance of its coefficients. The methodology illustrates the application of univariate linear regression analysis LR and multivariate linear regression analysis MLR Stepwise. The models were compared and evaluated using evaluation criteria – coefficient of determination (R^2), root mean square error (RMSE) and residual prediction deviation (RPD). It was found that the regression models for the determination of humus and phosphorus by the MLR Stepwise method improved the results obtained for the camera device by increasing the coefficient of determination (R^2) by an average of 13% and reducing the root mean square error (RMSE) by an average of 5%. The obtained models according to the indicated methodology could be used in modern agricultural practice as tools for express monitoring of the agrochemical parameters of the soil like organic matter and phosphorus content, as well as be implemented in the development of mobile web-based applications..

Keywords: regression models, regression analysis, prediction of agrochemical soil indicators, express monitoring, color characteristics of digital soil images, remote sensing of soil indicators, digital images.

JEL Codes: L60

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USE OF THE MATLAB PROGRAMMING ENVIRONMENT IN THE FACE-TO-FACE AND ONLINE TRAINING OF STUDENTS IN THE ELECTRIC DRIVES MODUL

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Abstract: This paper describes the structure of the Electric Drives module which is a compulsory module in the curriculum of students from the Electrical Power Engineering and Electrical Equipment program at the Angel Kanchev University of Ruse who are studying toward a bachelor's educational – qualification degree. The aim of the article is: first, to present methodological guidelines for the set-up of a virtual bench in the MATLAB programming environment that simulates with sufficient accuracy the operation of a real induction motor used in face-to-face laboratory exercises in the module concerned and can be used in the online training of students; second, to specify an approach for the plotting of the speed-torque characteristics through a virtual laboratory bench and to analyze the opinions of students on its use in the course of online learning in this module.

Keywords: Matlab, Electrical Drives, induction motor, simulation models

JEL Codes: L60

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EVALUATION OF THE EFFECT OF ELECTROMAGNETIC TREATMENT ON THE SOWING QUALITIES OF BEAN SEEDS

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Abstract: Bean seeds of the Bulgarian variety "Obratzov chiflik 12" were studied. The seeds are subjected to a three-stage pre-sowing electromagnetic treatment in a specially developed laboratory chamber. It was found that the pre-sowing electromagnetic treatment stimulated germination, the lengths of the sprouts and the roots of the plants germinated under laboratory conditions. After the treatment, an increase in the number of sprouted plants by 5.3%, an increase in sprouts length by 3.5% and root length by 2.4% was obtained.

The mode parameters of the pre-sowing electromagnetic treatments stimulating the sowing qualities of the seeds have been established.

The research results show that pre-sowing electromagnetic treatments have a stimulating effect on the sowing qualities of bean seeds.

Keywords: Bean Seeds, Pre-Sowing Electromagnetic Treatments, Electromagnetic Field Effect

JEL Codes: L60

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DEVELOPMENT OF A SMART MINIATURIZED SINGLE-USABLE ENDOSCOPY SENSOR REALIZED BY STANDARD CMOS PROCESS

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Abstract: *In this paper, a design procedure for an endoscopy sensor is proposed. The main topics are focused on the following parameters such as noise, speed, power, and area efficiency realized in the standard CMOS process. One of the major advantages of using CMOS technology is the opportunity that pixel and readout architecture are realized in the same wafer which leads to the design of compact sensors with advantages such as low pick-up noise from external sources, efficient row data processing from the photodetector, and high compatibility between internal modules. Thus leads to achieving a high yield from each die that reduces the final production cost. The reduction in cost makes the sensor suitable for a one-time usable device that relaxes the sterility requirements. The proposed system-on-chip finds application in bio-medical applications as in diagnostic medicine and especially for invasive surgery that leads to interventions with "minimal access".*

Keywords: CIS, CMOS, Endoscope, Area and Consumption Efficiency, Bio-Medical Application

JEL Codes: L60

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ANALYSIS OF EXISTING METHODS AND USED PRINCIPLES FOR THE CONTROL OF PERIPHERAL PARAMETERS IN PEOPLE IN AN UNEQUAL SITUATION

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Abstract: The report covers a survey and complete analysis of the existing electronic systems in the scientific literature of various types of devices, patents and products for the visually impaired. Understanding where these systems focus and how they interact with the user to restore or replace as much as possible their vision. Based on this study, a design concept for an electronic cane control system for the blind was created. A block diagram, an algorithm of operation of an electronic system was created and a prototype of a cane for blind users was proposed by using a sensor system and signaling. The developed module is based on Arduino and has been tested in laboratory conditions. The obtained results support the thesis that the ultrasound scan of the movement of a blind person allows to avoid the existing obstacles. The simulation study proves the effectiveness of the proposed electronic system.

Keywords: ultrasonic; cane; electronic control system; blind people.

JEL Codes: L60

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ANALYSIS OF THE APPLICATIONS OF PHOTOVOLTAIC INSTALLATIONS IN CROP PRODUCTION

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Abstract: The application of renewable energy sources is an important priority for the European union. The agricultural sector has great potential to increase its efficiency by integrating photovoltaic modules in the different technological processes. This study analyzes the available options for application of PV energy in the crop production sector. Previous studies have shown that a number of technological processes could be provided with renewable energy, such as lighting, heating, ventilation and irrigation. The area of their application varies from closed growing, such as in greenhouses and hydroponic systems, to open field growing. Some studies suggest the PV modules to be used as a source of shadows, while others to install them vertically and use them as a fence. This study analyzes the pros and cons of the different applications.

Keywords: photovoltaic energy, crop production, technological processes

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ANALYSIS OF THE POSSIBILITIES FOR PARTIAL POWER SUPPLY OF THE UNIVERSITY OF RUSE WITH PHOTOVOLTAIC ENERGY

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Abstract: The contemporary administrative buildings, such as universities, are known to be significant energy consumers. They are characterized with a number of specifics in their energy consumption, such as: their load profile is more significant during the daytime; their load profile differs for the different days of the week. It is known that photovoltaic installations produce energy during the light time of the day, yet the energy generation is a random process which has a number of uncertainties. Therefore, in order to create an economically efficient PV park, it is important to analyze the daily, monthly and annually dependencies between the load profile and the energy generation. This study aims to substantiate the economically expedient size of a PV installation if the main consumer is the University of Ruse infrastructure. It is based on experimental data from the PV park Kanev and the energy consumption of the university.

Keywords: photovoltaic energy, university, sizing, economically expedient

JEL Codes: L60

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**ORGANIZATION OF TRAINING OF STUDENTS IN ROBOTICS ON THE
BASIS OF A VIRTUAL LABORATORY**

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Abstract: Today, virtual laboratories occupy a special place among digital educational resources. This term means that laboratory work and experiments within the framework of the study of Natural Science subjects of elementary and basic school can be performed in a virtual environment. Virtual laboratories are designed to organize distance education, conduct experiments and laboratory work on a virtual desktop in various school subjects in a cloud application. Virtual laboratories have a large catalog of various school equipment that allows you to conduct experiments in all subjects. In addition, the virtual laboratory allows you to test hypotheses, experiment, study, confirm the reality of physical laws, expand the spectrum of manipulation of objects.

Keywords: Robotics, virtual laboratory, breakthrough technologies, informatization, education, innovative methodology, development activities.

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A DYNAMIC LOAD BALANCING ALGORITHM FOR DISTRIBUTED WEB SYSTEMS

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Abstract: Distributed web systems are complex systems that are interconnected by a multitude of nodes. To guarantee high performance and availability, task distribution is a crucial issue in distributed systems. Modern computer systems are made up of multiple components (called nodes) and distributed over multiple physical nodes; these are known as distributed web systems. In this article, an efficient algorithm for task distribution in distributed web systems will be presented. The algorithm, when distributing packets, will take into account the capacity and load of the nodes. This helps ensure a continuous flow and that tasks are distributed to less-loaded nodes that are able to take on other tasks. A multitude of modern applications and platforms in the areas of e-commerce, social media, cloud computing, big data, and the Internet of Things use distributed web systems. Distributed web systems are complex and require attention in implementation and planning. This comes with a number of benefits. Scalability is used to meet increasing demand; distributed web systems can be easily scaled. Reliability: The fact that these do not depend on a single node to function properly makes them more reliable than centralized systems. Performance: Given that tasks are distributed across multiple computing nodes, distributed web systems offer increased performance compared to centralized systems. Security: attacks are much more difficult to carry out given the increased number of nodes to be attacked. These are more secure than centralized systems.

Keywords: Load balancing algorithm, Distributed web systems, Dynamic load balancing, Capacity, Load efficiency, Scalability, Reliability.

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INTEGER COMPUTATION PUZZLES AS PART OF THE HOBBY TIME TRAINING APPROACH

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Abstract: *The concept of Developer’s point of view (DPV) learning approach is based on the idea of “perception the very solution to the problem as a game” and takes the gamification of learning to the next level.*

The Hobby Time Training (HTT) concept is part of the DPV learning approach. It assumes solving small, apparently simple problems, which encapsulates deeply hidden potential. The problem solving itself takes place during the students’ free time and assumes unobtrusive guidance with as little as possible obligatory moments.

In previous papers the HTT is presented by distinctive bitwise operations. They contain the sought-after hidden creative potential, mainly due to the limited support both at the high and low levels. Here the HTT is developed by another kind of apparently “simple” problems of the area of integer computation. Somewhat unexpectedly for the unprepared one it turns out that these problems have a deeply hidden inner content. Like bitwise operations, integer computation algorithms suppose usage of some special techniques such word-level parallelism, unrolling loops, and branch elimination.

The attention is focused here on some elements of Hamming sequence generation: factorization by 2, 3 and 5, divisibility check by 3 and 5, fast integer division and multiplication by 3 and 5.

Keywords: *Constructivism, Factorization, Gamification, Hamming Numbers, Hobby Time, Number Sequences Games, Regular Numbers, x86/x64*

ASJC Codes: 1701, 1708, 1712

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SPATIOTEMPORAL PROCESS SIMULATION MODELS

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Abstract: Agent-based models (ABM) can be used successfully for simulating complex processes and systems. They provide opportunities to describe their dynamic change and evolution over time. The agents' behavior description in a process or system situated in a particular context can be used to observe the collaboration of the set of participants, from which relevant conclusions can be drawn without the presence of a specific physical environment for research. This approach could be used to analyze the effects of control systems applications before they are implemented and in the design phase, thereby reducing the risks, and assessing the benefits of such implementation before they are used in real conditions. These simulations can both provide information about interactions using certain agent behaviors and at the same time lead to erroneous conclusions if these behaviors or the environment in which they cooperate deviate too much from the real one.

Keywords: Agent-based Modelling, Evaluation, Process Emulation

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EXPERIMENTAL EVALUATION OF THE PHP'S CURL LIBRARY PERFORMANCE

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Abstract: *cURL (libcurl) is a popular and widely used library distributed with the php interpreter. It allows php applications to connect to and communicate with external resources (servers) by using wide variety of communication protocols. In most cases it is the preferred way of consuming external REST web services. Programmers usually use it for granted without even thinking of any performance issues.*

During an experimental analysis of the Hadoop's WebHDFS API throughput, I noticed that read (download) speed from WebHDFS reduces with increasing the file size. Just to mention that the analysis was related to large amounts of data, i.e. files in hundreds of megabytes or gigabytes. When reading from WebHDFS, the cURL library is performing an HTTP GET request. However, this issue does not happen when writing to WebHDFS (performing an HTTP POST request). Since the communication between the php application and the WebHDFS API is handled by the php's cURL library, then the cause of the download speed decrease could be either the cURL library itself or the API.

This paper presents a series of experimental analyses aiming to determine the cause of the download speed decrease of the php's cURL library in case of receiving large files. Both the WebHDFS API and the php's cURL library are tested in multiple ways separately and independently of each other. Results clearly prove (in two different ways) that the cause of the download speed decrease is the php's cURL library itself, not the consumed API. Moreover different versions of the php's cURL library perform different rate of decrease in the read speed, but all tested versions have such an issue. It should be stated here that it applies to the php's cURL library only, not to the entire cURL project. The WebHDFS API was also tested by stand-alone command-line cURL tools (on both Windows and MacOS) and they achieve constant download speed for all file sizes.

Keywords: *cURL, php, web services, performance and throughput analysis.*

JEL Codes: *L86, C8, C9*

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DECLARATIVE IMPLEMENTATIONS OF OPTIMIZATION METHODS FOR SOLVING TRAVELING SALESMAN PROBLEM

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Abstract: The paper presents three declarative solutions to a well-known optimization problem - Traveling Salesman Problem (TSP). It provides implementations of representative algorithms of the two main approaches to deal practically with NP-hard computational problems – exact and approximate optimization methods. It is demonstrated how the algorithms Branch-and-Bound, Nearest-Neighbor, and Simulated Annealing can be implemented in a declarative (i.e. an automatic) way, using the style of programming, named Control Network Programming (CNP). Because these implementations correspond to the graphical representation of TSP, they are very intuitive and easily programmable. Respectively, CNP and its supporting programming language Spider, can be used for teaching advanced state-space search, greedy, and metaheuristic algorithms.

Keywords: declarative programming, Traveling Salesman Problem, Branch-and-Bound, Nearest-Neighbor, Simulated Annealing

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TEACHING OPERATING SYSTEMS: BANKER'S ALGORITHM

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Abstract: Studying operating systems helps in understanding computer architecture, how different components of a computer interact, and how system resources are utilized. Deadlock is a potential risk for any computing system, where it most often occurs when resources are allocated. The main topics in Deadlock teaching are: Definition and Characteristics of Deadlock, Necessary Conditions for Deadlock, Prevention Techniques for Deadlock, Deadlock Avoidance Techniques, and Deadlock Detection and Recovery. The Banker's algorithm (developed by Edsger Dijkstra) is a resource allocation and deadlock avoidance algorithm that is used in computer operating systems. In this paper, we would like to share our experience in teaching Banker's algorithm using a specially developed tool BANKER. The tool allows students to learn in detail the steps of the algorithm, its capabilities, and its limitations, as well as to experiment with a different number of processes and resources.

Keywords: Operating Systems, Teaching Tools, Deadlocks, Banker's algorithm

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TEACHING OPERATING SYSTEMS: DISK SCHEDULING

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Abstract: *Disk scheduling algorithms are essential for the efficient and effective use of computer storage devices, such as hard disks. These algorithms determine the order in which read and write requests are serviced by the disk I/O scheduler, which has a significant impact on the overall system performance. By studying disk scheduling algorithms, students can understand how to optimize the use of storage devices to achieve faster response times, increased throughput, and better utilization of system resources. They can also design new scheduling algorithms that better suit the requirements of modern computing environments, such as cloud computing and big data analytics. In this paper, we would like to share our experience in teaching Disk scheduling algorithms using a specially developed tool DISKSCHEDULING. The tool allows students to learn in detail several algorithms: FCFS (First Come First Serve), SSTF (Shortest Seek Time First), SCAN (Elevator Algorithm), C-SCAN (Circular SCAN), and N-Step SCAN. Through interactive simulation and comparative analysis, students get to know the advantages and weaknesses of the algorithms being studied.*

Keywords: *Operating Systems, Teaching Tools, Disk scheduling algorithms*

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ADVANTAGES OF INTELLIGENT EDUCATIONAL SYSTEMS

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Abstract: The growing access to computer technology has created the so-called digital natives. These people are using technology inseparably in their daily lives and they consume digital information much better than traditional ways. Due to this higher education institutions (HEI) have to create digital learning environments to enhance the knowledge acquisition in the students. Intelligent Educational Systems (IES) are computer-based systems that use artificial intelligence (AI) techniques to enhance the learning experience by adapting to the needs of the individual. This paper explores the advantages of using IES in education compared to the traditional classroom. This paper aims to highlight the potential of IES to improve the quality of learning for students. Some advantages include improving metacognition, decision-making, acquisition of practical skills with immediate feedback, personalized learning, student performance prediction, analytics for educators to monitor students and more.

Keywords: Education, Intelligent Educational Systems, Personalized Learning, Digital Information

JEL Codes: L86

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EDUCATIONAL VHDL MODELS OF PROCESSORS WITH VON NEUMANN AND HARVARD ARCHITECTURES

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Abstract: *In today's dynamically changing high-tech world, the challenges facing engineering higher education are becoming more and more serious, especially when it comes to training future IT professionals. Under the pressure of rapid changes in the labor market in this field, students come to the university with increasingly high demands and expectations for the quality of the educational process. More urgently than ever, they want to know why they are studying a particular subject from the curriculum and how it relates to their future professional realization. In this sense, the consistency of the curriculum becomes a key factor in the prevention against students' dropout. Building active interdisciplinary connections between the courses should be a mandatory principle when updating the curricula, and the more fundamental a given discipline is, the more important it is to build connections between it and more practically oriented courses. The Design Technology course has always had input connections with its predecessor Computer Organization, but after actualization of the curriculum, these two disciplines are studied in parallel, and this not only poses new challenges, but also uncovers new opportunities for deepening the connections between them. This paper describes an approach to illustrate the principles of operation of two classical computer architectures - von Neumann and Harvard using VHDL tutorial models of processors with such architectures. The aim of the discussed approach consists of the following: after the students have become theoretically familiar with the features of the mentioned above architectures within the Computer Organization course, they will have to develop VHDL models of such processors within the Design Technology course and to experiment with them to consolidate the acquired knowledge. The experiments will be carried out through FPGA implementation of the projects on Digilent's Basys 3 Board.*

Keywords: *Higher education, Interdisciplinary connection, Computer Organization, Design Technology, von Neuman Processor Architecture, Harvard Processor Architecture, VHDL Model, FPGA*

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USING INFOGRAPHICS TO IMPLEMENT MICROLEARNING CONCEPTS IN COMPUTER ORGANIZATION COURSE

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Abstract: *The contemporary university professor deals with the most difficult choices they has had to make in their career. The ubiquitous digitalization, which is taking place at an extremely dynamic pace, and which does not bypass the educational system, leaves no doubt that the academic teaching and academic learning must undergo serious changes, and they do not end only in the digitalization of existing educational content. It is more than clear that a student whose digital daily life requires almost minute-by-minute processing of hundreds of micro-portions of digital content in various formats is unable to take notes while the lecturer slowly dictates long passages of text which are currently displayed on the multimedia projector screen. University lecturers are already aware that they need to use new formats of presentation of educational content and they are actively working in this direction, but still the dilemma remains: how to deliver the educational material in the most attractive way without losing its academic value? Undoubtedly, the digital student is not able to spend hours on end, focused on long textual resources, even digital ones, and assimilate what is read quickly and efficiently. In this sense, the microlearning can prove to be an extremely useful strategy for improving the academic learning. The concept of microlearning has been discussed since the beginning of the 21st century, but with the then intensity of digital communications, it still seemed a bit abstract. However, now, when the social media and other communication platforms used by young people generate almost impossible-to-follow media streams, the digital content is becoming smaller in volume, and these tiny chunks of information form certain habits and shorten the attention span of the students. It should be emphasized here that the introduction of microlearning in the academic learning process should have a complementary and auxiliary character. It is not possible to completely switch to such an approach and preserve the academic value of the learning content, but it is quite possible to develop and deliver to students additional digital micro-resources explaining and illustrating the key concepts underlying in this content. This way, it will be easier for the students to overcome the barrier between their digital habits and academically presented digital learning content. In this paper is discussed an approach for integrating microlearning elements into the learning process of "Computer Organization" course by developing and publishing infographics in the closed Facebook group and in the private Instagram channel of the discipline.*

Keywords: Higher Education, Improvement of Learning, Micro-learning, Infographic, Computer Organization

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EXPLORING THE IMPACT ON THE OPERATOR OF IMAGES WITH DOMINANT BLUE COLORS

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Abstract: *This paper examines the effects on the operator's visual and nervous systems during prolonged observation of images with a blue tint or color. Possible adverse effects on the user's health and their impact are analyzed, taking into account the duration of screen viewing time. Proposed are software solutions limiting the saturation of the blue color. The paper publishes the results of studies conducted with two groups of users, with and without the involvement of software that controls the saturation of the blue color, while performing the same standard task for a specified period of time, with and without breaks. An analysis is made of the inconveniences introduced by the restriction imposed, the limits to which color correction is tolerable or negligible, and the difference compared to the traditional way of using computer systems - with limited continuous operation time. The effects on the nervous system, endurance and operator performance are described. The report concludes by listing the types of tasks and corresponding professions where the introduction of software restricting the use of the color blue can improve workflow while preserving employee health.*

Keywords: *Computer Use, Blue Color Effects, Vision Problems, Employee Burnout from Nervousness, Saturation Control, Workflow Enhancement*

JEL Codes: *I20, C88*

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STUDY OF THE IMPACT ON THE OPERATOR DURING PROLONGED WORK WITH NON-ERGONOMIC AND ERGONOMIC MOUSE AND KEYBOARD

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Abstract: This paper addresses the ergonomics of the mouse and keyboard as information input devices and their usability. Drawing upon Ergonomics as the science of designing input devices to better fit users, improve comfort, increase productivity, and enhance overall well-being. The report emphasizes issues related to the placement of the mouse and keyboard as information input devices, proper posture when using them, and issues related to prolonged work to reduce the risk of health problems such as neck and back pain and carpal tunnel syndrome. This paper presents the results of research conducted with two groups of users on the problems, speed of operation, comfort, and others when working with group A) with a traditional mouse and keyboard and group B) with an ergonomic mouse and keyboard. The report concludes with a recommendation to incorporate ergonomic information input devices when using a computer for a healthier and more productive work environment.

Keywords: Ergonomics, Posture, Computer Use, Keyboard, Mouse, Input Devices, Health Issues

JEL Codes: I20, C88

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FRI-2G.302-1-CCT2-01

**IMPROVEMENT OF THE LEARNING PROCESS IN THE SUBJECT OF
SEMICONDUCTOR COMPONENTS THROUGH SIMULATIONS**

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Abstract: Possibilities of improving the learning process for Electronics subjects through simulations of analog electronic circuits are presented. Simulations could be used in every part of the education process. LTspice is suggested as a powerful free-to-use simulation platform, that could be used in the education process, and used by the students for their own investigations and homework. Our experiences with the application of simulations in the lectures and exercises for the semiconductor components subject are presented. This is possible due to the many widely available simulation models for many different components, that allow the best one to be chosen for more realistic results. The examples include the automatic drawing of component characteristics, measurement of different parameters and comparison with the real values, choosing an appropriate simulation model, and design of a schematic based on the simulation characteristics and parameters. The possibilities for their beneficial application for the education process improvement are endless. The conclusion is that they considerably improve the understanding of the studied material and allow students to develop the necessary experience, skills, and correct methods of work, and to do their own projects and investigations at home without the need for expensive equipment.

Keywords: Education, Simulation, Semiconductor Components, Characteristics, Models, Electronics.

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EXPLORING OBJECT DETECTION ALGORITHMS: A COMPREHENSIVE OVERVIEW AND COMPARATIVE STUDY

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Abstract: Object detection is a fundamental computer vision task with diverse applications, ranging from autonomous driving to image and video analysis. Over the years, numerous algorithms have been developed to tackle this problem, each with its own set of strengths and weaknesses. In this paper, a comprehensive survey and comparative analysis of various object detection algorithms are presented, shedding light on their underlying principles, methodologies, and performance characteristics.

This study covers a wide spectrum of object detection techniques, including traditional approaches like Haar cascades and template matching, as well as modern deep learning-based methods such as Faster R-CNN, YOLO, and SSD. The evolution of object detection algorithms is discussed, emphasizing the pivotal role of convolutional neural networks (CNNs) in revolutionizing the field.

Keywords: Object Detection, Computer Vision, Deep Learning, Convolutional Neural Networks (CNNs).

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AN EVALUATION OF FIRE DETECTION METHODS: COMPARATIVE ANALYSIS AND PERFORMANCE ASSESSMENT

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Abstract: This report presents a comprehensive evaluation of diverse methods for detecting and monitoring forest fires, addressing the pressing need for early wildfire detection and mitigation. Forest fires represent a significant threat to ecosystems, wildlife, and human communities, making effective monitoring and rapid response essential to minimize their devastating impact. This study encompasses a wide spectrum of fire detection and monitoring techniques, ranging from traditional methods such as ground-based fire towers and satellite-based systems to cutting-edge technologies like unmanned aerial vehicles (UAVs) equipped with infrared cameras and remote sensing technologies. By understanding the advantages and challenges associated with each approach, stakeholders can make informed decisions to enhance their forest fire management strategies, ultimately preserving the vital forests and safeguarding both the environment and human livelihoods.

Keywords: Fire Detection Methods, Unmanned Aerial Vehicles (UAVs), Satellite-Based Detection, Forest Fires.

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FACIAL EMOTION RECOGNITION USING ARTIFICIAL INTELLIGENCE

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Abstract: The paper reviews facial emotion recognition, as a sub-field of computer vision and machine learning, harnesses AI algorithms to analyze facial expressions and decode underlying emotions. This abstract explores the significance of facial emotion recognition in facilitating more natural and empathetic human-computer interactions, with potential applications spanning diverse domains including healthcare, entertainment, customer service, and beyond.

Keywords: Facial Emotion Recognition, Human-Computer Interaction, Affective Computing, Computer Vision, Machine Learning.

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NAVIGATING THE FUTURE: EXPLORING THE CHALLENGES OF AUTONOMOUS DRIVING SYSTEMS

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Abstract: *In recent years, autonomous driving systems have emerged as a transformative force in the automotive, agriculture, and transport industries, promising to reshape our roads, cities, fields, and the very nature of transportation. This article delves into the multifaceted theme of autonomous driving, exploring the advancements, implications, and challenges associated with this ground-breaking technology.*

Keywords: *Efficiency, Effectiveness, GPS, Autonomous, Model, Self-Driving*

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COMPREHENSIVE SURVEY OF AIOT APPROACHES FOR WATERLOGGING CRISIS MONITORING

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Abstract: Waterlogging poses a significant threat to urban areas, affecting economies, transportation, and the well-being of citizens. Existing solutions often rely on manual reports, social media, and street cameras, falling short in handling the crisis effectively. In the face of intensifying climate change, an Early Warning System (EWS) becomes imperative for hazard detection, analysis, monitoring, forecasting, and citizen alerts. This paper explores the integration of Artificial Intelligence (AI) and the Internet of Things (IoT) to address these challenges, a paradigm known as AI of Things (AIoT). AIoT combines AI's problem-solving capabilities with IoT's data collection and connectivity. This survey encompasses a review of related works and a comparison of various AIoT-based approaches, and algorithms with highlighting their strengths and weaknesses. It also addresses challenges in AIoT for waterlogging monitoring, such as security, data integrity, and latency. Notably, we examine successful implementations worldwide, including systems in China, Taiwan, and Indonesia, showcasing AIoT's effectiveness in real-world applications. The survey concludes by underlining the growing importance of AIoT in waterlogging crisis management, emphasizing the potential for further advancements and the need for collaborative efforts to enhance urban resilience.

Keywords: Artificial Intelligence, Internet of Things, Crisis Management, Waterlogging Crisis.

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A REVIEW OF THE PRESENT-DAY CYBERSECURITY TRENDS, CHALLENGES AND THREATS

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Abstract: *This paper reviews the most recent trends, challenges and threats in the cybersecurity domain. The new generation of attacks in the local, wireless and global networks are presented and discussed in details, as well as the concepts of the quantum cryptography. The commonly used security standards are also analysed and discussed.*

Keywords: *Information and Communication Technologies, Cyberattacks, Cybersecurity, Emerging Trends.*

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WEB TRAFFIC MONITORING BY DESCRIPTIVE STATISTICS AND MULTILAYER NEURAL NETWORKS

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Abstract: The paper examines one of the main aspects of network traffic management related to traffic load and flexibility of system resources. An approach for the analysis and categorization of WEB traffic accessed by corporate clients in an urban environment, according to registered quantitative indicators of packet transmission is proposed. The approach is based on the application of Descriptive Statistics and Multilayer Feed-Forward Neural Networks. A method of synthesizing multilayer neural structures by experimenting with variations of different ratios between computational neurons in the hidden layers has been introduced. Backpropagation Gradient algorithm training was applied by Levenberg-Marquardt algorithm. The selection of multilayer networks for the identification of areas of consumption of WEB content was based on accepted criteria, respectively Accuracy, Mean-Squared Error and Mean Absolute Error. High levels of accuracy in minimizing of the target errors for various data samples used have been achieved.

Keywords: Traffic Analysis, Descriptive Statistics, Network Efficiency, Multilayer Networks, MSE, MAE.

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INNOVATIVE METHODS FOR LEARNING DIGITAL LOGIC DESIGN: SHAPING THE FUTURE OF TECHNOLOGICAL EDUCATION

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Abstract: Digital logic design constitutes a fundamental component of the modern technological industry, playing a pivotal role in the development of computer systems, mobile devices, and the Internet of Things (IoT). Within this context, this paper delves into the current challenges faced by educational institutions in teaching digital logic design and presents innovative methods to overcome these challenges. The paper analyzes contemporary trends in technological education and introduces innovative approaches to education in the field of digital logic design, such as interactive lessons, using virtual reality technology, using AI in education, blended learning, 3D printing, use the design-thinking process, project-based learning, inquiry-based learning, jigsaw, cloud computing teaching, flipped classroom, peer teaching, peer feedback, crossover teaching, personalised teaching, etc. The paper also examines the role of project-based learning and active learning methodologies in helping students apply their technical skills to real-world projects. Special attention is given to the integration of programmable logic devices (FPGAs) and simulation software tools into the educational process, enabling students to develop and test digital circuits in real time. The paper concludes that innovative educational methods are the key to effectively preparing students for the future challenges in the field of digital logic design and the broader technological landscape.

Keywords: Digital Logic Design, Innovative Teaching Methods, Technological Education.

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PHASE-CHANGE MATERIALS

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Abstract: Phase-change materials (PCMs) are modern materials for storing thermal energy in the form of sensible and latent heat, which play important roles in the efficient use of waste heat and cooling. While development of the PCM technology, many types of materials have been studied, including inorganic and organic matter. Considerable research has focused on the relationship between the material structure and energy storage properties to understand the heat storage/emission mechanism involved in controlling the energy storage performance of materials Nowadays. PCMs are particularly attractive and chosen as one of the most interesting cooling system in terms of high-energy storage density. They have smaller size, they are less complex and expensive than traditional cooling methods such as forced-air cooling or liquid cooling. in this study, phase-change materials are classified and reviewed. We review the application of various PCMs in the field of heat storage.

Keywords: Phase-change materials (PCMs), thermal energy storage, Cooling system, PCM technology, modern materials

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THERMAL MANAGEMENT MODELS AND SOLUTIONS OF LITHIUM-ION BATTERIES

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Abstract: Power train electrification is potential alternative to reduce carbon impact due to transportation. Lithium-ion batteries are found to be suitable for hybrid electric vehicles (HEVs) and pure electric vehicles (EVs). in order to increase vehicle efficiency and range due to better battery life and performance, an efficient thermal management of an electrified vehicle has to involve every system of the vehicle. However, it is not sufficient to optimize the thermal behaviour of each subsystem, but thermal management has to be considered at system level to optimize the global performance of the vehicle. Therefore the lithium-ion batteries are widely used due their high energy density and long cycle life. Since the performance and life of lithium-ion batteries are very sensitive to temperature, it is important to maintain strict temperature range of the cells. Performance can change dramatically, but it improves if a suitable operating temperature window is sustained. Thermal effects of lithium-ion batteries in terms of thermal runaway and response under cold temperatures will be tested later on.

Keywords: Thermal Management, lithium-ion batteries, thermal management system, electric vehicles, battery thermal behaviour

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METHODOLOGY FOR DESIGN MACHINE ELEMENTS OF GEAR REDUCERS WITH INCREASED STRENGTH

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Abstract: The report presents an analysis of an improved methodology for designing the main elements of gear reducers (shafts, gears, housing) with increased strength. The most important factors have been selected from the existing design methodologies, which in combination with modern CAD systems give a good result in the design of these elements with increased strength. The characteristics of these factors and their influence on the strength of the elements are analyzed. The relationships between these factors and CAD systems are examined in order to improve results in design processes.

Keywords: gear reducers shafts, gears, CAD system, design of elements

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DYNAMIC BLOCKS IN ENGINEERING GRAPHICS STUDIES

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Abstract: 2D CAD systems, having a number of drawing tools, are a necessary assistant and a means of visualizing the sequence for the production of graphic technical documentation. They are also used in checking the correctness of the geometric shapes, scale and dimensions of coursework sent by students as JPG photos. Dynamic blocks are used to draw multivariate objects, differing in their sizes and the presence or absence of individual elements. The paper reviews the practical experience of using AutoCAD® dynamic blocks in the education of students.

Keywords: Distance Learning, Engineering Graphics, Graphical Information, Correction, 2D CAD systems, Dynamic Blocks

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APPLICATION OF IMAGE EDITORS IN DISTANCE LEARNING IN ENGINEERING GRAPHICS

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Abstract: Distance learning offers great opportunities for student learning, but it is a real challenge for structuring and practical implementation of the learning process in technical disciplines related to graphic work. Image editors, having a number of tools are most commonly used to pre-process student drawings submitted as jpeg files. The paper reviews the practical experience of using image editors in the distance education of students.

Keywords: Distance Learning, Engineering Graphics, Graphical Information, Correction, Image Editors

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APPROACHES TO TRAINING AND SUPPORT FOR DOCTORAL STUDENTS

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Abstract: The paper presents an analysis of the importance of methods and approaches for teaching, training and supporting doctoral students during their work upon the dissertation research. The challenges in the training of doctoral students at the Department of “Mechanical Science, Machine Elements, Engineering Graphics and Physics” during the various stages of their work have been considered. Additional topics and questions related to improving the quality of training of doctoral students have been included in the research described. The authors' team envisages various measures and activities aimed at improving the joint scientific activity of doctoral students and academic staff. Conclusions and recommendations have been made.

Keywords: Approaches to Training and Support, Doctoral Education, Research productivity, Quality

JEL Codes: C90

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CHALLENGES TO IMPROVE ROAD SAFETY SOLVED WITH THE HELP OF ARTIFICIAL INTELLIGENCE

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Abstract: This report is an overview of artificial intelligence systems used to improve road safety. The use of artificial intelligence has great potential to increase road safety and accessibility and ensure mobility for all. The use of AI to improve road safety is developing in three directions. The first is improving the safety of the road infrastructure. The second is the development and implementation of systems to improve automotive safety, including autonomous vehicles. The latter approach involves improving the response time after an incident occurs. Using AI in all three directions will ensure improved safety for all road users, regardless of how they travel: by car, motorcycle, bicycle, electric vehicle, on foot or by other types of vehicles. By collecting and analyzing traffic accident data, the causes can be identified and solutions can be found to ensure a reduction in accidents and casualties. Artificial intelligence is a good assistant in learning to acquire a driver's license and take the exams. It can be used to customize learning material to the needs of the individual learner to improve the learning process and motivation to learn. Artificial intelligence can also be used in "the educational process" at school on the subject "Road Traffic Safety". Learning content, interactive lessons, personalized lessons, video lessons can be created. The use of AI in the field of road safety carries ethical and legal risks, which urgently require legislative frameworks for the protection of personal data, liability, copyright and other areas

Keywords: Artificial intelligence, autonomous vehicles, road safety.

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**DETERMINATION THE COORDINATES OF MASS CENTER ON
AGRICULTURE ROBOT**

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Abstract: *The change of coordinates of the center of gravity of a vehicle is a key factor in the loss of stability in motion. The article experimentally determined the influence of the body mass index of different drivers on the change in the coordinates of the center of gravity. A standard methodology was used to determine the coordinates of the center of gravity by lifting and measuring the forces acting on a robot intended for agricultural activities. The values of the center of gravity are determined experimentally according to the established methodology of cars.*

Keywords: *Weight Center, Terrain, Robot, Agriculture, Coordinate,*

JEL Codes: *L62*

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APPLICATION OF PULSE WIDTH MODULATION SIGNALS IN CARS ELECTRONIC CONTROL SYSTEMS

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Abstract: In this paper, the wide application of Pulse Width Modulation in wiring diagrams of cars electronic control systems is presented. This signal is more receptive than the electronic control unit because it can be assumed to be digitized. Pulse Width Modulation (PWM) is an analog modulation scheme in which the duration or width or time of the carrier pulse varies in proportion to the instantaneous amplitude of the message signal. The width of the pulse varies in this method, but the amplitude of the signal remains constant. Amplitude limiters are used to make the amplitude of the signal constant. Pulse Width Modulation controls various actuators or is generated by various sensors in automotive.

Keywords: Pulse Width Modulation, Signals, Electronic Control Systems, Wiring Diagrams

JEL Codes: L62

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SOME ADVANTAGES AND DISADVANTAGES OF THE VEHICLES USING COMPRESSED AIR TRACTION

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Abstract: In the paper a review of the main advantages and disadvantages of vehicles with compressed air traction system is done. A comparison with the other types of traction like gasoline engine, fuel cells, lithium-ion battery etc. is made. The data from other authors are also used for the comparison. Indicators calculated for the conditions of Bulgaria are presented. The results show in real values the main advantages of the compressed air vehicles and main problems of their exploitation. Series of diagrams are included which can be useful for future investigations.

Keywords: compressed air traction, electric vehicles, energy consumption, emissions

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RENEWABLE BIOENERGY OF PHOTOSYNTHETIC ALGAE TO USE IN BIOFUELS AND BIOPRODUCTS

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Abstract: In view of the continuing low prices of the fossil fuels, the algae-based industry has been forced to shift its focus from a lower cost fuels to biofuels and bioenergy with higher cost (non-energy), which are profitable. A higher cost of the algae-based bio products (biomass) is expected. The industry wants to provide extra profits necessary for lowering the cost of the production of the algae-based biofuel. This kind of approach for a bio refinery, which generates a host of high-quality algae products, should be of essential importance for the complete use of algae biomass and should allow for full-bodied economic production of bioenergy. In order to accelerate the application of the algae-based production, a primary goal of the future scientific research and development activity should become the minimisation of the energy, water, nutrients and the application of the integrated algae-based operations.

Keywords: Fossil, algae, bioenergy, biomass, research.

JEL Codes: L10, L11

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IMPACT OF THE FUEL ADDITIVES ON THE PERFORMANCE OF THE DIESEL ENGINE

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Abstract: *The doctrine of the environment-friendly characteristics of the internal combustion engine should be regarded as part of the industrial ecology, which considers the impact of technology on nature. This impact can be either from one engine (regional impact) or from a number of internal combustion engines, together with all elements of the infrastructure, which provide their functioning (global impact).*

The environment-friendly indicators of the internal combustion engine should include those which characterise the direct and indirect impact on the environment. in accordance with the second law of thermodynamics, the internal combustion engine will always give off heat in the environment. The higher the engine efficiency, the better the fuel and environment efficiency.

The cyclical work of the internal combustion engine and the fuel burning process includes using oxygen and chemical transformation of the fuel when harmful substances are formed in the engine cylinder and their release into the atmosphere

Keywords: *Environment, ecology, ICE, efficiency.*

JEL Codes: *L10, L11*

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ALTERNATIVE FUELS USED IN GASOLINE DIRECT INJECTION ENGINES

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Abstract: *The definition of alternative fuels that can be used in gasoline engines is a current research interest in the automotive and environmental field. This article provides an overview of different types of alternative fuels that can replace or improve upon gasoline as an engine fuel. These include: ethanol, methane, liquid natural gas (LNG), hydrogen, isopropanol and butanol. The article discusses the benefits and challenges associated with each of these alternative fuels, as well as their potential applications and environmental impacts. It also discusses research and technological innovation aimed at using these fuels more efficiently in petrol engines to improve fuel economy and reduce emission.*

Keywords: *Alternative fuels, Petrol engine, Emissions, Environmental sustainability, Engine efficiency, Technological innovations*

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**BASIC EQUATIONS OF WAVE PROPAGATION AND REFLECTION IN
INTAKE MANIFOLD**

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Abstract: During the intake stroke the pressure inside the intake system decreases. The pressure becomes smaller than the atmospheric and air starts accelerating towards the cylinder, hence increasing its kinetic energy. The closing of the intake valve creates a pressure wave due to compressibility of air. The pressure wave will travel through the intake system multiple times creating resonance. The intake system can be designed in such a way that the opening of the valve and the returning pressure wave to the valve coincide, increasing the amount of air inside the cylinder.

Keywords: ICE, intake manifold, pressure waves

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ALCOHOLS AS FUELS: A REVIEW OF PHYSICOCHEMICAL PROPERTIES AND THEIR INFLUENCE ON GASOLINE ENGINE PERFORMANCE

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Abstract: The need worldwide to reduce dependence on fossil fuels in connection with the reduction of environmental pollution necessitates the search for alternative fuels. This paper discusses the physicochemical properties of ethanol, methanol, isopropanol and butanol and their potential to replace traditional petroleum fuels. The characteristics of each alcohol, including octane number, density, viscosity, and miscibility with fluids are discussed. The influence of the physicochemical properties and their impact on HC, CO, CO₂ and NO_x emissions are analysed.

Keywords: Alcohols; Ethanol; Methanol; Isopropanol; Butanol, Emissions;

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ETHANOL APPLICATIONS IN DIESEL ENGINES

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Abstract: Gasoline and diesel as fossil fuels are widely used in industry and agricultural field, and have different performance, combustion and vibration characteristics in the internal-combustion engines. The search and development of synthetic and natural alternative fuels worldwide has become increasingly large-scale in recent years. Ethanol is an attractive alternative fuel because it is a renewable bio-based resource. It has lower carbon content than diesel fuel. ethanol is providing remarkable potential to reduce particulate emissions in combustion engines. The largest share is occupied by alcohols and, in particular, ethanol. Ethanol is currently the most widely used liquid biofuel. Added biofuels to fossil fuels effect on the mentioned characteristics. Ethanol is considered as a renewable fuel in different countries, which is produced from plant, sugary and starchy biomass. Ethanol as an important additive to gasoline and diesel fuel can improve the engine performance and reduce emissions. Ethanol is currently the most widely used liquid biofuel. . Further work is required in specifying acceptable fuel characteristics, confirming the long-term effects on engine durability, and ensuring safety in handling and storing ethanol–diesel blends. Performance of the tested engine decreased substantially while improvement on smoke and gaseous emissions makes ethanol blend favourable.

Keywords: BioFuel , Ethanol, Diesel engines , ethanol-disel blends, alternative fuels.

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SIMULATION MODELS APPLIED AT INTERNAL COMBUSTION ENGINES

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Abstract: *With the 204niversite in computing power of modern computers, modeling of individual processes and optimization of work using simulation models is increasingly used. With the help of modern computers, the simulation time is significantly reduced, which allows the use of more complex models that provide more comprehensive and visual information about the ongoing processes. This paper discusses some of the most used models for simulating the operation of modern internal combustion engines. Single and second zone thermodynamic model and computational fluid dynamics (CFD) model are considered.*

Keywords: *ICE, engine simulation, CFD, simulation models*

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BLE REMOTE CONTROLLED LAMPS ON BULGARIAN MARKET

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Abstract: *Different lamps with remote controls are sold on the Bulgarian market. Most lamps allow control of correlated color temperature and brightness. The mechanism by which this is done is by Bluetooth low energy protocol, using one-way encrypted communication. This article looks at various lamps and their remote control protocols and analyzes their vulnerability and the possibility of being "hacked".*

Keywords: *Bluetooth Low Energy, LED lamps, ethical hacking*

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INDUCED DEMAND IN TRAFFIC - MYTH OR REALITY

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***Abstract:** Induced demand in traffic, a phenomenon characterized by increased traffic volumes following the expansion or construction of transportation infrastructure, remains a topic of paramount concern in urban planning, transportation engineering, and environmental sustainability. This paper presents exploration of induced demand, diving into the theoretical foundations and real-world instances illustrating these (un)expected events.*

***Keywords:** Induced demand, traffic*

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CLEAR ZONES FOR ACTIVE SAFETY IN BULGARIA

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Abstract: Run-off-road (ROR) crashes are a major contributor to fatalities and serious injuries on roads globally, with the World Health Organization's Global Status Report on Road Safety 2018 revealing that they accounted for approximately 22% of all fatal road traffic accidents worldwide. In Bulgaria, run of road crashes have accounted for between 15% and 31% of all crashes over the past decade, according to data reported by the Ministry of Interior. To prevent vehicle collisions with objects or rollovers and enhance road safety, it is crucial to implement engineering improvements that can be integrated into a comprehensive road safety strategy. These improvements should be focused on enhancing clear zones - areas adjacent to the roadway that are free of obstacles - to ensure that they are designed to appropriately absorb and dissipate the energy of a vehicle leaving the road.

Keywords: Clear zone, road design principles, countermeasures, design domain, run-off-road, roadway departure, road geometry, adjacent land, road agency savings.

JEL Codes: L91

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INVESTIGATION OF ROAD TRANSPORTATION VIOLATIONS RELATED TO TRAFFIC SAFETY

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Abstract: *In order to ensure high efficiency and safety of road traffic, coordinated cooperation of many public and state institutions is necessary. One of these institutions is the Executive Agency "Road Transport Administration". This agency carries out the administrative service and control of the domestic and international road transport of passengers and cargo carried out by Bulgarian and foreign carriers on the territory of the Republic of Bulgaria. This work presents the results of the research of the control activity of the Regional Directorate "Road Transport Administration" - Ruse, related to road traffic safety. Data were obtained on the unevenness of the number of acts drawn up to establish an administrative violation by inspectors, the number of acts drawn up under the Road Traffic Act, the number of acts under the Road Transport Act and others. Analyzing this data and taking follow-up actions can improve road safety.*

Keywords: *Road Safety, Road Transport Administration, Control Activity.*

JEL Codes: *L91*

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FRI-20.21-1-SITSTL-03

ENGINEERING APPROACH TO PREVENTION OF UNFAIR TENDER ARRANGEMENTS IN TRANSPORT INFRASTRUCTURE PROJECTS

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Abstract: Exploring bid-rigging is essential because it undermines the foundations of society, the economy and government. These actions not only lead to unreasonably high costs, but also suppress fair competition, compromise the quality of infrastructure projects and increase social inequalities in Bulgaria. The methods used in the research include literature analysis, comparative and critical analysis of corrupt procurement practices at tender stage, in the context of responsible management of public financial resources. The main three key conclusions of the study are: 1) the corrupt tender practices represent a serious problem with numerous consequences at domestic and international level; 2) they can take different forms, which complicates their detection; 3) the effective methods for counteracting corrupt tender practices require technical solutions based on engineering control principles, transparency, intersectoral cooperation and collaboration, direct systematic public monitoring and control of the procurement process. Additionally, the study suggests improved model of the public procurement process proposed by the World Bank in 2009.

Keywords: Public procurement, tendering, infrastructure, corrupt practices, fair competition, decision-maker, conflicts of interest, responsible management, engineering principles, transparency

JEL Codes: L91

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STUDY OF THE MAIN CHARACTERISTICS OF A SECTION OF THE BICYCLE NETWORK IN THE CITY OF RUSE

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Abstract: The article examines the existing state of the bicycle route along "Tsar Osvoboditel" Blvd., from the bicycle network in the city of Ruse. The aim is to establish whether the bicycle infrastructure built in this way meets the requirements and, accordingly, the needs of different cyclists or drivers of individual electric vehicles. In cities with a well-developed bicycle infrastructure, it is noticeable that the share of individual trips by bicycle or individual electric vehicles is constantly increasing. The report concludes with some guidelines for improving the existing cycling infrastructure in the section of cycling infrastructure under consideration.

Keywords: bicycle infrastructure, bicycle network, bicycle transport.

JEL Codes: R41

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STUDYING THE AVERAGE SPEED OF VEHICLE TRAFFIC ON A ROUTE IN AN URBAN ENVIRONMENT

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Abstract: *The rapidly increasing share of road transport leads to many problems of a different nature, the main ones being related to ecology and road safety. The report presents an experimental study conducted with the aim of determining which are the main points of the infrastructure of a route in the city of Ruse that have an impact on the speed of the car. Attention has also been paid to how the organization of traffic in an urban environment affects the speed of a passenger car when traveling along a route.*

Keywords: *transport infrastructure, traffic speed, organization of movement*

JEL Codes: *R41*

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STUDYING THE EFFICIENCY OF ROUNDABOUTS

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Abstract: Modern (increasing) automobileization has led to a sharp increase in the load on the street network of cities and inconsistency in their planned solutions related to the amount of transport and pedestrian traffic, an increase in the number of traffic accidents, noise and environmental pollution. Effective management of intersections can solve a number of problems related to their capacity, the formation of traffic congestion, giving priority to public transport and reducing traffic accidents.

Keywords: transport flows, unevenness, traffic, intersection

JEL Codes: L10, L11

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FRI-20.21-1-SITSTL-07

TRAFFIC LIGHT SIGNAL TIME OPTIMIZATION FOR CROSSROAD IN CITY OF BOTEVGRAD

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Abstract: The publication presents a study and subsequent optimization of the times of individual signals at a light-regulated intersection in the city of Botevgrad. The research conducted is imposed given the requirements of the optimization algorithm being used. The subsequent work and the achieved results show a significant improvement in the passage of transport flows through the studied intersection. The implementation of the optimized times for green signals guarantees the achievement of benefits of a different nature, consistent with the reduction of the waiting time of cars, the reduction of the travel time of the driver and passengers and others related to the amount of fuel used and the harmful emissions emitted of the cars.

Keywords: Traffic flows, Traffic research, Traffic lights, Waiting time.

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FRI-20.21-1-SITSTL-08

IDENTIFICATION OF THE RISKS ASSOCIATED WITH THE TRANSPORTATION OF PEOPLE AND GOODS CARRIED BY VESSELS ON THE DANUBE RIVER AND THE ASSESSMENT OF THEIR IMPACT ON THE CARGO TURNOVER OF THE BULGARIAN RIVER PORT TERMINALS

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Abstract: *In the processes related to the implementation of transport services on the Inland waterways of the Republic of Bulgaria, there are a number of risks that directly affect the effectiveness and efficiency of transport between Danube River ports. These risks also affect ships carrying goods in transit between ports outside the Bulgarian section of the Danube River. This research aims to identify risks and assess their impact on the transport process.*

Keywords: *Inland water transport, Efficiency, Effectiveness, port terminal, river ports, risk assessment, threats to shipping.*

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FRI-20.21-1-SITSTL-09

APPROACHES AND MEASURES TO INCREASE ENERGY EFFICIENCY CONCERNING ROAD TRANSPORT

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Abstract: This paper analyzes energy consumption in the various sectors of the economy in the Republic of Bulgaria. Particular attention is paid to the energy consumption of the transport sector and the increase in the energy used in the sector in recent years. Some directions for improving energy efficiency in transport are considered. A review of the priorities in the integrated transport strategy, approved by a decision of the Council of Ministers of the Republic of Bulgaria, was made. As a result, proposals have been made to improve energy efficiency in transport and reduce its harmful impact on the environment.

Keywords: Energy efficiency, transport, harmful emissions, environment, transport policies

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FRI-20.21-1-SITSTL-10

APPLICATION OF CLOUD TECHNOLOGIES IN AUTOMOTIVE SERVICE ACTIVITY

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Abstract: *In the last century, the automobile industry has undergone unprecedented changes, which can be said to be revolutionary. This is due to an industrial restructuring, which affects even every corner of the world, mainly in technology research and development activities and research and development models. Change on. At present, foreign automobile R&D mainly represents schools, such as the United States in North America, Germany in Europe, and Japan in Asia all speeding up the development of their R&D centers. This has a very important position in the growth of enterprises and the launch of products. Generally speaking, international car companies have gone through three stages in the evolution of R&D models. Applying cloud computing technology to auto companies has beneficially improved the development of auto companies. Of course, as a new technology, cloud computing must have some problems, but with the development and gradual maturity of cloud computing technology, I believe that these problems will be solved easily. Therefore, companies should strengthen the application of cloud computing, this can bring new development scale and prospects to auto companies.*

Keywords: *Transport quality, Efficiency, Renewal, Maintaining, Machine reliability*

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RESEARCH OF OPERATIONAL PROCESSES IN A MEDIUM-LARGE COMPANY OPERATING IN THE CITY OF RUSE

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Abstract: *The organization and management of the transport process, which characterize the technological level of transport production, play a decisive role in raising the level of transport quality. Goods are transported from one place to another in order to ensure their sale and satisfy the needs of the population for goods and services. The provision of a newer fleet will increase transport efficiency and reduce maintenance and fuel costs. A fuel consumption study was done for three of the company's vehicles. Based on the analysis of the research, in accordance with modern scientific and technical achievements in road transport, it is necessary to carry out a complete renewal of the technologies applied in our country, allowing to achieve higher parameters of the quality of work in the shortest possible time. The use of newer means of transport leads to a reduction in fuel consumption and, accordingly, the costs of the company. Maintaining old vehicles is financially more profitable, but there are a number of other considerations that must be taken into account: machine reliability, driver comfort, fuel economy, as well as environmental protection, which are part of the company's strategy.*

Keywords: Transport quality, Efficiency, Renewal, Maintaining, Machine reliability

JEL Codes: L10, L11

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FRI-20.21-1-SITSTL-12

DETERMINING THE PERFORMANCE OF AN AUTOMOBILE GAS SYSTEM ACCORDING TO THE OUTPUT PARAMETERS

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Abstract: *There are good practices for maintaining vehicles that run on autogas or liquefied petroleum gas (LPG). When a gas-powered car comes into the shop for repair, some mechanics show some hesitation. Fortunately, maintaining these vehicles is not a complicated procedure. Liquefied petroleum gas, also known as LPG, is a mixture of propane and butane gases and is an economical and environmentally friendly alternative to petrol and diesel. Cars that run on LPG are dual fuel, meaning they have a dual system with two tanks: one for petrol or diesel and the other for gas. LPG vehicles operate very similarly to vehicles powered by gasoline and internal combustion engines. They have a non-return valve, a filling limiter, a flow limiter and a valve that guarantees their safety. There are millions of LPG powered vehicles around the world. It is a safe and economical fuel with easy maintenance requirements. As a general rule, the engines require less oil per volume than a diesel engine and do not require gas aftertreatment systems because the chemical properties of this fuel allow it to power the engine while reducing emissions. The control of the LPG system must be carried out at least once a year. This system may become inoperable as a result of gas filter replacement, body repair, bumper replacement or other mechanical interventions performed by untrained mechanics. The procedures described above are essential to keep the LPG system working and reliable for as long as possible. However, maintenance should be carried out regularly, as any unexpected repair becomes more expensive and time-consuming than a periodic check.*

Keywords: *Gas-powered car, LPG, Renewal, Maintaining, Machine reliability*

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FRI-20.21-1-SITSTL-13

DETERMINING THE CAR'S OPERABILITY ACCORDING TO OPERATING PARAMETERS OF WORK

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Abstract: Emissions of harmful exhaust gases depend on the operating conditions of the engine and its technical condition. Therefore, legislative activity is aimed at introducing new diagnostic and research procedures. The most common method is to use probes to sample multiple gases from the entire cross-section of the exhaust stream. The results of the measurements determine the changes in the concentration of harmful substances in the exhaust gases. In the coming years, one of the most serious human problems will be energy and environmental problems. The intensity of the negative impact of transport depends mainly on the number of vehicles. That is why many initiatives can be seen to minimize the negative impact of transport on the environment. One of the main ways of impact is the introduction of stricter limit values for toxic emissions from internal combustion engines. Current restrictions require a concerted effort by aircraft engine manufacturers to find new ways to reduce emissions of harmful compounds. When maintaining cars, the amount of exhaust gases can be used as a diagnostic parameter to determine their technical condition.

Keywords: Transport quality, Efficiency, harmful exhaust gases, Renewal, Maintaining, Machine reliability

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FRI-20.21-1-SITSTL-14

RETROFITTING A GASOLINE VEHICLE WITH A FUEL SYSTEM ENSURING OPERATION WITH GASEOUS FUELS

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Abstract: The subject of the development in the presented article is to investigate the possibility of retrofitting a vehicle with a gasoline engine by developing three-fuel systems. for the implementation of the task, a vehicle with a gasoline engine was used, which was retrofitted with a system to a LPG and CNG. The development and implementation of such systems will alleviate to some extent the problems associated with air pollution in large cities related to the release of carbon emissions, greenhouse gases, fine dust particles, etc. Installing two alternative fuel systems in vehicle at the same time is often avoided, due to the different requirements and excessive complexity of the vehicle design and the fuel system. The realization of a tri-fuel vehicle is by retrofitting a CNG vehicle system with a BRC SQ Plug&Drive gasoline and gas system for LPG operation. The vehicle was retrofitted with parallel systems for LPG and CNG operation that use a common control unit and gas injectors.

Keywords: Retrofitting a vehicle with a gasoline engine, LPG and CNG, air pollution, ECU and gas injectors

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Regulation No 67 of the Economic Commission for Europe of the United Nations (UNECE) - Uniform provisions concerning the I. Approval of specific equipment of vehicles of category M and N using liquefied petroleum gases in their propulsion system; II. Approval of vehicles of category M and N fitted with specific equipment for the use of liquefied petroleum gases in their propulsion system with regard to the installation of such equipment [2016/1829].

Regulation No 110 of the Economic Commission for Europe of the United Nations (UN/ECE) - Uniform provisions concerning the approval of I. specific components of motor vehicles using compressed natural gas (CNG) in their propulsion system; — II. vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) in their propulsion system

Regulation No 115 of the Economic Commission for Europe of the United Nations (UN/ECE) Uniform provisions concerning the approval of: I. specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion system; — II. specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system.

<https://brc.bg/>

<https://brc.it/home>

FRI-20.21-1-SITSTL-15

INTRODUCING VACUUM MOORING TO IMPROVE MARITIME SAFETY

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Abstract: Mooring is among the most common of all maritime tasks, but still is one of the most dangerous. The UK P&I Club, a marine insurer, has reported that over the last 20 years 58% of maritime injuries occur during mooring. Therefore, the industry is looking for ways to reduce the risk in mooring operations and to improve safety. The paper introduces the vacuum system for automatic mooring and its advantages over the traditional mooring system. Apart from the main benefit of minimizing the risk of injury, there are quite a few other significant benefits: (1) no more using ropes and wires, (2) berthing is automated and carried out by the ship's master from the bridge and (3) shortens the time for mooring and unmooring several times, which in turn shortens the stay of the ship and as a final result - the economic efficiency of the voyage as well as reducing harmful emissions in these ports. The vacuum mooring also solves very effectively the existing problems when the ship is moored in a lock or in a port with strong tidal phenomena. Many ports have already implemented the vacuum mooring system. To the end of 2022 more than 1 million mooring operations have been carried out worldwide.

The automated vacuum mooring definitely is a revolution in port operations and it is the future in port-to-ship interaction, especially with the expanding development and entering into ever wider operation of semi-autonomous and fully autonomous ships.

Keywords: Port Operations, Automation, Mooring, Maritime Safety, Vacuum, Ship Efficiency

JEL Codes: L9

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FRI-20.21-2-SITSTL

FRI-20.21-2-SITSTL-1

**CONDITIONS FOR ISSUING A “CLEAN ON BOARD” BILL OF LADING;
ISSUANCE OF A ‘CLEAN ON BOARD” BILL OF LADING AGAINST
RECEIPT OF A “LETTER OF INDEMNITY” FROM THE CONSIGNOR**

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Abstract: *A bill of lading plays a crucial role as evidence in international trade and transport. After the goods are loaded and the bill of lading is signed, it serves various functions and involve multiple parties in the commercial and transport contract, including the shipper and the consignee of the goods. The master of the ship is the person who receives the goods on behalf of the consignee and is responsible for their delivery in the quantity and condition in which they are loaded. Since the consignee of the goods does not participate during loading, they can protect their interests by demanding that a "clean on board" bill of lading be issued. It is the shipper's duty to ensure the loading of sound goods. If the goods meet this requirement, the master can sign a "clean on board" bill of lading. However, it is considered a bad and inadmissible practice for the master of the vessel to sign a "clean on board" bill of lading solely based on receiving a consignor „letter of indemnity“, especially if the loaded goods do not meet the relevant requirements of the commercial contract and the charter party.*

Keywords: *Bill of Lading, Clean on board, Letter of Indemnity*

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FRI-20.21-2-SITSTL-02

FORMATION OF THE CONTRACT FOR MARITIME TRANSPORT SERVICES; FORM OF THE CHARTER PARTY; CHARTER PARTY UNDER TEMPORARY CONDITIONS AS PER ENGLISH MARITIME LAW

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Abstract: *The formation of the contract for marine transport services and the form of the charter party have different requirements under the countries' laws. These issues are of legal importance, as ignorance of the legislation under negotiation can lead to serious legal complications, accompanied by material damages due to mistakes made in the negotiation process. The participants in the negotiation process should comply with the requirements of the law to avoid 'entering into contractual relations through imprudence.' On the other hand, given the technology of the contract process in commercial shipping, the negotiating parties - the carrier and the charterer - need time after agreeing on the terms of the charter party to coordinate the carriage with the shippers and consignees of the goods. It is also necessary for the carriers to complete routine checks regarding upcoming transport. These objective obstacles are overcome by first concluding a 'charter party under temporary conditions,' after which the contracting parties proceed to resolve outstanding issues. This mechanism allows contracting parties to enter into a binding agreement only if they mutually confirm that they have resolved the obstacles to entering into a legally binding charter party.*

Keywords: *Charter party formation, Forms of charter parties, Charter party under conditions*

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FRI-20.21-2-SITSTL-03

METHODOLOGY FOR COMPARATIVE ANALYSIS OF INTERMODAL AND MULTIMODAL TRANSPORT SERVICING OF CUSTOMER ADDRESSES FROM A PORT CONTAINER TERMINA

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Abstract: for containerized cargo insensitive to transshipment operations, the container pre-carriage or on-carriage, as an integral part of intermodal container transport from origin to destination, is subject to comparison with the option involving stuffing or stripping at the port container terminal combined with conventional road transport in the inland leg between the port and the customer address. The present study proposes a methodology for a comparative analysis of these two alternative transport technologies, considering the costs and the main logistics indicators, as well as including an assessment of the influence of the distance of the customer address from the port container terminal.

Keywords: intermodal transport, multimodal transport, port container terminal, container pre-carriage, container on-carriage, container stuffing, container stripping, container unstuffing.

JEL Codes: R41

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FRI-20.21-2-SITSTL-04

ORGANIZATION AND MANAGEMENT OF THE MUNICIPAL COMPANY "PUBLIC TRANSPORT - VARNA" EAD

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Abstract: *The paper reviews public transport, which is related to the daily needs of a large part of the population, because with the development of cities and the increase of their territories, difficulties arise in the organization of transport services. Moving from one place to another is one of the most important needs of people, the satisfaction of which is the main task of urban passenger transport. The transportation of passengers has great economic and cultural political importance, and well-organized transportation of workers in large cities and industrial centers ensures the normal operation of enterprises and institutions in the system of the national economy. Improving the quality of passenger transport in city buses is a task of primary importance. for this, it is necessary to ensure, first of all, reliability and safety of passenger service, shortening the time for their movement, lowering the filling of buses, the high degree of regularity and safety of movement.*

Keywords: *public transport, buses, route scheme*

JEL Codes: *R41*

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FRI-20.21-2-SITSTL-05

DEVELOPMENT OF THE STRATEGY FOR INTEGRATED PUBLIC TRANSPORT IN RUSE

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Abstract: An analysis of the system for integrated urban passenger transport in the city of Ruse was made. The weaknesses of urban passenger transport in the city of Ruse were examined and suggestions were made for their improvement. A number of studies have shown that prioritizing TCs from GPT leads to a reduction in travel time of 5 to 20%, depending on the length of the route, the type of timetable, the frequency of intersections along the route with SS and their mode of operation, the magnitude of the intensity of the rest of the movement. Although the priority passing of vehicles from the GPT at intersections with SS has been sufficiently studied and practice shows that it is a suitable tool for reducing the delays of the vehicles from the GPT, this approach does not always lead to positive results. Therefore, it is recommended to always carry out preliminary experimental studies, serving as a basis for detailed studies with simulation models and then again checking to confirm the effect in practice.

Keywords: Urban passenger transport, Mobility, Integrated system of public transport.

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FRI-20.21-2-SITSTL-06

THE ADVANTAGES OF ELECTRIC BUSES IN OPERATION IN MASS URBAN TRANSPORT

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Abstract: *The paper reviews the advantages of electric buses in their use in mass urban transport. Switching to electric buses in urban environments may bring more benefits than we thought. Beyond meeting climate targets and regulators' eventual ban of internal combustion engines, electric buses have several serious social and economic benefits.*

Keywords: *Efficiency, Effectiveness, Transportation Planning*

JEL Codes: *R42*

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FRI-20.21-2-SITSTL-07

FACTORS AFFECTING THE APPLICATION OF ELECTRIC VEHICLES

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Abstract: *Automobiles are an integral part of modern society, and over the years they have undergone significant changes in terms of their design and technology. The introduction of electric vehicles worldwide is leading to a historic transformation in the automotive industry. The main considerations determining this policy are ecological in nature, but the controversy surrounding their economic and ecological impact continues, with the combination of technical, economic and political factors determining their future development. The favorable combination of individual groups of factors aims to solve some problems related to the production and operation of electric cars.*

Keywords: *electric vehicles, influencing factors, energy source*

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FRI-20.21-2-SITSTL-08

CHALLENGES OF IMPLEMENTING ARTIFICIAL INTELLIGENCE IN AUTOMOTIVE WORKSHOP

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Abstract: *In the maintenance of modern vehicles, the provision of remote access to the vehicle to carry out diagnostic work, mainly on the electronic systems in cars, ships, etc., has received a strong development. On the other hand, the automation of the processes taking place in the workshop during the maintenance of transport equipment is not so well developed. Artificial intelligence is increasingly being used in different industries to optimize ongoing processes and manage the workload of employees. Its application in car workshops is difficult due to the need to provide a flow of information for artificial intelligence to use. The best option for this turns out to be extracting the necessary information from images captured by strategically placed cameras in the service centre. The report examines the technical requirements for these cameras, as well as recommendations for their correct placement in the workshop, in order to extract the best possible information from them.*

Keywords: *artificial intelligence, maintenance of modern vehicles, optimizing ongoing processes, manage the workload of employees, technical requirements, cameras, recommendations for correct placement*

JEL Codes: N7, R4

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FRI-20.21-2-SITSTL-09

VEHICLE MAINTENANCE AUTO PARTS SUPPLY CHAIN RESEARCH

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Abstract: *When maintaining vehicles, the need for spare parts is often established. The short delivery time of these parts helps reduce the duration of vehicle service and repair operations. This necessitates the creation of appropriate supply chains ensuring low parts prices and short delivery times. The report analyses the chains used for the supply of auto parts in the maintenance of vehicles in Bulgaria. Their advantages and disadvantages are indicated. Suggestions for the improvement of logistics chains are indicated.*

Keywords: *maintaining vehicles, automotive spare parts, supply chains, delivery time*

JEL Codes: *N7, R4*

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FRI-20.21-2-SITSTL-10

PERSONAL MAILBOX, IN A SELF-SERVICE OFFICE OF A COURIER COMPANY

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Abstract: *Dynamic lifestyle in the cities, created completely new customer needs. The same were analyzed by the courier companies and responded by innovative solutions for the delivery-sending of parcels. in their desire to satisfy the needs of their customers, courier companies have invested in the creation of green delivery chains (the use of electric cars, bicycles), automatic post offices APS, self-service offices. These innovative delivery methods had to meet the challenge of environmental protection, reduction of harmful emissions, reduction of noise pollution, reduction of delivery time, reduction of delivery costs. On the other hand, courier service users got extended working hours, convenience of visiting a courier service office during non-working hours, at a low cost of courier service. Such a service is the sending and receiving of a parcel through a personal mailbox, in a self-service office*

Keywords: *Customer needs, Inovative methods, personal mailbox, selfservice office.*

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Димитър Ескидаров Младежки форум "Наука, технологии, иновации, бизнес", 2023 – пролет АНАЛИЗ НА ОСНОВНИТЕ ПРОБЛЕМИ ПРИ КУРИЕРСКАТА ДЕЙНОСТ

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**DECARBONIZATION OF THE TRANSPORT IN THE REGION OF RUSE AND
BUILDING AN INNOVATIVE CAPACITY FOR THE FUTURE**

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Abstract: *in recent years, the European Commission has been making serious efforts for decarbonization in the countries of the European Union and in the world in general. for this purpose, the Green Deal was brought forward as a priority that must be followed by all member countries. Transport and the people associated with it should offer solutions to meet the decarbonisation requirements. This means that politicians, researchers, employers, representatives of non-governmental organizations and society as a whole collaborate together. in connection with this, the report presents a scheme of an innovation camp held in the city of Ruse and the decisions reached between the interested parties related to decarbonized transport. As a result of the work, 8 topics were formed and accompanying decisions were determined to be implemented in the following years..*

Keywords: *innovation camp, decarbonization, innovative capacity, green deal, Programme „Science meets regions“*

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NEW OPPORTUNITIES FOR INNOVATIVE DEVELOPMENT OF TRANSPORT IN THE DANUBE REGION OF BULGARIA

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Abstract: An initiative of the Joint Research Center of the European Commission implemented under the program "Science meets the regions" related to the creation of sustainable relationships between politicians and interested parties, and especially scientists, points the way for the development of the various regions of the member countries. The report presents a new opportunity for innovative development of transport in the Danube region of Bulgaria through interaction of the scientific potential of the University of Ruse with interested parties from the region. The results show that for the Danube region in the Bulgarian section it is necessary to increase the decision-making capacity at the local, national and European level on issues related to decarbonization, intelligent transport systems, smart cities, the green transition, etc. This can be done by creating teams between scientists from the University of Ruse, its partners and interested parties.

Keywords: politicians and scientists, development of the Danube region, transport solutions, innovations

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INVESTIGATING THE APPLICATION OF A TOROIDAL PROPELLER IN VESSELS THROUGH FLUID DYNAMICS SIMULATION

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Abstract: *The toroidal propeller is an innovative technology that is emerging as a key factor in the transformation of vessel propulsion. The paper investigates the application of a toroidal propeller through fluid dynamics simulations in a laboratory setting. The results are aimed at creating an appropriate model to reduce energy consumption and harmful and greenhouse gas emissions from vessels.*

Keywords: *Toroidal propeller, Energy Effectiveness, Marine Transport, greenhouse gas emissions reduction, CFD Simulation*

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INVESTIGATION OF PERFORMANCE INDICATORS OF A HYBRID POWERED ELECTRIC VESSEL UNDER DIFFERENT OPERATING MODES

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Abstract: *With carbon neutrality targets set in the European Green Deal, the transition to green drives in water transport is inevitable. for this purpose, studies of different types of drives and power supplies are needed, and an objective assessment of their applicability.*

The report examines the results of an experimental study of the energy consumption of a hybrid solar-hydrogen powered vessel. for this purpose, tests were conducted in which the relationship between the vessel's traction force and the energy consumed was determined. As a result of the research, it was determined how to efficiently use the energy from the sun and hydrogen in operation.

Keywords: *Hybrid Powered, Energy Effectiveness, Solar Power, Hydrogen, Greenhouse Gases Reduction*

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**FINDING THE RIGHT PERSONALITY FOR THE JOB:
A LITERATURE REVIEW**

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Abstract: *Personality is a crucial factor in finding one's fit in the world, whether it is in a role, a team, or a culture. However, personality is not a simple or static construct, it is a complex and dynamic combination of traits, values, and preferences that influence one's behaviour and identity. Personality assessment tools aim to measure and describe personality in a systematic and reliable way, and to match individuals with the best opportunities for their development and satisfaction. However, these tools are not infallible or comprehensive, they are based on theories and frameworks that have changed over time and have their own merits and drawbacks. The main goal of this paper is to explore the history of personality type, from the ancient Greeks to contemporary psychologists, and some of the most common and widely used personality assessment tools for recruitment are reviewed. The benefits and challenges of using these tools for recruitment are also discussed, including considerations such as validity, usefulness, fairness, and ethical concerns. Personality assessment is both an art and a science—a tool meant to complement recruiters' understanding of candidates while fostering communication—ultimately leading to an optimal fit, for both parties involved.*

Keywords: *Personality, Typology, Recruitment, Performance, Onboarding.*

JEL Codes: *M12, M50, J23, J24*

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JOB DESIGN AND NEW REQUIREMENTS FOR HUMAN RESOURCES

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Abstract: Changes have taken place in the professional life of society, which are gaining more and more speed. They concern changes in the requirements for the soft and hard skills of employees. Let's not forget the application of artificial intelligence, for making managerial business decisions and optimizing processes. Organizations operate in a rapidly changing environment in which technological advantages, management and knowledge transfer are at the core of competitive advantage. Organizations need people with adequate and sufficient skills to work in this context. Undoubtedly imposed by the development of technology and the transformation of needs, job positions in various economic sectors will disappear, and new professions of the future will appear on the labor market. In order to maintain the competitiveness of organizations, not only executive but also managerial work must be prepared for the future requirements of the position.

Keywords: Human Resources, Job Design, Artificial Intelligence.

JEL Codes: M12, M50, J23, J24

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THE COMPONENTS OF PSYCHOLOGICAL CAPITAL IN AN ORGANIZATIONAL CONTEXT

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Abstract: The paper deals with psychological capital as one of the main factors of competition between organizations. A thorough review of the concept of psychological capital is made and influencing factors are discussed. The paper aims at presenting the four core components of psychological capital: self-efficacy, optimism, hope and resilience, and enlightening their impact on individual and organizational performance. In addition, it tries to analyze some aspects of the relationship between psychological capital and leadership style. A conclusion is drawn that better understanding of psychological capital theory enables managers to improve individual and organizational performance.

Keywords: Psychological capital, Hope, Resilience, Optimism, Self-efficacy, Leadership, Organization.

JEL Codes: L20, L22

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FOLLOWERSHIP BEHAVIOR AND STYLE: AN ORGANIZATIONAL PERSPECTIVE

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Abstract: The paper deals with followers' behavior and style in the organization. Followership behavior is defined as a set of preliminary attitudes, decisions and corresponding actions generated in the process of "inferior - superior" interaction. An attempt has been made to analyze some invisible aspects of followership behavior in the organization, such as temperament, perceptions, beliefs, attitudes, value system, and causal attributions. On the basis of this analysis, a parallel is drawn with the individual's orientation towards authority, assuming that the employee's orientation towards the immediate supervisor is the basis of his/her followership style. It is concluded that the followership style of each employee represents a relatively stable system of methods, techniques and methods based on experience and beliefs, which characterizes the features of his/her practical activity as a subordinate. On this basis, specific recommendations are formulated for subordinate employees in the organization.

Keywords: Followership, Subordinate, Followership Behavior, Orientation towards Authority, Followership Style

JEL Codes: L20, L22

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DIGITAL IDENTITY MANAGEMENT SYSTEMS

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Abstract: The dynamic digital era presents a number of challenges. The digital identity of business organizations is one of them and creates a need for appropriate and effective management. The current development aims to shed light on digital identity management systems. The implementation of the set of research tasks leads to: (1) a developed methodology for researching the target scientific literature; (2) a discussion of digital identity management systems presented in research reviews; and (3) examples of real digital identity management systems that are offered on the market for information systems and technologies in Bulgaria.

Keywords: Digital Identity, Digital Identity Management Systems

JEL Codes: L86, M15

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RESEARCH ON SATISFACTION ABOUT DIGITAL ADMINISTRATIVE SERVICES FOR STUDENTS IN HIGHER EDUCATION

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Abstract: Universities are increasingly engaged in the digital transformation of education. This trend has accelerated further since the global COVID-19 pandemic, when education institutions were forced to move to online learning. Electronic services are a key element in this change, providing tools and resources that support the learning process and the management of the student educational experience. Electronic services allow students to receive information and perform administrative activities more easily and conveniently without being limited by physical presence in university buildings. The provision of digital services to students continues to be a key factor in improving the educational experience and facilitating the management of universities. This process is important to modern education and will remain relevant in the future as technological advances continue to shape educational practices. The paper discusses the results of student's opinion survey about provided e-services in University of Ruse.

Keywords: Universities, Digital Technologies, Electronic Services

JEL Codes: L10, L11

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INTERACTIVE DIGITAL TOOL FOR ORDER-SPLITTING ONE PURCHASE ORDER AMONG A NUMBER OF SUPPLIERS

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Abstract: Each vendor might have significant differences in transport costs, product portfolio, the prices, minimal order quantity, capacity, etc. Managers compare these parameters and decide either to order the whole lot from one vendor or to split it between different vendors. Moreover, in some cases splitting the orders is unavoidable, particularly when any of the vendors have enough capacity to cover the full quoted quantity. This paper represents a digital tool that could be used by procurement staff to split a set of products among a number of vendors. It includes an interactive spreadsheet where the managers check and uncheck the products from a particular vendor, compare the prices and see the final result - the total cost for the orders. The spreadsheet is enriched with additional indicators to alarm if the minimum order quantity for the vendor is not covered, if the capacity of the vendor is exceeded, or if the total ordered quantity is not enough to cover the needs of the company. This spreadsheet tool could be directly used as a model for splitting the orders in the supply chain management office of a company. It also can be used as an interactive task for students to explain this complex part of a procurement process. Human resource managers could use this tool in the recruitment process for testing new employees in supply chain management offices.

Keywords: Supply Chain Management, supplier evaluation, vendor comparison, spreadsheet model

JEL Codes: M10, M20

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THEORETICAL ASPECTS OF THE OUTSOURCING LOGISTICS ACTIVITIES

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Abstract: In the article, a theoretical study of the existing concepts, approaches, and theories is made regarding the possibility of their use to justify the decision to outsource logistics activities. The purpose of the article is to study the individual aspects of selected theoretical approaches, from the point of view of their suitability to be used for preliminary analysis of the decision to outsource logistics activities, for the degree of their outsourcing, for the evaluation of advantages and disadvantages and forecasting of future benefits and problems of implementing or not implementing this decision, as well as to assess its impact on the organization's logistics efficiency. From the point of view of logistics outsourcing the relevant traditional approaches, approaches from the new institutional economics, and strategic management approaches are examined. Conclusions have been drawn regarding the possibilities and aspects of their application for the purposes of outsourcing logistics activities.

Keywords: Logistics, Outsourcing, Logistics activities, Logistics outsourcing, Logistics performance.

JEL Codes: D21, D23, L21, L21, L25

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DEVELOPMENT OF METHODOLOGY FOR EVALUATION OF PRODUCTION INFRASTRUCTURE OUTSOURCING

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Abstract: The primary objective of this paper is to establish a robust methodology for assessing the outsourcing of production infrastructure and to provide clear guidelines for future research actions. As a consequence, the most crucial aspects are described, including: defining the research's object, subject, thesis, and hypotheses; specifying general requirements and constraints; engaging domain experts in outsourcing to validate findings derived from the analytical review; selecting the survey method; development and test of the questionnaire; determining the population of surveyed companies and experts; formulating an approach for data processing; conducting data analysis and discussion; comparing the obtained results with findings from the review of scientific publications; and finally, drawing conclusions and recommendations.

Keywords: Production Infrastructure, Outsourcing, Methodology

JEL Codes: L60, M11, O18

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AN APPROACH TO APPLYING A METHODOLOGY FOR SELF-ASSESSMENT OF AN ENVIRONMENTAL MANAGEMENT SYSTEM THROUGH A MATURITY MODEL IN DIFFERENT INDUSTRIES IN BULGARIA

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Abstract: *This paper reviews the self-assessment methodology through a maturity model of environmental management systems, according to ISO 14001, implemented in a company from the mineral resources industry. The results of the application of this Methodology give confidence to all interested parties that the company operates in an environmentally friendly manner, annually assesses its current level of maturity and implements activities to increase it in order to achieve sustainable development of its activities. As a future study, the practical application of the methodology will be carried out in a company from the electrical industry.*

Keywords: *Maturity Model, Environmental Management Systems, Methodology, Mineral Raw Materials Industry*

JEL Codes: *L10, L15*

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Babekova, N., Vitliemov, P., Literature review on integrated systems for quality management, environment and health and safety at work in the mining industry, Annual scientific conference of Angel Kanchev University of Ruse and Union of Scientists – Ruse, "New Industries, Digital Economy, Society-Projections of the Future III", Ruse, 2020.

Babekova, N., Vitliemov, P., The model of maturity as a factor for sustainable development of organizations, Annual scientific conference of Angel Kanchev University of Ruse and Union of Scientists – Ruse, "New Industries, Digital Economy, Society - Projections of the Future III", Ruse, 2021.

Babekova, N., Georguiev, T., Vitliemov, P., The Model of Maturity as a Factor for Sustainable Development of Organizations, 8th International Conference on Energy and Agricultural Engineering, Ruse, 2022.

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MARKETING CHALLENGES AND TRENDS IN THE CONDITIONS OF THE TRANSITION TO A CIRCULAR AND GREEN ECONOMY

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Abstract: The focus of global efforts and policies are related to social, environmental and economic sustainability. This presents businesses with a number of challenges related to the integration of circular business models, "green ideas" and tools in marketing activities and strategies to achieve sustainable production, consumption and sustainable behavior in the growing dimensions of the circular economy. The purpose of the paper is to outline the challenges and trends in green marketing in search of sustainable marketing solutions in the context of the transition to a circular and green economy.

Keywords: Green Marketing, Sustainable Marketing, Circular Economy, Marketing Mix, Sustainable Development

JEL Codes: M31, M14, Q01, F50

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BALANCED SYSTEM FOR ACCOUNTING BUSINESS ANALYSIS OF THE COMPANY- METHODOLOGICAL GUIDELINES FOR IMPROVEMENT

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***Abstract:** In the scientific report, the main directions are the improvement of the scientific framework, the methodology and the organization of the accounting business analysis of the enterprise. Problems and models for analysis of key indicators characterizing internal business processes and efficiency are presented. A concentric model of accounting business analysis in a balanced system of indicators with the possibility of modification is proposed. Models and methods for marginal cost analysis, financial strategy analysis, and Cost-Volume-Profit dependency analysis in a balanced system of performance indicators are presented.*

Keywords: Accounting Business Analysis, Efficiency, Balanced System of Indicators

JEL Code: G32

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MANAGEMENT OF REAL ASSETS IN BUSINESS: A RESEARCH FRAMEWORK

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Abstract: The objective of this paper is to develop a research framework for management of real assets in business. As a consequence, the aspects of a cycle concept for long-term assets is suggested, including: forecasting and planning the necessity of long-term assets in business; acquisition of machinery and equipment; usage of long-term assets in industrial production; maintenance and renewal of long-term assets; Finally, conclusions and recommendations for future work are submitted.

Keywords: Real Assets, Long-term Assets, Production Management

JEL Code: M11

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**FISCAL RULES : WHAT DO THEY PROMOTE.
THE CASE OF BULGARIA**

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***Abstract:** The budget is the main tool in planning and implementing fiscal policy. In order to be effective instrument promoting growth, the budget should be designed so as to answer the specific phase of the business cycle. In doing so, the budget is subject to many rules impeding its efficiency. But the rules are imposed in the sake of the long-term fiscal stability. An efficient rule should be strict enough to prevent incumbents from any attempt to boost economy (and their popularity) by spending public funds unreasonably thus jeopardizing the overall fiscal sustainability. At the same time the rules are supposed to give the government enough flexibility in their righteous fiscal efforts. Well – designed fiscal budget is able to maneuver through the constraints and promote stability and growth.*

This paper explores the rules imposed by the law on the budget and analyze the fiscal balance on a commitment basis and cash-based balance. The research extends to adjusting the balance according to the economic cycle accounting for the GDP gap. First paragraph is the description of the fiscal rules in Bulgaria. Second part presents methodology in computing cyclically adjusted balance (following the aggregate approach for elasticities) and presents the results concerning the three types of balance: Consolidated fiscal program; ii. Central government; iii. Cyclically adjusted budget; The third part summarizes the results of the analyses and presents some conclusions.

Keywords: Budget, Fiscal Policy, Public Deficit, Debt

JEL Codes: H30, H61, H62, H63

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REGIONAL LABOUR PRODUCTIVITY AND WAGE DYNAMICS IN BULGARIA FOR THE PERIOD 2007-2019

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Abstract: According to economic theory, growth in wages follows labour productivity growth. We examine this relation for Bulgaria on the district (NUTS 3) level during the period 2007-2019 (from EU accession to the COVID 19 crisis). The data show increases in both labour productivity and wages for all districts. A common trend is that wages grow faster than productivity in each district. However, there are differences between the districts in terms of labour productivity growth (average annual percentages varying between 2,13 and 5,48), as well as in terms of wage growth (between 5,43% and 6,78%). There is also a differential between wages and productivity growth, with top performers in terms of productivity not necessarily being top performers in the wage/productivity differential.

Keywords: Labour Productivity, Wages, Growth, Bulgarian Regions

JEL Codes: J3, J31, E23

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MUNICIPAL BUDGETS 2023 – 2024 – CHALLENGES AND PERSPECTIVES

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Abstract: The paper reviews the specifics in the preparation and implementation of municipal budgets. Municipalities are part of the country's budget system, consisting of two main structural elements - state budget and local budgets. The state budget includes the Republican budget and the judicial system's budget, and the local budgets have the municipal and mayoral budgets. In the adopted budget for 2023, a key proposal for the municipalities was approved, whereby the transitional residuals available in the municipal budgets for the activities delegated by the state from previous years will be centralized in the state budget at the end of the year. The 2023 budget also provides for a new transfer for other targeted spending on local activities. Its amount is BGN 50 million, intended to reach the minimum wage for all local activities in the municipalities.

Keywords: Budget, Transfers, Additional Funds, Challenges, Perspectives

JEL Codes: L10, L11

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Funds for municipalities in the approved State Budget for 2023. The National Association of Municipalities in the Republic of Bulgaria (**Оригинално заглавие:** Средствата за общините в одобрения Държавен бюджет за 2023 г. Националното сдружение на общините в Република България). URL: <https://www.namrb.org/bg/aktualno/sredstvata-za-obshtinite-odobreniya-darzhaven-byudzheth-za-2023-g> (Accessed on 29.08.2023).

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FEE AND COMMISSION INCOME OF THE BULGARIAN AND EUROAREA BANKING SECTORS – A COMPARATIVE STUDY

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Abstract: *The paper presents a short comparative study of data on the structure and key ratios of fee and commission income within the Bulgarian and euro area banking sectors. In the expose we also attempt to measure the relative effectiveness of fee and commission income in and between the selected regions. Both goals are aiming to supply enough data and evidence to draw trends and conclusions concerning central bank regulatory practices and macroprudential risk management. The topic might also be considered of high societal interest currently, because of recent changes in Bulgarian legislature regarding lessening the banking fee burden of citizens.*

Keywords: *Bulgarian Banking Sector, Euro Area Banking, Fee And Commission Income, Fee And Commission Banking Regulation*

JEL Codes: G21, E58

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ANALISIS OF THE DETERMINANTS OF EXCHANGE RATE VARIABILITY

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Abstract: *The objective of this paper is to analyze the determinants of nominal exchange rate variability for the acceding countries. The literature recognizes various determinants of bilateral exchange rate variability. For example, countries with strong trade links tend to be characterized by stable bilateral exchange rates. The implication is that the costs of adoption of a common currency decreases when exchange rates are stable. In this case, the countries may reap the benefits of common currency without risking that by irrevocably fixing their currency large adjustments in the real sector would occur. After presenting the main results of several authors who previously studied the determinants of exchange rate variability, this paper will estimate the importance of the factors to which OCA theory points for the exchange rates variation in Central and Eastern European countries, hereafter the CEE countries.*

Keywords: *Exchange Rate Variability, Common currency, Optimum Currency Area (OCA)*

JEL Codes: *F31, O24*

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FRI-2G.404-1-EM2-06

EMPIRICAL EVIDENCE ON EXCHANGE RATE VARIABILITY AND TRADE

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Abstract: *There exists a large body of literature on the effect of variability of exchange rate on trade. Certain studies have found a significant effect of variability of exchange rate on trade, however these studies refer to the major floating currencies. Overall, taking account of the empirical researchers have found no convincing effect of exchange rate variability on trade. However the exchange rate risk is relevant to the firms and is not always hedged, the effect of exchange rates on trade must exist and but probably it was too small to be detected in the available surveys. Moreover, the insignificance of exchange rate volatility as an explanatory variable of foreign trade for developed countries can be justified by the fact that its effects are transmitted through various channels which may be even opposing. At the same time, simulations of theoretical models suggest that, despite small quantitative impact of exchange rate variability on trade, the switch to floating rates might reduce considerably the welfare of traders. This result is in line with opinion surveys of businesses, which consider that exchange rate uncertainty has adverse effects on trade and investment.*

However, empirical tests focusing on emerging countries have shown a significant and negative pattern between exchange rate volatility and trade. Thus, the results contrast with those referring to developed countries, which is probably due to the relative underdevelopment of hedging instruments on currency markets.

Keywords: Exchange rate variability, Trade, common currency

JEL: F62, F1, F31

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ENTREPRENEURSHIP AND DUAL TRAINING – OPPORTUNITIES FOR REGIONAL DEVELOPMENT

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Abstract: *The report focuses on the opportunities to support the development of regions by building entrepreneurial skills, including through dual training. It examines the nature and role of entrepreneurship in supporting sustainable economies. The model of dual training, which is based on collaboration and support between mentors and mentees, is also presented through the potential for developing pre-entrepreneurial behaviour and initiatives.*

Keywords: *Dual Training, Entrepreneurial Initiatives, Skills, Development*

JEL: *M53, L26*

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FRI-2G.404-1-EM2-08

ANALYSIS OF AN ELEMENT OF AN ALGORITHM TO STUDY THE INFLUENCE OF INTRAPRENEURSHIP ON THE QUALITY MANAGEMENT SYSTEM IN A MANUFACTURING ENTERPRISE

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Abstract: The purpose of this report is to investigate an element of an algorithm for improving the quality management system by promoting intrapreneurship in a manufacturing enterprise. The tasks are as follows: (1) Graphical presentation of the algorithm through a flowchart for conducting training to promote intrapreneurship and (2) analysis of Questionnaire Card №2 as an element of the studied flowchart. The findings in the present study are part of a dissertation work.

Keywords: Intrapreneurs, Questionnaire, Training

JEL Codes: L0, M11

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CO-MANAGEMENT AS A TOOL FOR ACHIEVING SUSTAINABLE DEVELOPMENT – SURVEY RESULTS

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Abstract: These 21st century human challenges give rise to the need for new, alternative approaches to governance that are based on the inclusion of all stakeholders. Stakeholder participation is considered a necessary condition for achieving sustainable processes and outcomes. It weakens conflicts between actors and harnesses the potential of the knowledge of all actors and thus contributes to sustainable solutions. It encourages the coordination of participatory policies between different levels of government and local communities for joint problem-solving, allocating rights and responsibilities between stakeholder groups. Co-management, which is based on partnerships and power-sharing arrangements, is therefore increasingly established as an alternative approach to governance. This report presents the results of a survey conducted among institutions and organizations involved in policy development for working with vulnerable groups in the municipality of Ruse..

Keywords: Co-Management, Stakeholders, Vulnerable Groups, Sustainable Development

JEL Codes: D91, M12

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EMPIRICAL RESEARCH OF COMMUNICATION PROBLEMS CAUSING ORGANIZATIONAL CONFLICTS

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Abstract: Conflicts in the organization are one of the challenges that must be dealt with by management at every hierarchical level. In order to effectively manage them, managers need to understand the reasons for their occurrence. The earlier in time this happens, the better it will be for the organization and the possibility of avoiding a conflict in a certain situation in which the employees of the organization are involved becomes greater. This saves time and money that would have been allocated to liquidate the consequences of the conflict that occurred. Therefore, it is appropriate to emphasize the actions of managers regarding the effective management of human resources, in particular the use of the most effective methods of communication, flexible and adaptable to the different situations that daily work brings, is of great importance for all parties, which to one degree or another are related to this situation and the consequences of the selected measures - reactions. In the present study, the state of communication in a specific organization is investigated in order to identify the communication barriers that could generate conflicts in the organization. On this basis, conclusions are formulated and specific recommendations are defined regarding the identified problem areas.

Keywords: Management, Communication, Communication Barriers, Conflicts, Conflict Management

JEL Code: M1

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AN EMPIRICAL STUDY OF CONSUMER ATTITUDES OF SECONDARY SCHOOL STUDENTS TOWARDS A UNIVERSITY EDUCATIONAL PRODUCT

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Abstract: The peculiarities of the functional purpose of higher education as a system for reproduction of the economic and intellectual potential of the country requires the use of a scientific approach to the solution of mature problems and creates a need for theoretical understanding and practical solution of a number of problems in the functioning of the organizational-economic mechanism in education. That is why it is of particular importance for the development of the educational system, educational policies and strategies to look for real trends and perspectives in society's expectations of what kind of education young people should receive in higher education, so that it satisfies their needs and those of society generally. From the point of view of the present development, the study of the modern views of secondary school students from Ruse and the region towards higher education can be considered to be the research study, primarily aimed at the expected learning outcomes. This understanding looks for the common points between educational management and the administration of higher schools, whose learning outcomes generate attitudes both towards the product of the educational services provided and towards the educational institution.

Keywords: Consumer Attitudes, Educational Product, Higher Education Institutions, Secondary School Students

JEL Codes: M1, M31

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EXPECTATIONS AND ATTITUDES OF FIRST YEAR STUDENTS TOWARDS THE CHARACTERISTICS AND RESULTS OF THE LEARNING PROCESS

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Abstract: The educational process in an academic environment is a compound complex of interactions, components and stages, implemented with the participation of both its consumers, i.e. the students, as well as the institutions mediating the process - higher education institutions. In this context, achieving high quality of the process and its results depends equally strongly on the involvement, contribution and level of performance of the parties involved. This report presents the methodology and results of an empirical study among first-year students from the most numerous program in the Faculty of Business and Management, and one of the largest in general at the University of Ruse - program Business Management, BSc. The research was carried out experimentally during a consultation with all students of the specified program by applying a qualitative type of research toolkit and examines the following components: personal positive expectations (this YES), personal negative expectations (this NO), team decisions on student characteristics, characteristics of teachers and characteristics of the process (i.e. training). The results help to form an adequate and realistic point of view in the adaptation and improvement of the educational environment, the educational process, the skills and qualities of the academic lecturers. The key advantage being the preliminary study of the attitudes and expectations of the students, who are subsequently also users of the educational product.

Keywords: Consumer Attitudes, Educational Product, Higher Education Institutions, Quality of Education

JEL Codes: M1, M31

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SPECIFIC ASPECTS OF VIRTUAL TEAMS' MANAGEMENT IN PUBLIC ORGANIZATIONS

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Abstract: *The advancement of technology and globalization, coupled with the coronavirus pandemic and quarantine measures, have posed a challenge for public sector organizations both in Bulgaria and globally. However, this crisis has also provided an opportunity for these organizations and their employees to discover the advantages of virtual teamwork. Nevertheless, managing virtual teams presents its own set of difficulties for the public sector, particularly in terms of management. This paper delves into various aspects of public sector organizations, including their types and structures, in order to identify the most common characteristics of in-house teams within these bodies. It then compares these features with the typology and specifics of virtual team management practices. The paper also examines the emergence of virtual teams as a new paradigm and analyzes the challenges of managing virtual teams in public organizations.*

Keywords: Virtual Team, Team Management, Communication, Public Sector, Public Organization

JEL codes: M1, M10, M12, H11

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ON THE ENGLISH LOAN WORD MARKETING IN SCHOLARLY LITERATURE

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Abstract: *The aim of this paper is to study the meaning and usage of the English loan word marketing in Bulgarian scholarly literature and to make some practical suggestions for its proper use as an adjective in collocations. The study shows that in Bulgarian collocations, some of the terms borrowed from English, marketing among them, do not always agree in gender, number, etc., with the nouns they define. The addition of Bulgarian adjectival suffixes to the word marketing may alter its semantics and hence cause ambiguity. The study suggests that in order to avoid misunderstanding, all three terms, management, business and marketing, should be used without suffixes as adjectives in collocations, which will ensure greater clarity in their usage in scholarly texts.*

Keywords: *English loan words, grammatical adaptation, adjectives*

JEL Codes: *M31, Z13.*

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ELECTRONIC ADMINISTRATIVE SERVICES FOR STUDENTS IN UNIVERSITY

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Abstract: Digitalization of services is a precondition for shortening of time for service provision, increase of quality, higher efficiency, error declining and discipline of participants in the process. Higher education also requires introduction of digital services to manage the research, teaching, administrative and business activities of higher education institutions. Students are main clients in the educational process and usually their needs of administrative services are not evaluated as main priority in university information systems. The paper analyses the state of the e-services provided to students at the University of Ruse and assesses the opportunities for further development and improvement.

Keywords: E-Services, university information systems, Digital Technologies

JEL Codes: L10, L11

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AN APPROACH TO IMPLEMENT A CLOUD ERP SYSTEM FOR MANAGING PROCESSES IN BULGARIAN SMALL AND MEDIUM-SIZED PRODUCTION ENTERPRISES

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Abstract: *The current business environment and the overall situation of Bulgarian small and medium-sized manufacturing enterprises are characterized by a high level of dynamics and competition. One of the main prerequisites for maintaining competitiveness in the medium and long term is the effective use of modern technologies, which have the potential to improve value creation at all levels of production and support people in their work areas. Information and communication technologies (ICT) are one of these fundamental drivers that enable intelligent, flexible, and autonomous collaboration in production among network operators, manufacturing processes, details, as well as storage and transportation systems. These innovative technologies and the overall digital transformation in production threaten the current market position and competitive advantages of established enterprises in an already expensive and dynamic environment. This paper presents a model for assessment the advantages of implementation a cloud-based system for planning the production resources.*

Keywords: *Cloud ERP, SME production enterprises, model.*

JEL Codes: *L10, L15*

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RAILWAY QUALITY MANAGEMENT SYSTEMS – PAST, PRESENT, AND FUTURE TRENDS

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Abstract: *The purpose of this paper is to highlight the recent trends in quality management systems, and in particular – the quality management systems in the railway sector. These systems are based on the popular ISO 9000 series of standards, and more specifically- on the requirements of ISO 9001:2015. The latest standard ISO 22163:2023 for quality management systems in the railway sector is the heir to ISO/TS 22163:2017 which was also based on ISO 9001:2015 and expanded it with industry-specific requirements. This paper presents the main changes between the two editions of ISO 22163 and outlines some key issues and opportunities to be considered when implementing quality management system requirements, methods, and tools in the railway sector.*

Keywords: *Quality Management Systems, Railway Sector, ISO 9001, ISO 9000 Series of Standards, ISO 22163*

JEL Codes: *L15, L62, L92, O31*

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EFFICIENCY AND EFFECTIVENESS OF APPLICATION OF SPECIAL SEISMIC PROTECTION METHODS

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Abstract: *The purpose of this article is to analyze the impact of economic crises on the development of outsourcing as a progressive management tool. An analysis is made of the scientific sources on the advantages and disadvantages of outsourcing and the possible solutions for making it a profitable choice. The key characteristics of successful outsourcing practices are presented, which turn the correct use of the "outsourcing" tool into a powerful weapon for argue not only competition, but also for dealing with economic crises.*

Keywords: *Outsourcing, Economic Crises*

JEL code: *O14*

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RELIGION – DOMESTIC POLICY – FOREIGN POLICY – CASUS BELLII

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***Abstract:** The influence of religion in the interaction of states is one of the great and underdeveloped security challenges of the 21st century. Its role in international politics presents an intellectual challenge to scholars of international relations, religion, and politics. Religion has emerged as a significant factor in some analyzes in the field of international relations, although there are still huge blanks and unexplored sectors in the religion-foreign policy relationship. Many researchers have made valuable analyzes seeking the opinions of adherents of various faiths concerning the relationship between religion and foreign policy.*

***Keywords:** Religion, Domestic policy, Foreign policy*

***JEL Codes:** F52, F53*

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20TH CENTURY GLOBALIZATION V/S 21ST CENTURY DEGLOBALIZATION

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Abstract: *The paper analyses globalization and deglobalization as processes typical of 20th and 21st century, respectively. The data collected are scientific attempts to provide relevant definitions and explanations. Further data regard criticism addressing consequences of both processes. The paper concludes, that nowadays both processes exist in parallel and both of them are under political pressure for change.*

Keywords: globalization, deglobalization

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THE CURRENT DEBATE ON UNITED NATIONS SECURITY COUNCIL REFORM

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Abstract. *The Security Council is the only UN body which can legitimately authorize responses to global security threats – including by the use of force. Its outdated structure, though, which was inherited since the aftermath of the Second World War, gives a decisive role of the 5 permanent members - USA, USSR, China, UK, France- by giving them the exclusive right to veto all decisions. Though the years this has made the work of the Security Council more or less ineffective. The war that the Russian Federation started in Ukraine in 2022 triggered this debate again. The paper analyses the current problems in the decision-making system of the Security Council, the proposals made by some states and coalitions of states, and the possible solutions.*

Keywords: United Nations, Security Council, international relations, war in Ukraine, veto right

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THE RISKS FOR THE GLOBAL SECURITY, PROJECTED IN THE FRAGILE STATES INDEX 2023

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Abstract: *This paper presents and discusses the opportunities provided by the annual Fragile States Index (FSI) for identification and forecast of the risks for the global security. The index comprises 12 risk indicators divided in 4 groups: cohesion indicators, economic, political and social indicators. A number of sub-indicators are included in each of the groups, on the basis of which a relatively complete picture of the current situation is outlined for each of the countries presented in the study. The top-10 most unstable countries according to FSI 2023 are Somalia, Yemen, South Sudan, Siria, Afganistan and some others. The paper analyzes which of the index's indicators for these countries indicate the greatest risks for the global security. An added value of the work is the comparison between the most unstable countries according to FSI and most resilient states ranked in the newest Fund for Peace Index.*

Keywords: Global Security, Fragile Countries, Fragile States Index

JEL Codes: Z28

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**ENHANCING NATIONAL-POPULISM IN EU MEMBER STATES:
THE CASE OF RUSSIAN FEDERATION**

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Abstract: *The paper is based on data regarding methods used by the Russian Federation to spread its political influence among EU member states: supporting a fifth column, financing of politicians and political parties, troll factories, Orthodox clergy, aggressive war and occupation of territories of neighbouring states, information wars, hybrid warfare, cyber-attacks. The paper argues that the Russian Federation has applied those methods to enhance national-populist parties and their electorate, as they are committed to political values contradictory to the values of liberal democracy and the principles of EU. Therefore, those parties have become powerful allies to the current Russian leadership in its efforts to transform the post-second world war order and thus, to halt European integration. The paper concludes, that the methods, applied by Moscow have been effective to the extend, that national populism has become a major challenge for the stability of European democracies and for the forthcoming political elections at EU level.*

Keywords: *Nationalist Populism, Liberal Democracy, Political Influence*

JEL code: Z10

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**NON-GOVERNMENTAL ORGANISATIONS
FUNCTIONING BEYOND NATIONAL BORDERS.
THE CASE OF INTERNATIONAL ELIAS CANETTI SOCIETY**

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Abstract: The current paper is related to a PhD study on NGOs, that "transcend" the idea of the nation-state and enhance the development of a transnational civic society in parallel to the international society of states. The comprehensive research encompasses theoretical analysis of transnationalism and case studies. Here we explore the governance of transnational NGOs in order to identify common characteristics, which can be considered typical of a global standart. Then we analyse the International Elias Canetti Society (IECS) to find out to what extend its governance is relevant to the standart. The paper concludes by provision of policy recommendations, i.e. how IECS could overcome existing gaps, so that it could add more value to the effective functioning of the transnational society.

Keywords: Civil/Civic Society, Transnational Civil/Civic Society, NGO

JEL Codes: A13

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THE BULGARIAN PARLIAMENTARY MODEL. DISTORTIONS OF THE DIVISION OF POWERS ACCORDING TO THE ELITE OF THE STATE

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Abstract: *The article delves into the specifics of the Bulgarian parliamentary model, examining it through the lens of French philosopher Montesquieu's principles of equality and the separation of powers - legislative, executive, and judicial. It draws comparisons between this model and its alignment with both the historical Tarnovo Constitution and our more recent 1991 constitution. The discussion centers around the challenges associated with attempts to exploit differences in favor of the executive branch, particularly after the country's liberation by the Prince and the subsequent powers vested in the Prime Minister. This analysis highlights the rupture in the relationship between the parliament and the electorate, where elected representatives often prioritize the retention of power for the ruling party or coalition, rather than serving the interests of those who voted for them. The article also explores the concept of votes of no confidence as a mechanism of oversight, as well as the overall effectiveness of parliamentary control, both of which often fall short of realizing the principle of 'power checks power.' Special attention is paid to the role of the judiciary as an extension of the parliament, particularly in its role in appointing members of various judicial bodies and ensuring the legality of state actions. Furthermore, the piece contemplates the issue of parliamentary and governmental representativeness, particularly in light of consistently low voter turnout, which frequently remains below 50 percent. Ultimately, the article makes a compelling case that the parliamentary system carries inherent risks, as it can lead to the formation of a political elite with its own agenda, diverging from the interests of the people and the state. This erosion of democracy results in premature termination of mandates and governance challenges.*

Keywords: Democratic Principles, Constitutional Matters, Public Representation, And Legal Integrity

JEL Code: D72

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THE MULTIFACETED REALM OF ECONOMIC SECURITY

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Abstract: *This article delves into the multifaceted concept of economic security, a critical cornerstone for both national prosperity and societal well-being. While the primary focus is on economic security, the article also offers a brief overview of other aspect of international security: political, environmental, social, cyber.. Economic security is not just an economic indicator; it serves as a comprehensive measure of a nation's health, influencing a multitude of sectors such as healthcare, education, and social cohesion. The article explores key aspects like employment stability, income equality, and social safety nets. It also addresses the challenges posed by globalization and technological advancements, offering viable policy solutions to mitigate their risks. The article aims to provide a holistic understanding of economic security, emphasizing its critical importance for individuals, communities, and nations.*

Keywords: *International Security, Economic Security*

JEL Code: *F52*

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**TO AVOID WATER CONFLICT BETWEEN NATIONS
AND SOCIAL GROUPS, IS IT NOT TIME TO RECOGNIZE
WATER AS A PUBLIC GOOD?**

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***Abstract:** The resources available to individual economic entities and society as a whole to create goods are limited at a certain point in time. All individuals, organizations and society as a whole face the common economic problem of scarcity: needs are unlimited and resources are insufficient. The choice of one thing over another, the juxtaposition of alternatives, is an integral part of the economic system. Resource limitation, which manifests itself in the lack of balance between people's needs and the means to satisfy them, is a fundamental economic issue known as the problem of scarcity. Resource limitation gives rise to the need to choose for their alternative use. The essence of the main market problem in the economy is precisely the distribution of limited resources among the existing opportunities for their use. Goods are a means of satisfying needs. If they can be used freely without reducing access to them, they are public goods. If it is produced under conditions of scarcity, where a greater amount of one good means less of another, it is an economic good. Most goods fall into this category - they are not free, but some other good has to be sacrificed for their acquisition. Is water an economic or a public good?*

"If there's no water, people will start moving," says Kitty van der Heyden, head of international cooperation at the Dutch foreign ministry and an expert on hydropolitics. Water scarcity affects approximately 40% of the world's population, and according to UN and World Bank projections, drought could put 700 million people at risk of displacement by 2030.

The report presents a perspective of concern about the consequences of water scarcity. If there is no water, politicians will try to control water resources and may go to war over them. Over 270 hotspots around the world give rise to military conflicts caused by water imbalance.

Keywords: Corporate social responsibility, Social investment

JEL Codes: M1, M14

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THE HEALTH MEDIATOR AND ITS SOCIAL SIGNIFICANCE

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Abstract: Infectious diseases are a serious test for the social and health system, which spread easily, especially in places far from medical facilities, in areas with a compact population and overcrowding in neighborhoods and homes, which greatly complicates the isolation of virus carriers. Awareness of diseases, facilitation of access to social and medical services and immunizations, assistance of employees to reach individuals without a selected general practitioner are activities performed by health mediators that contribute to the control of various socially significant communicable and non-communicable diseases. The specificity of the activity of the health mediator requires that part of the working time be in the field - for visits to the homes of families who do not visit medical institutions for regular examinations, for the assistance of the general practitioner in increasing the immunization coverage, for participation in various initiatives and campaigns and others. The regulation provides for the preparation of a work schedule that specifies the hours for field activities and hours for administrative work.

Keywords: Social risk, Health mediator, Health

JEL Codes: I14, I18

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THE ROLE OF HEALTH MEDIATORS IN VULNERABLE SOCIAL GROUPS

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Abstract: Facilitating access to medical services for vulnerable groups of the population with religious and cultural differences, increasing health culture and awareness. The improvement of their health is an important indicator of the ability of the competent institutions to seek a solution and achieve change to a national problem that may challenge the ability of society as a whole to cope with difficult to overcome health damage. All this confronts not only the vulnerable community, but the entire society with health challenges from socially significant diseases and epidemics of communicable diseases. Access to health services is guaranteed through the mediation of health mediators, who are a connecting link between vulnerable groups of the population and the health care system.

Keywords: Social risk, Health mediator, Health

JEL Codes: I14, I18

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SOCIAL ASPECTS OF PSYCHOACTIVE SUBSTANCE DEPENDENCE

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Abstract: *This report explores the relationship between addiction and dependence on psychoactive substances, and how it impacts society. It discusses the challenges and trends related to dependence, and stresses the importance of social support in the form of preventive programs, clinical social work, treatment, and community support. The report highlights the need for new sectoral policies and approaches to working with dependent individuals, to increase the effectiveness of institutions in limiting the growing number of dependents and their negative social and economic consequences. It also addresses the legal and socio-economic impacts of addiction and emphasizes the need for a coordinated, systematic, and long-term prevention and treatment strategy, along with a range of social services, medical assistance, educational interventions, and community support as part of a comprehensive plan.*

Keywords: *Dependence, Addiction, Psychoactive Substance, Social Work*

JEL codes: *I10, I18, I30, I38*

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SUPERVISION AS AN IMPERATIVE SOLUTION TO PREVENT BURNOUT SYNDROME IN SOCIAL WORK

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Abstract: Social work is an incredibly important and compassionate profession that requires a great deal of responsibility. However, it can also be quite emotionally and mentally taxing due to the variety of problems that social workers must address. To combat this issue, various methods and techniques are being used in social work, one of which is called supervision. This approach is considered a crucial part of ongoing professional development for social workers. The goal is to prevent and overcome the phenomenon of "burnout" in social work through the use of supervision. In this regard, it is important to explore the theoretical aspects and viewpoints surrounding this topic, which is the prior aim of the present paper.

Keywords: supervision, social work, social worker, stress, burnout syndrome

JEL Codes: I30, I31, I38,

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FEATURES OF THE "DEPENDENCE-CO-DEPENDENCE" RELATIONSHIP WITH INTERNET TECHNOLOGIES

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Abstract: Technology addiction is a modern problem that causes dependence and co-dependence. It can negatively impact all aspects of life, leading to social isolation and damaged relationships. Examples of this addiction include internet, gaming, pornography, online shopping, and social media addiction. It may also lead to codependency in loved ones who require psychological support. Social workers play an important role in supporting those affected by addictive behavior and codependency. Understanding the underlying human need is key to addressing addiction and dependences. The report discusses codependency, which is a challenging topic to define theoretically. It is compared to addiction and dependence, which are already well-known phenomena, and their negative impact on quality of life. The report explores the connection between "dependence" and "codependence" in relation to internet technologies, leading to new questions about the transformation of internet codependency into dependence and the effectiveness of social support approaches.

Keywords: Dependence, Addiction, Co-Dependence, Internet Technologies, Social Work

JEL codes: I10, I30, O30, O35

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THE ROLE OF SOCIAL INNOVATIONS IN THE DEVELOPMENT OF SOCIAL ENTREPRENEURSHIP AND SOCIAL ACTIVITIES

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Abstract: In dynamic times where, human values are compelled to change with lightning speed due to the climate and moral crises that threaten us, the actions of society, business and governments are of utmost importance. This paper examines the opinions of several authors on the emergence and definition of social entrepreneurship, with some supporting and others contradicting each other thesis. The goal of the paper is to define the role of social innovations in the development of social entrepreneurship and the social activity and to draw clear boundaries between all types of activities related to the well-being of society., is going to be presented in the next pages.

Keywords: Social Entrepreneurship, Social Innovations; Responsible Education

JEL codes: O35, L31

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INCLUSIVE EDUCATION AND RE-SOCIALIZATION OF STUDENTS WITH SPECIAL NEEDS AT UNIVERSITY OF RUSE, BULGARIA

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Abstract: *The paper presents part of the results within the frames of a project implemented by the author in 2023 under the programme "Young researchers and postdocs-2". On the basis of the explored literature and good national and international practices, some conclusions are drawn about the strengths and weaknesses of the work with students with special needs at the University of Ruse putting a stress on the approaches and tools for students' re-socialization in the academic environment. The necessity of a Centre for work with students with special needs at University of Ruse is justified and similar structures in other Bulgarian universities are presented. An idea for the development of Academic rules for work with the students with special needs is announced. Such Rules will be introduced after a broad discussion with the stakeholders and their approval by the Academic Council of the University of Ruse.*

Keywords: *Inclusive Education, Students With Special Needs, Socialization, Re-Socialization.*

JEL Code: *I20*

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THE ELDERLY - AN ASSET OR A HINDRANCE TO CREATING NEW OPPORTUNITIES FOR SOCIAL DEVELOPMENT

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Abstract: *The aging of the population has various perspectives in social perception. It involves rethinking social approaches in demographic, social, political, and economic terms, as well as health and social support. The World Health Organization's 'active older living' concept has shaped international and European policy discourse. The aim is to understand how population aging can create new opportunities for societies, such as the contribution of the growing number of older people as consumers and producers to socio-economic development and innovation. Age discrimination is a common phenomenon that stigmatizes the elderly and combines discrimination on other grounds. This harms people's opportunities, participation, health, and well-being and manifests in different contexts. Providing digital literacy training for seniors can help them avoid social isolation and access essential services and information. These would contribute to promoting a fulfilling and active life in good health by older people.*

Keywords: *Aging, Age Discrimination, Well-Being, Stigmatization, Social Isolation, Social Services*

JEL Codes: *I30, I38, J14*

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A NEW TOOL FOR SELF-ASSESSMENT OF DEPENDENT BEHAVIOR

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Abstract: Addictions and dependencies in the modern era have evolved beyond the traditional forms in the last century. The virtual space has made routine activities more complex and hybrid, making identifying early signs of addictions challenging depending on behavior. Therefore, researchers require new tools that incorporate traditional methods of testing and surveys alongside self-assessment elements. This will enable them to determine the stage of dependence development. Furthermore, self-assessment tools can facilitate self-analysis, which can encourage individuals struggling with substance or drug addiction or dependences to seek professional psychosocial assistance. In this report, the authors propose a new self-assessment tool that can aid in the formulation of relevant preventive and social support programs for addicts and help determine the need for the provision of social services.

Keywords: Dependence, Addiction, Self-Assessment, Prevention, Social Work

JEL codes: I10, I30, O30, O35

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FRI-1.322-1-SW-11

SOCIAL INNOVATION BY DESIGN

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Abstract: This paper defines social innovation as a concept and a phenomenon, focusing on the process of cocreation that addresses a significant social challenge that is well-known globally but is tackled in a specific local context, and whose innovative solution – novel in terms of both the result and the path of its generation – has the potential to generate positive change and social impact. It proposes a relationship between social innovation, the lab approach, as well as the design process, and the design mindset to develop plausible solutions. Examples of models applied by various schools that employ Design Thinking, as well as sample methods suitable for each stage of the design process are given. The final section discusses approaches used to measure and assess the social impact of innovative solutions.

Keywords: Social Innovation, Social Innovation Labs, Design Thinking, Social Impact

JEL Codes: M1; M14

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DEVELOPMENT OF SUSTAINBLE ENTREPRENEURSHIP AND INNOVATIONS IN BULGARIA: SOME REFLECTIONS ON THE PROJECT “TRAINING FOR ECOPRENEURSHIP AT THREE BULGARIAN UNIVERSITIES”

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Abstract: Based on the Actor-Network-Theory an alternative understanding of the innovation process will be presented as a theoretical foundation of the so called Sociology of Translation. Thus, a four-phase model of the French sociologist Michel Callon will be used to reflect on the development of sustainable entrepreneurship and innovations in Bulgaria and the experiences of the project “Training of ecopreneurship at three Bulgarian Universities”. The first phase of the model starts with the so called problematisation, which is not to be mistaken with the identification of a common problem or challenge to be solved but more as a formation of a network of relationships, which have to be stabilized. In a second step the various interests and identities of the involved stakeholders have to be aligned. The success of this phase is actually confirmed in the parallel running process of enrollment understood as series of multilateral negotiations and trials of strength. Last but not least a mobilization of the established network is executed, which could be followed by controversies and disintegration of the alliances and formations.

Keywords: Actor-Network Theory, Sustainable Entrepreneurship, Green Innovations, Innovation Model

JEL Codes: L10, L11

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HOW IS "CYBERTR[®] SERIOUS GAME" DESIGNED AS AN EFFECTIVE TEACHING TOOL?

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Abstract: Children are the weakest and most defenceless circle in the world of technology. for this reason, it is seen as an easy target for many cybersecurity threats. The main reason for this is the lack of awareness of children. Although cyber-security learning is provided in schools, traditional education can't afford the expectations and needs of students. One way to solve this problem is to use serious games about cybersecurity awareness in the learning process. Though many useful serious games are presented in the literature on cybersecurity awareness, no game yet exists that focuses equally on the serious (learning) and game (game) aspects. Therefore, there is a need for games that balance learning and play components. A game designed with serious gaming criteria can useable an effective teaching and learning tool. From this perspective, this article focuses on how serious games should be designed for the learning environment, the design process of the game 'CyberTR' is presented. The design of CyberTR will help other researchers and game developers to design a quality serious game as a learning tool.

Keywords: Serious game, learning tool, awareness, academic achievement.

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PRESCHOOL AND PRIMARY SCHOOL ROBOTICS EDUCATION – BENEFITS AND CHALLENGE

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Abstract: This article explores the advantages of introducing robotics education at the preschool level and how it can benefit the acquisition of knowledge in other subjects, particularly mathematics. It proposes a tailored curriculum, provides examples, and offers guidance on integrating robotics with various subjects. It is evident that modern children often struggle to maintain interest within the confines of traditional classrooms and conventional teaching methods, leading to a lack of motivation and understanding of the practical benefits of learning. In Bulgaria's educational system, robotics is primarily taught as an extracurricular activity, not as part of mandatory training. These extracurricular programs are typically designed for primary and junior high school students, with limited attention given to robotics education in kindergartens. The teaching approach suggested by the authors is rooted in constructivist pedagogy, emphasising the creation of a learning environment where students can collaborate, utilise diverse information sources to complete tasks, and successfully achieve their learning objectives. Robotics plays a role in enhancing children's spatial awareness through activities like constructing pathways. It also has a positive impact on mathematical knowledge, including numbers, digits, lines, geometric shapes, and, to some extent, colour and object recognition, as well as letter recognition. Children develop their spatial orientation skills by understanding left-right and forward-backward directions. The curriculum proposed by the authors aligns with the STEAM (Science, Technology, Engineering, Arts, and Mathematics) educational approach. The article describes specific instances of implementing robotics education in facultative groups for 6-7-year-olds, summarises observation results, and suggests practical solutions.

Keywords: Robotics, Preschool education, Constructivism.

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AN OPPORTUNITY TO INCREASE THE COMPUTER LITERACY OF HIGH SCHOOL STUDENTS BY INTRODUCING THEM TO SEO

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Abstract: *Digital competencies play a pivotal role in education, employment, and active participation in society. It is essential for the education system to comprehend these competencies and know how to foster their growth. High school education in information technology aims to equip students with knowledge, skills, and attitudes essential for developing fundamental digital competencies. This approach empowers students to become confident in several areas, including swiftly adapting to new technologies, seamlessly integrating them into their daily routines, utilising them for self-directed learning, honing problem-solving abilities in a connected environment, and creating and sharing content on the Internet.*

In today's age of technology, a strong online presence is imperative for businesses of all kinds, whether they offer travel services, sell clothing, or manage restaurants. Every business owner aspires to be where their potential customers are, and Search Engine Optimization (SEO) is a technique that can make this aspiration a reality. Therefore, it is advisable for every student to have a foundational understanding of SEO to apply it in their future endeavours.

When introducing students to the concept of SEO, it is not necessary to delve into intricate technical details. Instead, providing them with a basic understanding of SEO and highlighting the knowledge they've acquired in their earlier education is sufficient. The objective is for learners to establish connections between their existing knowledge and this new field, stimulating their interest in gaining further expertise in Search Engine Optimization. This approach encourages students to seek additional knowledge, remain motivated to apply what they've learned, and delve deeper into the subject matter.

The article presents research findings on what students learn about SEO in school and identifies the grades at which the subject of Search Engine Optimization is introduced. It scrutinises the learning content, draws conclusions, and offers well-founded recommendations regarding the selection of educational materials. Additionally, the article provides insights into the practical utility of this knowledge and offers specific exercises to enhance the learning experience.

Keywords: *Search engine optimization, Education, New generation.*

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3D TERRAIN GENERATION SUBSYSTEM

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Abstract: The article discusses a newly created subsystem for generating 3D terrain. Existing systems, their positive features and disadvantages are described. The need for the development of one's own is determined.

There are described the used technologies and algorithms - existing ones, recreated and new ones developed. The adapted mathematical apparatus for 3D modeling, pathfinding in space, coloring and terrain editing is described. As a result, it was created an original development (web-based client-server application), which can be used in creating games, virtual reality systems, virtual worlds, virtual routes into existing maps and objects, simulation of natural phenomena and cataclysms with subsequent training of rescue teams, etc.

The generated terrain/world can be exported from the environment and imported into another system where additional functionalities can be added to it.

Keywords: 3D terrain generation, Software Engineering, Information systems.

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CYBER SECURITY - MAIN DIRECTIONS

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Abstract: The article examines the main directions in the field of cyber security.

There are explored and summarized what cyber security is from several perspectives, the main directions out of dozens of possible ones. Fundamentals of network security and standards, information security, public opinion management, physical security, industrial security, risk management, access control, project management, risk assessment, and more are covered.

Some tools for monitoring traffic, defining vulnerabilities and protecting information in network security are implied. Some good practices and standards for data protection are discussed.

Keywords: Cybersecurity, Software Engineering, Information systems.

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RECURSION AND ITERATION: BRIDGING MATHEMATICAL PUZZLES WITH COMPUTATIONAL SOLUTIONS

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***Abstract:** Recursion and iteration are not merely programming constructs; they serve as pivotal tools linking computational practices to mathematical reasoning. This article delves into mathematical puzzles and challenges that can be addressed or illustrated through recursive or iterative approaches. It elucidates how computer science education can enrich and amplify critical thinking by employing mathematics as both a foundation and inspiration.*

***Keywords:** Recursion, Iteration, Mathematical puzzles, Education, Critical thinking.*

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APPLICATION OF PROPP'S MAPS IN THE STUDY OF "COMPUTER MODELING" IN 4TH GRADE

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Abstract: After the introduction of the "Computer Modeling" curriculum, a major problem arose in some schools - how not to lose children's interest in programming. Stacking blocks with sequential actions is always fun at first, until the process begins where children themselves choose and arrange the commands to animate a story they create.

This is where the fairy tale text comes in handy. As in the telling of any story, the sequence must be followed and there should be no unimportant details, so in the arrangement of the blocks there should be order and there should be no redundant blocks.

Vladimir Yakovlevich Propp, author of the book "Morphology of the fairy tale", examines a significant number of magical fairy tales and separates the recurring elements in them. On this basis, he creates 31 functions realizing the plot in the fairy tale. They are always in a strictly defined sequence, without necessarily all of them being present. Functions create a plan for ordering actions.

When children learn to create a story using maps based on the main elements in Propp's study, it becomes clean, concise, with strict sequence. In this way, students transfer their abstract thinking to the arrangement of blocks, acquiring skills to eliminate redundant commands.

This report presents a technology for using Propp maps in Computer Modeling training.

Keywords: Computer Modeling, Learning, Scratch, Prop maps.

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IMPLEMENTING THE A* ALGORITHM IN ETERNAL VIGIL

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Abstract: This paper delves into the exploration of advanced methods for enhancing pathfinding mechanisms in the context of game development, with a particular focus on optimizing the movement of monsters and mobs within the game world. Emphasizing the application of the A* algorithm, this research aims to assess its effectiveness and elucidate its potential advantages in enhancing the gaming experience. The study primarily employs the A* algorithm to develop a pathfinding solution that intelligently navigates monsters and mobs through complex game environments. The investigation extends to both theoretical analysis and practical implementation, leveraging the algorithm's capabilities to find optimal routes while considering different types of factors. Utilizing computational tools and gaming frameworks, the research employs the A* algorithm to model and evaluate pathfinding scenarios. This includes the creation of a simplified virtual environment to test the algorithm's performance and the integration of A* within the context of an actual game development project. The paper seeks to highlight the advantages and commercial viability of employing the A* algorithm for enhancing pathfinding in the realm of game development. Through empirical analysis and simulation, the study aims to provide valuable insights into the potential benefits and practical implications of this approach.

Keywords: A* algorithm, Dijkstra's algorithm, game, shortest paths.

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SELECTION CRITERIA FOR SOFTWARE TESTING SYSTEMS

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Abstract: *The modern software industry faces the challenge of finding the optimal balance between the cost required to produce a product and the time required to do so. The process of software product testing is a key point in software development, testing is an important step in ensuring the reliability and functionality of software systems and therefore requires special attention and precision. Dozens of test automation tools are currently available on the market and the selection of the right product is often critical to the successful implementation of a project. for this reason, this paper focuses on the underlying factors that should be considered when selecting a test tool. A comparative characterization of popular platforms on selected key factors is made. An appropriate methodology for selecting a suitable testing resource is described. Finally, some practices and their application in a way that best suits the needs of the software, business and users are summarized.*

Keywords: *testing systems, automation testing.*

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ACTIVE SUPPORT OF PRETEND PLAY IN KINDERGARTEN

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Abstract: Play is not only an activity desired by children, but a daily need for them, as well as a natural way in which they learn. This is a psychological regularity, and therefore preschool education must comply with it, assigning a significant place to play in children's daily life. In recent years, children's teachers organize and conduct pretend play less and less often, and as a result, the level of children's game culture drops significantly. The reduction of play and play skills has negative consequences for children's development. In this regard, the aim of this report is to outline ways for the rehabilitation of pretend play in the daily life of the kindergarten.

It was established that the pretend play rises to a higher level in the case of active support - tutoring - by the adult. Active support of the play can be implemented in four ways: educational pretend play, bringing in a new toy, integrated pretend play, involving the teacher in the children's free play. The report presents the requirements for their implementation. Practice shows that the results of active support of story-role play are beneficial for both the teacher and the children: The teacher has the peace of mind of working in a group that deals calmly, that loves and respects him; children not only satisfy their need for play and creative activity, but also develop harmoniously.

Keywords: pretend play in kindergarten; active support of pretend play.

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NEED FOR HEALTH KNOWLEDGE IN THE EDUCATION OF STUDENTS FROM THE "SOCIAL PEDAGOGY" SPECIALTY

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Abstract: Health knowledge and skills are built in early childhood and continue to accumulate in school and academic environments. Health topics are included in the curricula of various disciplines. Health knowledge, skills and habits in children and the elderly are a prerequisite for healthy behavior and practicing a healthy lifestyle.

The report presents and analyzes the need for health knowledge, as an important element in determining the needs of persons and children at risk in the socio-pedagogical sphere. Through the collected information and the indicated analyses, the necessity of the provided specific health knowledge and health information offered in the training course in the specialty "Social Pedagogy" is investigated.

Keywords: health knowledge, students, social environment, professionals, training, need.

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SOCIAL CHARACTERISTICS OF CHILD-PARENT RELATIONSHIPS

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Abstract: The report is dedicated to the analysis of the social determinants of child-parent relationships as a result of the influence of the transformation process of modern targeted family educational orientations. The system of family educational goals is an integrative characteristic of the entire process of formation and socialization of the child's personality, implemented within the family unit. It is constructed on the basis of parental value orientation, the motives and goals of parenting, the attitudes related to the application of a certain style of educational behavior and the educators' ideas about the desired appearance of the child; it is determined by the specifics of his age and individual characteristics and is realized through the complex influences and interactions of the family with other factors of socialization. the report describes the essence of modern trends in this direction, an analysis of the child's basic needs, characterizing the cognitive and socializing determinants of his relations with his parents, was made; the meaning and functions of game technologies in the considered context are clarified, as well as the areas of their application for creating effective child-parent interactions based on the possibilities of play therapy.

Keywords: Socio-psychological characteristics, Targeted family upbringing orientations, Child-parent relationships, Contemporary pedagogical problems of family education, Positive family upbringing,

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PLANNING FOR OLD AGE - THE ESSENCE OF ADULT CARE REFORM IN NORWAY

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Abstract: Care for the elderly in Norway, as in other European countries in general, will face serious challenges in the coming years as the number of elderly people increases. The Norwegian government envisages a reform that aims to address the challenges facing elderly care, which include a growing number of older people, a decline in the working population, the sustainability of the pension system, etc. The main objectives of the reform are to contribute to older people being able to live safely at home, better planning of health and care services, enhanced prevention, the introduction of innovation and technology, and achieving sustainable development. In order to achieve these objectives, inter-institutional cooperation will be supported and municipalities will be empowered and given more responsibilities.

Keywords: Norway, Elderly care, public services, sustainable development

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THE EXCURSION – A SPECIFIC ORGANIZATIONAL FORM OF GETTING ACQUAINTED WITH THE SURROUNDING WORLD

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Abstract: A typical peculiarity of the excursion as an additional form of pedagogical interaction is that in it, children communicate with real objects and perceive their features, which contributes to the personal development and diversification of the lives of adolescents.

This report presents the main steps in understanding the specifics of the excursion by the students - future teachers as a typical form of education in the ‘Surrounding World’ educational direction.

An excursion for children from the IV age group is described.

Keywords: Excursion, Surrounding world, Preschool age, Kindergarten

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OPPORTUNITIES FOR INITIAL TRAINING OF PLAY THERAPY PROFESSIONALS IN BULGARIA

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***Abstract:** The paper reviews the formal and non-formal parameters of initial training of play therapy specialists in Bulgaria. Special attention was paid to the structure and content of the courses available within the university curriculum programs and outside the formal education.*

***Keywords:** Play therapy, Initial training, Formal and non-formal education.*

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ORGANISATION OF EARLY CHILDHOOD EDUCATION AND CARE IN FINLAND

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Abstract: The paper focuses on the organizational aspects of Early childhood education and care in Finland. Special attention is paid to the access, the organisation of the centre-based institutions, the educational guidelines and the home-based provision. The purpose is to present an overview of the general structure of early childhood education and care compared to Bulgaria.

Keywords: ECEC, Finland, Bulgaria.

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SCIENTIFIC THEORIES OF LEADERSHIP STYLES AND THEIR IMPLICATIONS IN A CONTEMPORARY CONTEXT

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Abstract: This scientific material focuses on the theories of leadership, the leadership styles and their influences in a cultural and social context. It examines the scientific concepts of the leadership as a process and individual personality characteristics and emphasizes the interdisciplinary nature of leadership and its insufficiently extensive researches.

Keywords: Leadership Theories, Leadership Models, Social Value of Leadership.

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DIGITAL TOOLS FOR MONITORING AND ASSESSING LEARNING OUTCOMES

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Abstract: Digital tools for assessing the knowledge of primary school students can find a place both in the classroom during in-person or remote learning and during their self-study at home. These tools accelerate the assessment process, reduce subjectivity, track students' progress, and provide insights for future work.

Keywords: E-Learning, Assessment, Digital tools.

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APPLICATION OF PLAY THERAPY AS A METHOD OF CORRECTING CHILDREN'S ANXIETY

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Abstract: The paper reviews adolescent anxiety. Anxiety is a feeling of unease, that can be mild or severe. Everyone has feelings of anxiety at some point in their life. Special attention was paid to play therapy as a method of correcting children's anxiety. Techniques of play therapy are indicated. Play therapy is a psychotherapeutic method of influencing children of preschool and school age through the use of games, toys and other elements. Role-playing, which is the basis of this therapy, helps to identify children's behavioral, mental or developmental problems, teaches them how to solve these problems and helps to restore the child's mental and emotional health. The main rule of play therapy is to create comfort for the child, as he must feel confident and free, and this is the only way for him to learn to determine his inner state and be able to cope with problems.

Keywords: Anxiety, Play, Play therapy.

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A COMPREHENSIVE PHILOSOPHY OF INCLUSIVE EDUCATION

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Abstract: The philosophy of inclusive education is a system of pedagogical interactions aimed at forming ways of knowing and improving cognitive and socializing processes, i.e. forming methods of knowledge and self-knowledge, as well as improving the socialization of children and students. Preschool and school age are the most favorable periods for intensive development and upbringing of adolescents. The general level of learning, upbringing and development in this age period depends on the inclusion of the child in learning about the surrounding world.

The authors emphasize the exceptional role of training, upgrading, improvement and upbringing at this age, as a basis for all other types of training and activities, as well as for successful socialization, which in turn begins precisely from this age period. The scientific report presents effective forms, methods and means for developing the cognitive and sensory skills of children and students through a system of pedagogical interactions aimed at forming ways of knowledge and self-knowledge, to improve development processes.

Keywords: Inclusive Education, Evolving Philosophy, children, pupils.

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DIDACTIC ANIMATION IN EDUCATION OF STUDENTS IN BULGARIAN LANGUAGE AND LITERATURE IN THE BEGINNING STAGE

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Abstract: An actual problem of the educational process in our country is the low motivation of students for learning. It turns out that the application of didactic animation has a beneficial effect in this regard and increases the effectiveness of the learning-cognitive process. in the literature in our country, there are some studies that reveal the benefits of its use in primary school education. However, there are still not enough developments concerning the classroom-lesson form of teaching Bulgarian language and literature. Therefore, a model was created for the application of the animation approach in the education of elementary school students in this subject area. in order to establish the effectiveness of the model, an empirical study was conducted. The report presents the results of the testing of a complex of lessons with animated elements, which is part of the created sample. The purpose of this report is to reveal the impact of didactic animation in the education of students in Bulgarian language and literature in the elementary stage.

Keywords: Empirical research, animation, animation approach, education, Bulgarian language and literature, elementary school.

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**A MODEL FOR PRACTICAL APPLICATION OF THE USAGE FOR
DEFINITE AND INDEFINITE ARTICLE RULE IN 5TH GRADE**

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***Abstract:** The problems regarding the use of the definite and indefinite article for masculine nouns can be successfully overcome by searching for and proposing an individual approach by the teacher of the Bulgarian language, based on his/her professional and methodological training. The test tasks we propose are related to the specific learning content in the 5th grade curriculum.*

***Keywords:** using the article with masculine nouns, errors in using the definite and indefinite article, test task models.*

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[-%D0%B8%D0%BD%D1%82%D0%B5%D1%80%D0%B0%D0%BA%D1%82%D0%B8%D0%B2%D0%B5%D0%BD-%D0%BC%D0%B5%D1%82%D0%BE%D0%B4-%D0%BD%D0%B0-%D0%BE%D0%B1%D1%83/](https://www.institute-hr.com/%D0%B8%D0%BD%D1%82%D0%B5%D1%80%D0%B0%D0%BA%D1%82%D0%B8%D0%B2%D0%B5%D0%BD-%D0%BC%D0%B5%D1%82%D0%BE%D0%B4-%D0%BD%D0%B0-%D0%BE%D0%B1%D1%83/)

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THE CONCEPT OF WORLDVIEW AS A SIGNIFICANT CONSTRUCT FOR DISCOVERING THE VALUE ORIENTATION OF A TEXT

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***Abstract:** The paper summarises contemporary research and understanding on the conceptualisation of the notion of worldview. It also delves in major linguistic theories involved in studying worldview such as Systemic Functional Linguistics and the specific means of its realisation on discourse level. In relation to this, the relationship between the concepts of worldview, ideology and values is explored.*

***Keywords:** worldview, values, ideology, Systemic Functional Linguistics.*

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ON SOME ASPECTS OF THE CULTURAL MODELS OF THE FESTIVE TRADITIONS, RITES AND RITUALS OF BULGARIANS AND POLES

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Abstract: This paper examines the possibilities of adding Appraisal theory to the research tools of linguo – cultural studies. It provides some background information about the origin of the Appraisal model and outlines the basic concepts – attitude, engagement, and graduation. By providing illustrative examples of the application of Appraisal to the analysis of the use of proverb it seeks to prove the suitability of the theory for studies aiming to examine the link between language and culture. The translation of the terms suggested in the theory into Bulgarian and the detailed description of the categories and subcategories of the Appraisal theory aims to broaden the spread of the Appraisal model and to facilitate the exchange of ideas among scholars of various language backgrounds.

Keywords: Appraisal, Systemic Functional Linguistics, Interpersonal Meaning.

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THE DEEP STRUCTURE OF FAIRY TALE NARRATIVES AS A POINTER TO AXIOLOGICALLY SIGNIFICANT CULTURAL MESSAGES

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Abstract: *The paper investigates the role of the deep structure of fairy tale narratives as an important factor in construing culturally significant messages that play an essential role in building and maintaining values and ideologies in different communities and cultures. It compares the findings of Vladimir Propp from his influential study on the Russian folk tales in the Afanasiev's collection of Russian folk tales with the results from a study on the tales in Joseph Jacobs' "English fairy tales". The theoretical underpinnings include A. Greimas' actantial model and Vladimir Propp's classification of fairy tale characters and events according to the main roles and functions they perform in the tales. Conclusions are drawn on the cultural significance of the findings.*

Keywords: *worldview, values, folk tales, deep structure, Greimas' model, ideology.*

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TRANSLATION AS A FORM OF PROBLEM-SOLVING

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Abstract: *The paper focuses on problem-solving behaviour during the translation process. It is based on Chesterman and Wagner's (2002) classification of translation problems and strategies. Three broad types of translation strategies are discussed and backed up with illustrative examples. These translation strategies are used to solve three major types of translation problems: search problems, blockage problems, and textual problems. The latter attracted considerable interest on the part of translation scholars and practitioners while the former is a relatively under-researched area. The paper concludes that translation strategies are a powerful “conceptual tool” that can be used for “improving translation skills” (Chesterman 1997:93).*

Keywords: *translation process, problem-solving, search strategies, creativity strategies, textual strategies, translation skills.*

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ANIMAL GENRE IN CONTEMPORARY WATERCOLOR

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Abstract: One of the first types of human art since ancient times is the depiction of animals. The animal world has always been and remains an inexhaustible source of creative inspiration and interpretation for humans. Artists of different eras have always depicted animals in their paintings, trying to convey their impressive images through beauty, strength, and grace. The animalistic genre in modern watercolor exists as an independent genre, but has so far been less explored than other genres. Today, animal photography is somewhat forgotten by science, little studied and poorly presented to the general public. The article provides a brief overview of the creativity of individual contemporary watercolorists and their works in the spirit of animalism, supplemented by observations from artistic practice and the opinions of the author. This theoretical essay can be considered the initial stage of systematizing the features of the animalistic genre in watercolor for its further research.

Keywords: watercolor, watercolor painting, animalism, animalistic genre.

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WHERE HAS THE 'MAGIC' OF CHILDHOOD GONE? THE PLACE OF A FAIRY TALE IN PRIMARY SCHOOL READERS

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Abstract: *In this paper, we examine the place of the fairy tale in primary school readers from 1st to 4th grade with an analysis of the types and number of fairy tales, their ratio and distribution by grade. The fairy tale is a verbal carrier of multiple values and symbols of Good, Beauty and Nobility, which are the sculptors of children's spirituality. It is an important educational tool through which the child acquires life experience by imitating the good example of fairy tale characters. The content of the reading books for the primary school level includes works of various genres: fairy tales, stories, poems, fables, folk songs, riddles, etc. Fairy tales are loved by young pupils and preferred to other genres, as the fantastic element, the element of 'wonder', intrigues them greatly. The unusual setting in which the action takes place, the unlikely and unexpected incarnations of the characters attract young readers. The analysis of the fairy tales included in the curriculum of some of the approved readers shows the total dominance of the domestic fairy tales, followed by the animalistic ones and finally the magical ones. There is a tendency for the fairy tale, especially the magical fairy tale, to be increasingly squeezed out of the curriculum. Its dramatic reduction makes a strong impression, and its complete absence in the 1st grade reading books is, to say the least, perplexing and raises the worrying question - where has the 'magic' of childhood gone?*

Keywords: *Fairy tale, primary school, educational tool, reduction tendency.*

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**MELODIC LESSONS: TEACHING MUSICAL LITERACY AND
PERFORMANCE SKILLS THROUGH AUTHOR SONGS AND
INSTRUMENTS**

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Abstract: *This article examines the importance of music education and creative expression through music in the development of elementary school-aged students. Through an analysis of methods and practices in education, the article examines how music education combined with the performance of original songs and skills in playing musical instruments, designed collaboratively with students can assist the development of musical literacy and creative skills.*

The article presents examples of pedagogical practices that focus on stimulating individual expression and creativity. The paper also examines the positive influences of music on the cognitive development, social skills, and emotional satisfaction of students.

Keywords: *music education, musical literacy, author songs, designed collaboratively musical instruments, pedagogical practices.*

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SOME FEATURES OF THE HUMAN AUDITORY SYSTEM – PART 2

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Abstract: *The human auditory system has enormous capabilities for perceiving and processing sound signals. This paper is a continuation of the one presented at the last Russe University conference 2022, addressing additional important properties of hearing - loudness (perception of loudness) and masking (changing hearing sensitivity to certain sounds in the presence of others with specific parameters). The development of the latest three-dimensional surround sound reproduction systems is based on detailed knowledge of the characteristics and operating conditions of human hearing. This determines the importance, relevance and intensity of such research nowadays.*

Keywords: *psychoacoustics, loudness, critical hearing bands, masking, decibell, adaptation*

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REALITY AND REALISM IN DOCUMENTARY FILM SOUND DESIGN

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***Abstract:** The paper aims to discuss the subtle difference between the authenticity and realism in documentary films sound design. The realism and the reality in every audio- visual work are two completely different things. Often we hear a sound and, especially if it is accompanied by visual elements, we tend to accept it as authentic. When filming, we can't always make the perfect recording, regardless if this is a feature film or documentary. Even more- in documentaries there are much more obstacles. Often the situation changes unexpectedly and no matter how much time we spent in preparation, there is always a chance that something could get wrong. That's where the sound design lends a helping hand. Sometimes we need to augment some sound elements just to make the sound realistic. But does that compromise the authenticity? That's where the thin line between reality and realism lies.*

***Keywords:** sound design, documentary, films, realism, reality, authenticity.*

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EVOLUTION OF AUDIOVISUAL PRODUCTION FOR DIGITAL ENVIRONMENT

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***Abstract:** Developments in the digital sector are often defined as revolutionary, the report considers them as evolutionary, based on previous developments and experience. The focus is on the evolution of audiovisual formats created for online distribution, analysing them in historical, artistic and social contexts. The Internet is a medium that allows accessible and cost-free educational resources for anyone who wants to create and distribute audiovisual content, but this liberality leads to many negative consequences.*

This paper explores the philosophy and reasons behind the birth of the first vlog, which was the founding father of a popular online audiovisual format that has kept its core expressive tools unchanged to this day. It analyses the main factors that influenced the development of digital audiovisual content.

The paper reviews the relationship between digital content usage and depression in teenagers and young adults.

Keywords: Audiovisual, Digital, Production, Vlog, Depression.

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LOCATION SOUND RECORDING – “THE DISTANT RELATIVE” IN CINEMA

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Abstract: The paper focuses on the specifics of the location sound recording on a movie set. It addresses the various challenges for the production sound mixers fighting to record every single bit of dialogue in the scene but also struggling to deal with unobliging and grumpy attitude of directors and producers. It focuses on the problem and tries to find an answer of the question why the location sound recording process has been so disregarded in recent years from both crue and producers so it feels like a “distant relative on a family gathering”. Is it an easy task to replace the original audio with studio recordings; what additional post-production stages are involved, does it worth it and how good the new alternative is for the overall film-sound perception? Can the new A.I technologies help here?

Keywords: Movie, Location sound recording, ADR, Foley, Film sound, Dialogue recording

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DEVELOPING MUSICAL LITERACY IN CHILDREN THROUGH CLASSICAL GAME APPROACHES, ORIGINAL MUSIC GAMES AND DIGITAL EDUCATIONAL RESOURCES

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Abstract: The focus of the article is to present the author 's model of musical literacy. It is based on the idea of gamification, using didactic materials created by children, i.e., puppets and toys that are constructed on the principle of LEGO toys. The created versions are attractive for children, and a pre-arranged colour code allows the performance of a particular melody that can be played on traditional and non-traditional musical instruments. The process of making the puppets and toys by children is seen as a creative act that would contribute immensely to their further involvement in play actions. This would also facilitate the formation of attitudes and a deeper perception of the puppet as a partner in play and communication.

Keywords: Music education, musical literacy, play, composing, educational resources, puppet.

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**TECHNOLOGICAL MODEL OF A LESSON ON THE TOPIC
"COLLECTION AND MULTIPLICATION OF POSSIBILITIES"**

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Abstract: Combinatorics is an important branch of mathematics because it has applications in various aspects of modern life, including computer science, engineering, and statistics. This paper presents an innovative approach to developing a technological model for a combinatorics lesson, focusing on the topic "Addition and Multiplication of Possibilities". The model combines traditional teaching methods with the use of modern tools and resources. Through it, students have the opportunity to explore combinatorial concepts in a more interesting and engaging way by solving real-world problems. Emphasis is placed on developing critical thinking while encouraging active participation and experiential learning. The goal is to increase students' interest and motivation in learning mathematics and its applications in the real world.

Keywords: Education, Application of Combinatorics, Technology map, Lesson plan, Reflection, Opportunities, Combination without replacement, Graph-tree

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TECHNOLOGICAL MODEL FOR TEACHING ON THE SUBJECT "SETS AND OPERATIONS WITH THEM"

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Abstract: In mathematics education „The theory of sets“ contributes to using a unified approach to describe and systematize different scientific knowledge. This unitary approach saves time and mental effort on the part of students to develop their mathematical competencies. Therefore, it is appropriate to study this topic explicitly (in a separate lesson) in an enthralling and accessible way for children. This article presents a technology model that includes a Technology Map and a Lesson Plan for an introduction to set theory. The development can be directly used in school practice or it serves as an exemplary model for advance planning of learning activities in a modern and effective method.

Keywords: Education, Application of set theory, Technology map, Lesson plan, Personal and intellectual reflection.

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FRI-2G.307-1-ERI-03

DIGITALIZATION OF MATHEMATICS EDUCATION FOR FIFTH GRADE STUDENTS. EXAMPLES WITH LEARNIGAPPS

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Abstract: The usage of interactive materials in mathematics education opens new opportunities for teachers to present it as funny and interesting. Combining classical and modern methods in teaching allows to achieve a better dynamic, both in learning and in communication between a teacher and students. Selecting the right resources leads to increased student achievement, student satisfaction, and teacher satisfaction as well. Digital math games also bring a significant benefit to students - they are checked much faster, which means faster feedback.

The paper presents the platform LearningApps, which is suitable for practice and homework, as well as for ongoing control of knowledge. The atmosphere in the classroom when the students used games is significantly different from the usual tension - there is euphoria, "awakening" and competitive spirit.

Examples of games, developed by LearnigApps are given.

Keywords: LearnigApps, games, innovation

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SOME IDEAS ABOUT DIGITALIZATION OF MATHEMATICS EDUCATION FOR FIFTH GRADE STUDENTS WITH WORDWALL

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Abstract: The usage of interactive materials in mathematics education opens new opportunities for teachers to present it as funny and interesting. Combining classical and modern methods in teaching allows to achieve a better dynamic, both in learning and in communication between a teacher and students. Selecting the right resources leads to increased student achievement, students, and teacher satisfaction. Digital math games also bring a significant benefit to students - they are checked much faster, which means faster feedback.

The paper presents the platform WordWall, which is suitable for practice, homework and for ongoing control of knowledge. Different types of WordWall games are described.

Examples of games, developed by WordWall are given.

Keywords: WordWall, games, innovation.

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VOCATIONAL HIGH SCHOOL IN RIVER SHIPBUILDING AND NAVIGATION - A UNIQUE SCHOOL IN RUSE

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Abstract: The article describes the history, present and future of the Vocational High School for River Shipbuilding and Navigation in the city of Ruse. The material is the result of work on the project "Unique vocational schools in Bulgaria". The vocational high school is one of the 41 unique vocational high schools that were visited. The results of the work in the archive - Ruse and the interview with the director are presented. Eng. Ivelina Georgieva.

Keywords: vocational education, vocational school of river shipbuilding and navigation.

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EDUCATION MOTIVATION OF ADULT LEARNERS IN EVENING SCHOOLS

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The article examines the system of motives and its hierarchisation, guiding adult learners in evening schools to make the difficult choice to continue their education, the factors for preserving their motivation to learn for four years and the incentives to continue moving in the chosen direction. The goals set by adult learners and the actions taken to achieve them have been studied. Particular attention is paid to both the role of the teacher and the form of education to increase students in evening schools' motivation to learn. Present here are the results of an analysis of an interview conducted with the headmaster of an evening school and a focus group with students from an evening school.

Keywords: Motivation, Adult learners, Evening schools, Andragogy.

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INTEGRATING SCRATCH GAME IN MATHEMATICS EDUCATION FOR 5TH -7TH GRADES

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Abstract: The article presents the game "Math quiz for school" developed with Scratch. It can be used in an annual review of the whole school material or during a school year. The game aims to consolidate students' theoretical knowledge.

The developed Scratch game has been approbated in "Vasil Levski" Secondary School, and a questionnaire was conducted at the end of the lesson. After analysing the data, it was found that the children were ready for this type of lesson. The pupils developed their team-playing skills, decision-making on issues and logical thinking.

For the present and future generations, teachers need to adapt to the rapidly evolving technology and modernization of the world to attract and retain students' attention.

Keywords: Math quiz for school, Scratch, mathematical game.

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<https://scratch.mit.edu/>

FRI-2G.307-1-ERI-08

DEVELOPING AN INTERACTIVE LESSON ON MODELLING WITH LINEAR EQUATIONS

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Abstract: Science, art, and mathematics can all come together. Many children find mathematics too abstract and abstract. The free time they have left some spend in front of the TV or computer and some on the sports fields. Mathematics is all around us. To design and create a television, a computer or build a sports field requires not only scientific and engineering knowledge but also mathematical knowledge. This article presents an interactive math lesson for 7th grade. The idea of the lesson is for students to have fun while receiving information, to build skills that will be useful to them in everyday life and at the same time to update old and reinforce new knowledge. They will learn something new, different; the practical application of modelling problems with linear equations; that there is no boundary between different subjects.

Keywords: Interactive teaching, Linear equations, Math lesson.

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BASIC MODELLING PROBLEMS, NECESSARY TO TRAINING STUDENTS FOR NATIONAL EXTERNAL ASSESSMENT AFTER 7TH GRADE

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Abstract: The paper presents the importance of modelling problems for in the 7th grade. It looks at the main types of modelling problems with expressions, equations, and inequalities that students need to know for National External Assessment after 7th grade.

Keywords: Modelling problems, National External Assessment after 7th grade.

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FRI-2G.307-1-ERI-10

BASIC PROBLEMS SOLVED WITH VIETA'S FORMULAS, NECESSARY TO TRAINING STUDENTS FOR STATE MATRICULATION EXAM AND NATIONAL EXTERNAL ASSESSMENT AFTER 10TH GRADE

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Abstract: The paper presents the types of math problems studied in school and solved using Vieta's formulas. The types of problems that are found in the exam materials for State matriculation exams and National external assessment after 10th grade are examined.

Keywords: Vieta's formulas, National External Assessment after 10th grade, State matriculation exams.

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SAT-2G.307-1-ERI-01

**APPLICATION OF THE FIVE-LEVEL MODEL OF TEACHING
MATHEMATICS ON THE TOPIC OF BIQUADRATIC EQUATIONS**

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Abstract: This paper presents Biquadratic equations. This topic is a part of the Quadratic equation's module, which is included in the compulsory Mathematics curriculum in the 8th grade. The Five-level Mathematics teaching model suggested by A. Lecheva has been applied. The model's stages are described, and relevant examples and math problems have been selected. The developed methodology is applicable for both - traditional and distance education.

Keywords: Biquadratic equations, Quadratic equations, Five-level teaching model.

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ASSESSMENT TEST FOR THE QUADRATIC EQUATIONS MODULE USING THE SMARTEST ONLINE PLATFORM

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Abstract: This paper presents assessment test for the Quadratic Equations module using the SmarTest online platform. It is suitable as exam tool for knowledge and skills of students in the module Quadratic Equations, included in the Mathematics curriculum in 8th grade. The capabilities of the platform SmarTest are used. The steps of creating the test are shown.

Keywords: Quadratic equations, Five-level teaching model, SmarTest platform.

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SAT-2G.307-1-ERI-03

TRANSFORMING EDUCATION FOR THE 21ST CENTURY LEARNER. LEARNING AND TEACHING TRENDS IN HIGHER EDUCATION

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Abstract: In contemporary education, innovative teaching methodologies are reshaping the landscape of learning, aiming to enhance student engagement, performance, and interest. This comprehensive paper synthesizes diverse educational approaches, including Flipped Classroom, Collaborative Learning, Peer-to-Peer Learning, and Project-Based Learning, among others, providing an in-depth analysis of their implementation, benefits, challenges, and outcomes. The paper delves into specific case studies, highlighting the transformative impact of these methodologies in real-world educational settings. Through rigorous comparative analysis, the study reveals the superior efficacy of innovative methods, such as the Flipped Classroom model, in fostering profound understanding, active engagement, and a genuine passion for subjects like mathematics. The findings underscore the importance of embracing modern pedagogical techniques to create dynamic and inclusive learning environments, ultimately preparing students for the challenges of the 21st century. This paper serves as a comprehensive resource for educators, administrators, and policymakers, offering insights into the practical implementation of these methods, strategies for overcoming challenges, and recommendations for creating enriching educational experiences. As education continues to evolve, this paper provides a roadmap for harnessing the potential of innovative teaching methodologies to unlock the full potential of every learner.

Keywords: Innovative Pedagogies, Educational Technology, Teaching Methods, 21st Century Education.

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SAT-2G.307-1-ERI-04

GIRLS - GENERATION FOR INNOVATION, RESILIENCE, LEADERSHIP AND SUSTAINABILITY PROJECT

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Abstract: The paper goes into the imperative role of the current generation in driving transformative change across various domains. Focusing on innovation, resilience, leadership, and sustainability, the paper examines how these interconnected concepts play a crucial role in shaping the future of society, economy, and the environment. The paper highlights the significance of innovation as a catalyst for progress, exploring how new ideas, technologies, and approaches are fundamental in addressing global challenges and driving economic growth. It emphasizes the need for fostering innovation ecosystems that support entrepreneurship, research, and development. In the context of resilience, the paper analyses the increasing frequency of disruptions, such as natural disasters, pandemics, and economic crises, and underscores the importance of equipping individuals and communities with the capacity to withstand and recover from such shocks. Resilience-building strategies, from adaptive governance to social safety nets, are explored to enhance societal preparedness. Leadership emerges as a pivotal aspect, with the paper shedding light on the qualities and responsibilities of effective leaders in guiding organizations and societies towards a sustainable future. It emphasizes ethical decision-making, inclusivity, and the ability to inspire collective action as key traits for transformative leadership. Sustainability forms a central theme throughout the paper, as it examines the pressing need to balance economic growth with environmental stewardship and social equity. The paper delves into sustainable practices in sectors like energy, agriculture, and transportation, emphasizing the importance of responsible resource management and reducing carbon footprints. Furthermore, the paper addresses the vital role of education and intergenerational collaboration in fostering a sense of ownership and responsibility among the current generation to drive positive change. It emphasizes the need for mentorship and knowledge-sharing across age groups to ensure continuity and the passing on of wisdom. "Generation for Innovation, Resilience, Leadership, and Sustainability" - GIRLS project calls for concerted efforts from individuals, communities, governments, and businesses to collaborate and embrace sustainable practices, innovative thinking, resilient approaches, and transformative leadership to create a more prosperous and sustainable world for future generations.

Keywords: Sustainable development goals, Innovation, Resilience, Leadership, Active methodologies, Effective Teaching.

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UNIVERSAL DESIGN FOR LEARNING – AN EQUAL OPPORTUNITY TO SUCCEED

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Abstract: *The Universal Design for Learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn. The paper presents research results on the Universal Design for Learning and its benefit for equity, diversity, and inclusion; the principles of UDL application and their applicability in marginalized classrooms; and reviews the main differences between traditional education and education based on UDL. The research was organized in the frame of the European Erasmus+ project MEDUS: Innovative educational approaches and practices for migrant pupils to maximize the effectiveness of their social inclusion and school performance 2021-1-LT01-KA220-SCH-000024051 <https://medus-project.eu/>. Information about the theoretical background and successful practices of developing professional competencies of teachers and special educational staff to create an inclusive academic, social, and emotional environment for migrant pupils is presented.*

Keywords: *Universal Design for Learning, Innovative Educational Approaches, Migrant Pupils, MEDUS.*

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CONCEPTUAL MODELS AND METHODS FOR IMPROVING THE EDUCATIONAL PROCESS IN ACCOUNTING BUSINESS ANALYSIS OF THE ENTERPRISE

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Abstract: *The report offers approaches, models and methods for improving the educational process of accounting business analysis of the enterprise in economic universities. The need to improve the educational content and teaching methods is argued. Possibilities for using non-traditional, active and interactive learning methods in the conditions of digitization of the educational process are explored.*

Keywords: *accounting business analysis, training, interactive methods, games, digitalization.*

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**SIGNIFICANCE OF THE ADAPTED PHYSICAL ACTIVITY AND SPORT
IN COMPLEX REHABILITATION ³**

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Abstract: Physical activity is for everyone, without any restrictions regarding physical or mental condition, age, or gender. Sports is essential for all people, but for people with disabilities, it is even more important, since most of them are deprived of conditions for independent sports, due to the lack of architectural access, due to the insufficient number of free sports facilities or due to the lack of funds to pay for the necessary sports facilities. Sports and physical exercise are one of the main ways to achieve physical, social, and emotional well-being of persons with disabilities.

The main challenge to society is to give these citizens the opportunity and equal chance for a full performance in all spheres of public activity, including sports. In this regard, this article objective is significance of the adapted physical activity and sport in complex rehabilitation.

Keywords: Adapted Physical Activity, Physical Activity, Sport, Complex Rehabilitation, Integration, Socialization, Quality of Life.

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THE APPLICATION OF MANUAL MOBILIZATION TECHNIQUES IN ELBOW INJURIES⁴

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Abstract: The elbow joint plays an important role in the kinematics of the upper limb. It allows the hand to assume different positions to ensure the performance of daily activities. Injuries to the elbow complex are common and can range from minor soft tissue injuries to complex osteoligamentous injuries. They are one of the most difficult to treat and physiotherapy injuries of the upper limb. This is due to the complex anatomical arrangement involving several articular surfaces and their congruence. The elbow complex includes three synovial joints: humeroulnar (art. humeroulnaris), humero-radial (art. humeroradialis) and proximal radio-ulnar joints (art. radioulnaris proximalis). Kinematically, the distal radioulnar joint is added to the elbow joint, due to its participation in the complex pronosupinator movements. Stability of the elbow joint during movement is provided by bony and articular congruence and soft tissue components consisting of the static capsule and collateral ligaments and the dynamic muscles crossing the joint. Mobilizations of the elbow complex (passive or combined with movement) are an integral part of complex kinesiotherapy to overcome post-traumatic limitations. The most frequently applied techniques are: passive joint mobilization; mobilization with Mulligan movement; myofascial release techniques and manual soft tissue mobilization. Manual mobilization techniques improve tissue trophicity, reduce pain and help increase range of motion in the elbow joint.

Keywords: elbow injuries, passive joint mobilization; mobilization with Mulligan movement; myofascial release techniques, manual soft tissue mobilization

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EXERCISE RECOMMENDATIONS TO PREVENT OSTEOPOROSIS⁵

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Abstract: Osteoporosis is one of the most common diseases of the musculoskeletal system, occurring with an imbalance of the processes of bone formation and resorption, as a result of which the density and quality of the bone deteriorate, the strength of the skeleton decreases and the risk of fractures increases. This necessitates increasing the level of awareness among the population about the disease, risk factors, methods of prevention, and also conducting screening for early diagnosis. The benefits of exercise for the prevention of osteoporosis are that it increases muscle strength; improve movement coordination; reduce bone loss; improve balance reactions and reduce the risk of falls and fractures; support cognitive function. All this improves the ability to perform daily activities and maintain a good quality of life.

Keywords: Osteoporosis, Exercise, Prevention, Physical therapy

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GENERAL TECHNIQUE FOR MASSAGE FOR FRACTURES⁶

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Abstract: The paper reviews general methodology of massage in the treatment of fractures aiming to support bone-tissue and functional recovery. Massage therapy is applicable and effective regardless of the type of fracture and the recovery phase. The plan for application of massage in recovery after fractures is tailored to the phases of bone regeneration. The massage is carried out in two periods: immobilization and post-immobilization. In the maximum-protective periods, the massage is done outside the focus of pain, in the moderately-protective ones, the massage is atraumatic with the gradualness of the grips included in strength and depth, and in the minimal-protective periods, the massage is detailed and selective depending on the occurred contractures. Massage can significantly prevent the negative consequences of immobilization, improve the quality of bone callus, improve the quality of life of fracture patients, and support their functional recovery.

Keywords: massage, fracture, functional recovery, bone regeneration

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COMMON SELF-CARE ISSUES OF DISABLED PRESCHOOL CHILDREN

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Abstract: *The paper reviews the importance of self-care occupations for disabled children and their common problems in this area. Children in preschool age need to be independent in self-care in order to develop further their potential for the future. Assessment of group of children with physical dysfunctions, autism and genetic disorders is conducted with the aim to obtain better understanding of the reasons for their common self-care issues. The research findings show dysfunctions in habituation, process skills, sensory integration, motor skills and the most difficult occupations for the study group are dressing, feeding and drinking.*

Keywords: *Disabled children.*

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BUILDING A SYSTEM FOR THE ASSESSMENT AND DEVELOPMENT OF PROFESSIONALLY RELEVANT QUALITIES OF MARITIME PROFESSIONALS. POSSIBILITIES OF INCORPORATING APPARATUS METHODOLOGIES

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Abstract: Each profession has requirements demands on the health, physical and mental state of the people who practise it (5). Maritime professionals are a large group of people exercising professions related to the sea, including divers, rescuers, seafarers, etc. The development of compulsory qualities necessary for the performance of the duties is carried out through the familiar triad of knowledge acquisition, skills development and habit formation. This requires a clear assessment of the individual's abilities and resources to cope with the specific demands imposed by the marine professions (1)(4). Good physical condition is a prerequisite for the development of optimal physical endurance and the skills to maintain a high level of situational alertness (2), crucial in the work of marine professionals. At the beginning of the training of marine professionals such as lifeguards, divers, etc., physical fitness assessment is required. This enables subsequent training to focus on building, maintaining and upgrading the necessary professional skills, taking into account the individual characteristics of the trainees. A clear assessment is also needed of the individual's mental resources to cope with high stress, conflict resolution skills and speed of decision making, qualities important in the activities of marine professionals. This provoked the development of a system for assessing the physiological and psychological functioning of marine professionals, who are continuously being developed and upgraded. In this summary, we present the results of years of working and researches conducted with marine professionals to assess and develop professionally relevant qualities (3). The system includes the examination of body fat, spirometry, stress resistance, derivation of individual stress profile, assessment of the current mental state of the examined person. Experience has shown that incorporating feedback and illustrating the results obtained through the use of instrumental methodologies (biofeedback) motivates marine professionals. The display of individual results allows each examinee to obtain a realistic assessment of their available resources and this helps to focus on an individual level on developing and upgrading professionally relevant qualities. This provides a justification for incorporating new instrumental methodologies in future research orienting towards the assessment of professionally relevant qualities.

Keywords: assessment, development, professionally significant qualities, maritime specialists

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ZONE THERAPY AND PREGNANCY

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Abstract: *Pregnancy is one of the most important periods a woman goes through, requiring adaptation of the body to changes in physiology, psyche and social and life. It normally lasts 9 months and causes changes in the hormonal balance of the female body, stress levels increase, and sometimes complications may also occur. Nowadays, kinesitherapy occupies an important part of an expectant mother's daily life, counteracting the stress and favoring her physical and psycho-emotional health. Zone therapy is an alternative method that in a reflex way, it affects the improvement of the function of the internal organs and blood circulation and can be administered with a curative-prophylactic purpose in some often common conditions and complications during pregnancy - reduces anxiety and depression, nausea and vomiting, improves immune function, musculoskeletal and autonomic nervous system, can minimize the risk of cardiovascular diseases, to prevent the appearance of edema on the limbs, to affect attention deficit, loss of balance, etc. It gives an opportunity for impact especially at times when motor activity is limited during pregnancy and could complement the individually prepared and kinesitherapeutic program. The purpose of this article is to investigate the effectiveness of the application of zone therapy for pregnant women.*

Keywords: *kinesitherapy, zone therapy, pregnancy*

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POSTURAL, MYOGENIC AND MYOFASCIAL SOURCES OF PAIN IN THE LUMBAR SPINE

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Abstract: *Physiotherapists have a large range of functional diagnostic tests with which they can differentiate the structures that are the source of complaints. Accurately locating the structures that create pain and dysfunction is related to a good knowledge of the diagnostic and clinical criteria. Only when there is a correct analysis of the problem can the tasks and the means to have a beneficial effect on health be determined.*

Keywords: *physiotherapy, low back pain, posture, myogenic pain*

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BIOMECHANICAL RATIONALE AND KINESITHERAPEUTIC STRATEGIES IN KYPHOSIS⁷

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Abstract: *The human spine normally has a double S-shaped curve. In the cervical and lumbar regions, it protrudes forward and is called lordosis. In the thoracic and caudal region, it protrudes backwards and is called kyphosis. Slight curvature of the spine is normal and is called physiological curvature. Kyphosis is a deformation of the spine in the thoracic region by more than 40-45 degrees. The treatment of spinal curvature depends both on the causes of its occurrence and on the degree of complications caused by it.*

Keywords: *spine, kyphosis, thoracic lobe, deformity*

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RATIONALE AND INITIAL GUIDELINES FOR DEVELOPING A BULGARIAN OCCUPATIONAL THERAPY HANDWRITING ASSESSMENT TOOL

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Abstract: *The aim of this paper is to present a rationale behind the need of developing an occupation-based handwriting assessment tool designed with the Bulgarian educational context in mind and applicable for Bulgarian elementary school students. The paper gives initial guidelines for developing such an instrument based on a comparative overview of occupational therapy handwriting assessment tools existing abroad.*

Keywords: *occupational therapy, handwriting difficulties, handwriting assessment tool, inclusive education*

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FLAP OPTIONS IN SOFT TISSUE COVERAGE OF THE LOWER LEG⁸

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Abstract: Coverage of soft tissue defects in lower leg, especially after open tibial fractures, is problematic because of the insufficient skin coverage. The combination of open fracture and soft tissue defects increases the chances of delayed fracture healing and nonhealing. There is a wide variety of free, muscular or pedicled flaps for the lower leg reconstruction. This paper reviews the different flap options for soft tissue coverage depending on injured region and the most reliable surgical procedure. We use gastrocnemius muscle flap for injuries in the proximal third of the tibia and soleus or hemisoleus muscle flaps for middle third of the tibia. The distal part of the tibia could be reconstructed with sural flap or tibialis anterior muscle flap. Free flaps could be used in all regions. Massive defects extending in two or more regions could be reconstructed with a combination of two flaps. We also provide a short description of the surgical procedure of each flap.

Keywords: Soft tissue coverage, muscle flaps, free flaps

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LOCAL ANTIBIOTIC APPLICATION IN OPEN LOWER LIMB FRACTURES

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Abstract: The paper reviews existing methods of local antibiotic delivery systems, as well as our clinical experience in the treatment of complex open lower limb fractures. We present our current treatment algorithm. The indications and limitations of polymethyl methacrylate (PMMA) loaded beads application are discussed in the context of current literature review.

Keywords: Local antibiotic, open lower limb fracture, infection

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20-YEAR-OLD FEMALE SUBJECT WITH SEVERE COGNITIVE DELAY AND SERIOUS POSTURAL PROBLEMS, FOLLOW-UP AFTER 30 DAYS OF ASSOCIATED POSTURAL ERGONOMICS AND PSYCHOLOGICAL TREATMENT

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Abstract: Idiopathic scoliosis in a 20-year-old female. The person is also affected by severe cognitive delay for which a precise etiopathogenesis is not known. The person had been treated in the past with psychotherapeutic and physiotherapeutic protocols which led to his current condition. The subject was treated with the B.A.E. method. for postural recovery and at the same time a psychotherapeutic path associated with the use of Universal Integrative Medicine method was started by Dr. Nader Butto and the 10 laws of R. Assagioli. The result was evaluated after thirty days of treatment and the results are very encouraging from both a postural and psychological point of view, so much so that questions arise about possible relationships between cognitive delays and posture. The girl was previously treated only with physiotherapy protocols with insufficient results for years. During medical, physiotherapeutic and psychological management. A new psychotherapeutic treatment associated with postural treatment with the Biomechanical Anthropometric Ergonomic method improved both posture and cognitive aspect in just thirty days.

Keywords: Posture, Biomechanical ergonomic anthropometric method, scoliosis, back pain, cognitive delay.

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**HOMOCYSTEINE -PREDICTOR OF PATHOLOGICAL CHANGES
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Abstract: Homocysteine is a naturally occurring amino acid, a variant of cysteine. It differs from it in that it contains one additional methylene group. It is produced in the body as a byproduct of methylation, the process of making an essential protein called methionine. The metabolism of homocysteine depends on the levels of vitamin B12 and folic acid in the body. The reason for its increase can be a genetic defect, kidney damage, taking certain drugs, diabetes, rheumatoid arthritis, liver and kidney diseases, deficiency of vitamins B 12, folate and vit. B 6. Folic acid is one of the vitamins of group "B", which is necessary for the metabolism of homocysteine. In normally functioning cells, homocysteine is rapidly converted to other products. Vitamin B12, another B vitamin, helps keep folate in an active form, allowing it to keep homocysteine levels low. High levels of homocysteine are thought to increase the risk of coronary heart disease, increase the risk of death from cardiovascular disease, even more than other pathologically elevated indicators such as cholesterol and triglycerides, are associated with a higher risk of neurovascular disease, development of dementia, migraine, neurodevelopmental disabilities or epilepsy. According to world studies, it is accepted that homocysteine is a key clinical and laboratory indicator for proving the development of a disease, determining the health and longevity of a person.

Keywords: Homocysteine, Amino Acid, Predictor, Metabolism, Clinical-laboratory indicator.

JEL Codes: L10, L11

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THE METHODOLOGY OF HEALTHCARE TRAINING – TECHNOLOGY FOR TRAINING FUTURE HEALTHCARE SPECIALISTS

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Abstract: *The methodology of education in health care is a technology in the process of formation of future health professionals. It includes the purposeful, systematic and specially organized interaction between the subjects of education and upbringing, between society and the individual, between the individual and social communities.*

The harmoniously formed personality of the specialist, trained with the help of the methodology, represents a unity of ideological, intellectual, moral, aesthetic and emotional life. The characteristic features of the harmoniously formed professional personality of the future specialists acquired through the technology - health care training methodology are: balanced ratio and optimal proportions, proportionality between the parts of the overall human personality, unity between physical, mental and social development, between general and professional abilities, between multifaceted training and close professional development; proper internal organization, orderliness, structuredness of the overall system, which is characterized by stability, strength, strength and relative completeness; internal dynamism in which harmonic and disharmonic intervals alternate; completeness, monolithicity, unique uniqueness and distinctiveness; socio-psychological adaptation and integration of an open and self-managing system in the process of its continuous creative development, realization and self-improvement in the direction of more humanism; activity in the struggle to establish harmony in life and to overcome any obstacles and barriers on the way to its realization. The formation of the harmonious personality of future medical specialists in the conditions of the methodology of training in health care in the higher school are interpreted through: striving to satisfy human needs - healthy or sick; striving for initiative, combined with creative activity in finding a solution for the maximum benefit of the patient and society; developing awareness of humanity, duty and responsibility.

Keywords: Healthcare training methodology, Technology, formation, Future healthcare professionals.

JEL Codes: I12, I14

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NARCOLEPSIA - A DISEASE WHICH MAKES YOU FALL ASLEEP

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Abstract: Rare diseases are serious, often chronic and progressive diseases. In very rare diseases, symptoms can be observed at birth or in childhood. According to the generally accepted European definition, a rare disease is considered one with a prevalence of no more than 5 per 10,000 people in the EU. The term "rarity" is too relative. Although each rare disease occurs in a very small part of the population of a country, if they are summed up as a whole, due to the large number of nosological units (more than 6000), rare diseases become a serious public health problem of any health system. Rare diseases are a serious public health problem and pose a threat to the health of EU citizens. Late and misdiagnoses of patients with rare diseases are common and often result in a medical, physical, and mental burden for the patient and a financial and emotional burden for the family. It is believed that low awareness of rare diseases is one of the reasons for late and wrong diagnoses. One of the diseases recognized as a rare disease is narcolepsy, which has a prevalence of between 20 and 50 per 100,000. Narcolepsy is a neurological disease characterized by chronic excessive daytime sleepiness, cataplexy, hypnagogic hallucinations, sleep paralysis and disturbed night sleep. It is difficult to determine the true number of sufferers, as narcolepsy often goes undetected or is misdiagnosed. The disease can appear at different ages - from infancy to 50 years of age. It is considered a lifelong condition that usually does not progress. It is a chronic and debilitating disorder with a peak onset at age 15 and a second peak at age 35 that requires lifelong treatment. During the period 30.04.23-30.05.23, a survey was conducted on the awareness of the students of the Medical Assistant specialty at RU "Angel Kanchev" and the Nurse and Midwife specialty at the Varna University of Medical Sciences, Sliven branch, about the disease Narcolepsy. Analysis of the responses found low awareness of rare diseases and narcolepsy in particular. As a consequence of the obtained results, an information bulletin was prepared, a seminar and a talk were held in order to control the established deficit of awareness about the disease narcolepsy.

Keywords: Narcolepsy, Rare diseases, Daytime sleepiness, Cataplexy, Sleep paralysis.

JEL Codes: I12, I14

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BURNOUT SYNDROME IN THE CONTEXT OF PROFESSIONAL ACTIVITY

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Abstract: The professional burnout is one of the serious problems of modern professional activity and the WHO defines it as a disease of the XXIst century. Occupational burnout involves physical, mental and emotional exhaustion caused by excessive and prolonged stress. Occupational stress affects health in biological, social and psychological aspects. In addition to personal well-being, the development of burnout syndrome harms the health of organizations and disrupts the quality and efficiency of the work process. In the article is also analyzed the influence of professional activity on the manifestations of burnout.

Keywords: Professional burnout, Professional activity, Work process.

JEL Codes: J24, J83

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NATURAL IMMUNE DEFENSE AND OMNIBIOTIC

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Abstract: Immunotherapy, also called biologics, is a type of anti-tumor that activates the natural defenses in the human body to fight cancer. This is done by using substances produced in the body or in a laboratory to improve and restore the natural function of the immune system.

Microbiological therapy proves that the whole is greater than the sum of its parts. In many studies, it has been found that the combination of probiotic symbionts, which can be active in the small intestine and in the large intestine, have a more positive effect on the barrier action, the stimulation of the body's resistance forces, the provision of nutrients and the production of vitamins in the gut than these individual components can achieve. One of the most important protective mechanisms of the respiratory tract against various irritants is the mucociliary system. It consists of three elements: (a) a mucus gel to which foreign particles adhere; (b) periciliary serous fluid and (c) cilia of the epithelial cells, which, by their characteristic movements, move the mucus with its adherent particles towards the pharynx (mucociliary clearance).

Keywords: Immunotherapy, Immunity, Health, Health risk

JEL Codes: I12, I14

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EVALUATION OF PAIN, DISABILITY AND DEPRESSION IN PATIENTS WITH LOW BACK PAIN DUE TO DISC HERNIATION

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Abstract: Low back pain (LBP) is an important medical, economic and social problem and a leading cause of disability in the modern world. In 90% of cases it is non-specific, but in 10% it is due to a specific disease, including damage to the intervertebral discs due to disc herniation (DH). Despite the high prevalence of asymptomatic disc herniations, symptomatic cases are the cause of frequent hospitalizations, and unsatisfactory results of treatment and impaired quality of life of these patients are reported. The symptoms of disc herniation are a combination of nociceptive pain and neuropathic pain, which is a therapeutic challenge, lost of sensory and motor symptoms, as well as the presence of a vertebral syndrome that limits the mobility and worsens the patient's gait. This leads to a significantly impaired quality of life, related with the disease (HRQoL).

In this article, we present our study on the extent of pain, disability and depression in patients with LBP due to disc herniation, including according to gender, age and place of residence.

Keywords: Low Back Pain (LBP), Disc Herniation (DH), Health Related Quality of Life (HRQoL), Pain, Disability

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**EMOTIONAL INTELLIGENCE IN THE TRAINING AND PROFESSIONAL
ACTIVITY OF THE NURSE**

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Abstract: *The learning process and the professional activity of the nurse are related to interaction at different levels. This interaction requires both certain personal qualities, professional knowledge and skills, as well as social and communicative competences. Achieving high levels of social and emotional intelligence is an important condition for professional and quality nursing care. A large part of the nurse's activities require proper management of one's own emotions, as well as recognizing and managing the emotions of patients and other members of the professional team. In the literature, authors include different components of emotional intelligence. The ability to react adequately in a specific situation, dealing with negative emotions, showing empathy, strong motivation and self-control of the nurse are manifestations of emotional intelligence and high professionalism.*

The need for training nurses in terms of emotional intelligence is determined by the frequent, publicly disclosed cases of aggression and conflicts in medical facilities. The reasons are two-fold: on the one hand, the ever-increasing aggression shown by patients and their relatives, the lack of trust and recognition of the authority of professionals working in medical facilities, and dissatisfaction with the health care system. On the other hand, there are the problems of medical specialists working in medical institutions: the long-lasting and deepening personnel crisis, the lack of motivation and job satisfaction, as well as the lack of knowledge and experience to deal with emotionally negative situations.

Keywords: *Emotional intelligence, Nursing, Training, Professional activity, Conflict management and aggression*

JEL Codes: *I10*

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MODERN APPROACH TO DIAGNOSTIC AND TREATMENT OF DEEP PELVIC ENDOMERIOSIS

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Abstract: Endometriosis is one of the most common benign gynecological disease, among women in reproductive age. It affects up to 10% of women, presenting mainly by infertility, dysmenorrhea, chronic pelvic pain (1). Most common, endometriotic lesions can be found in the pelvis. There are three different forms of endometriosis according to the position – superficial, ovarian and deep. Deep endometriosis is described as involvement of endometrial like tissue with depth 5 mm and more under the peritoneum (2). Diagnosis of endometriosis is often delayed and set when the disease is advanced. It takes from 4 to 11 years and 65% of women were initially misdiagnosed (3). Main modern approach for diagnose of deep endometriosis is usage of imaging diagnostics. Diagnostic tools with best sensitivity and specificity are MRI and transvaginal ultrasound (TVU). TVS is the most accessible tool for diagnosis. Usually it is the first method used in symptomatic patients with sensitivity and specificity of diagnosis similar to those for MRI, when performed by a specialist with appropriate expertise. It is cost-effective and accessible. Treatment of deep endometriotic lesions can be challenging. Often lesions affect extragenital organs in the pelvis and cause severe adhesions. Surgical removal needs a multidisciplinary team and could be related to intra- and postoperative complications. Conservative hormonal treatment can also be used independently or pre- and postoperatively. Recent aspects of conservative treatment for endometriosis include lifestyle changing, nutrition diet, antioxidative therapy and anti-inflammation therapy. Therapeutic approach when deep endometriosis is diagnosed has to be individual, according to patient's age, symptoms and specific features.

Keywords: Deep endometriosis, Diagnostic, Treatment

JEL Codes: : I 12

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**MIDWIFE LED MODEL OF CARE – IS MIDWIFERY IN BULGARIA
READY FOR IT**

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Abstract: *The Midwife Led Model of Care is comparatively not very popular in Bulgaria. Although it has strong standing and traditions in different countries of the EU, especially in Great Britain, it hasn't garnered much attention in our country. Its advantages in regard to both health results for women, babies and families, and for the Healthcare economy give us a strong ground to investigate the potential to popularise the Midwifery Model of Care in Bulgaria. This article explores the challenges and possibilities of implementing the Midwife Led Model of Care nationally. It looks at Bulgarian midwives' readiness to register autonomous midwife practices and offer such care. The current level of awareness and attitudes is reviewed and authors discuss midwives' motivation regarding this topic. Challenges are explored and the importance of implementing the model is discussed. Conclusions are drawn and main directions for encouraging the Midwifery Model of Care are listed.*

Keywords: *Midwife Led Care, Midwifery Model of Care, Private Practice Midwife, Patient Centred Care, Autonomous Midwife*

JEL Codes: *I10*

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MOST COMMON NEONATAL SKIN AND EYE INFECTIONS

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Abstract: Infections of the newborn baby are an essential part of neonatal period pathology. Neonatal infections are those acquired during the prenatal development or during the first four weeks of baby's life. Premature babies and newborns with very low birth weight are most at risk to develop such infections. Some neonatal infections are present immediately after birth, while other may develop during the postpartum period. Intrauterine infections are caused by the baby being infected with microorganisms in utero or during birth. Most often, diseases caused by intrauterine infections are traced back to sexually transmitted diseases. Diseases of the newborn can also be caused by maternal chronic disease (diabetes, heart defects, toxic effects during pregnancy - medication intake, smoking, alcohol abuse). Newborn illness requires timely consultation with a neonatologist or paediatrician, prompt diagnosis, and adequate treatment. This report presents the most common skin and eye infections in newborns in the postpartum period, as well as their prevention and treatment.

Keywords: newborn, skin, skincare, eyes, infections, prevention, treatment

JEL Code: I12

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BARTTER'S SYNDROME – REVIEW OF LITERATURE AND CASE REPORT

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Abstract: Bartter's Syndrome is a rare, autosomal recessive disease with variable genetic forms affecting renal tubular structures. The disease may be observed either in prenatal or in newborns, babies, young children, adolescents and adults. The genetic disorder occurs as an error of ionic transport through the ascending loop of Henle. As a result appear a defect in sodium, chloride and potassium transport, metabolic alkalosis, polyuria, dehydration. These processes result in volume contraction and stimulate the renin – angiotensin II – aldosterone axis.

Bartter's syndrome is associated with polyhydramnios, prematurity in the prenatal period. In newborns and later is manifested with dehydration, failure to thrive, hypokalemic metabolic alkalosis, low levels of sodium and chloride. A special genetic type is associated with sensorineural hearing loss.

The treatment includes a substitution of lacking electrolytes – potassium supplementation, aldosterone antagonist (diuretics), prostaglandin inhibitor.

Keywords: Bartter's Syndrome, genetic tubular disorder, hypokalemic metabolic alkalosis, dehydration

JEL Codes: I 12

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LIPOID ASPIRATORY PNEUMONIA IN 5 YEARS OLD CHILD WITH ARNOLD – CHIARI SYNDROME

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Abstract: Aspiratory pneumonia is a lung inflammation caused by foreign bodies in respiratory system. They are endogenous – tissue secrets from the mouth, nose or stomach; or exogenous – foreign bodies such as plants, minerals, etc. Aspiration is common for patients with poor pharyngeal reflex – neurologic diseases, intoxications, comma, seizures, chronic vomiting or regurgitation, digestive or respiratory abnormalities. Detailed medical history, physical exam and radiology are important for correct diagnose. A special attention is necessary for active treatment and prevention of aspirations. The lipoid aspiratory pneumonia in Arnold – Chiari syndrome patient case report shows the risk of aspiration incident in neurologic disorders.

Keywords: aspiration, lipoid aspiratory pneumonia, foreign body, neurologic disorder, Arnold – Chiari syndrome, poor pharyngeal reflex

JEL Codes: I 12

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ASSESSMENT OF THE HEALTH AND IMPACT OF THE COVID-19 PANDEMIC ON THE PHYSICAL DEVELOPMENT OF STUDENTS IN ORGANIZED COLLECTIVES IN RUSE REGION FOR 2016-2020

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Abstract: *The national health policy covers measures to strengthen health and the structures providing health care to the population. Particularly important in this aspect is the problem of protecting students' health and risk factors: smoking, overweight/obesity and low physical activity*

We set ourselves the goal of studying the physical development of students in organized collectives in the Ruse region - height, body mass, physical capacity for 2016-2020 and the impact of the Covid19 pandemic

We used data from health-preventive cards from schools, reports and analyzes of RZI Ruse, regulatory documents. We processed them with a methodology for conducting preventive examinations for students from 7 to 18 years of age and presented graphically. Individual assessment of height and weight, are considered in three groups: I group "norm", II group, "extended norm", III group "outside the norm". The results include the served contingent by year for 2016-2020 and those during the Covid 19 pandemic (2020). of 18,355 students in 906 educational parallels.

The served contingent of students for 2016-2020 is from 97.16% (2016) to 98.14% (2019). with the range falling to 95.93%, under the created objective circumstances with the epidemic situation with Covid 19. A good organization has been created to track the physical development of students in the Ruse region from the RZI, the personal doctors and the staff in the health offices to carry out anthropometric studies for 2016-2020. The indicators in the "norm" are leading for the three indicators: height up to 80.49% (2017), weight up to 77.83% (2017) and physical capacity 97.06% for (2020)

Keywords: *Collective, Covid19, physical capacity, height, weight*

JEL Codes: *I 12*

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THE NEED FOR INTRODUCTION OF THE HEALTH MEDIATION IN BULGARIA

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Abstract: The Health Mediator is a bridge between vulnerable minority communities and health and social services. It is used with the respect and trust of both the people of the community and the countries and you require the necessary knowledge, skills and competence to enhance your highly responsible work. The term "health mediator" was introduced for the first time in a strategic document through the "Health Strategy for Disadvantaged Persons Belonging to Ethnic Minorities (2005-2015)" adopted by the Council of Ministers during the Decade of Roma Inclusion... 2001 - the first 5 MH begin work on a project of the "Health Problems of Ethnic Minorities" Foundation in the Roma quarter in the town of Kyustendil. The created network of health mediators is an achievement for Bulgaria, achieved through the active cooperation between the Foundation "Health Problems of Ethnic Minorities", the Association "National Network of Health Mediators", the Ministry of Health, the Ministry of Labor and Social Policy and the Directorate for Ethnic and Demographic Affairs to the Council of Ministers.

Keywords: Health mediator, Health, Health risk

JEL Codes: I12, I13

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RISK OF DEMENTIA IN ELDERLY PATIENTS AFTER COVID 19

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Abstract: *The coronavirus pandemic will cause a surge in neurodegenerative diseases in the world - this is the opinion of many experts around the world. More and more new data are being published about the negative impact of COVID-19 on the immune system, the damage to the nervous system by the SARS-CoV-2 virus and the stimulation of autoimmune processes by it.*

Long-term cognitive decline is common after infection with the novel coronavirus. This indicates the need to assess the impact of the COVID-19 pandemic on the future burden of dementia worldwide. This is what a study published in the Journal of Neurology of the American Medical Association warns.

The report examines studies on the risk of developing dementia after contracting Covid-19.

Keywords: Covid 19, dementia, elderly people

JEL Codes: I10

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CREATION AND IMPLEMENTATION OF AN OSTEOPOROSIS PREVENTION PROGRAM

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Abstract: Osteoporosis is the third most significant social disease in the world - after cardiovascular and oncological diseases. This is a global problem that will grow in importance as the world's population increases and ages. This report presents the work on project No. 2023-FOZZG-01, financed by the Scientific Research Fund at Rousse University "Angel Kanchev", on the topic Creation and implementation of a program for the prevention of osteoporosis. The aim of the project is to prevent osteoporosis by conducting educational and research activities and creating a prevention program. The importance of screening and prevention options, early detection and appropriate treatment is emphasized.

Keywords: Osteoporosis, Osteopenia, Screening, Prevention, Health care

JEL Codes: I10, I12

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BOTULINUM TOXIN IN THE TREATMENT OF CHRONIC PELVIC PAIN

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Abstract: Chronic pelvic pain is a common multifactorial condition affecting 6% to 27% of women aged 18-50 years worldwide. It is defined as chronic or recurrent abdomino-perineal-pelvic pain, hypersensitivity, or discomfort lasting six months, usually associated with changes in sexual dysfunction without a clear etiology. A major source of morbidity in women worldwide, resulting in reduced quality of life, reduced ability to work and significant use of health resources. Treatment may include psychological therapy due to the presence of associated negative cognitive symptoms such as anxiety and behavioral sequelae, physical therapy, pharmacotherapy, and sometimes surgery. Chronic pelvic pain should be addressed in a multispecialty and multidisciplinary setting with the collaboration of various experts. Botulinum toxin treatment by injection into the pelvic floor muscles was first described twenty years ago. Administered in therapeutic doses, it causes localized muscle weakness or temporary paralysis. Its potential use has been recognized for the past ten years as a successful method of treating vaginismus. The aim of this paper is to review the literature on botulinum toxin as a treatment for female sexual and genitourinary dysfunction, focusing on recent empirical findings.

Keywords: botulinum toxin, vaginismus, pelvic pain syndrome, sexual dysfunction, dysmenorrhea, dyspareunia

JEL Codes: I1, I12

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HYPERGLYCEMIA – A FACTOR FOR THE DEVELOPMENT OF CANCER IN PATIENTS WITH DIABETES

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Abstract: *Diabetes mellitus (DM) has been known to mankind since ancient times. The first official record of a diabetic condition is from 3,000 years ago in the Ebers Papyrus (1500-1300 BC), which records a condition of “excessive excretion of urine. According to the World Health Organization, diabetes mellitus includes a group of metabolic diseases characterized by hyperglycemia, which is the result of a disturbance in insulin secretion, insulin action and/or both together.*

Malignant tumors are most often multifactorial. Epidemiological studies have shown that hyperglycemia increases the prevalence and mortality of certain malignant diseases, such as breast cancer, liver cancer, bladder cancer, pancreatic cancer, colorectal cancer, endometrial cancer.

The number of scientific studies investigating the link between diabetes and cancer is growing. Epidemiological data currently show that people with diabetes are at higher risk of developing certain types of cancer – breast, endometrial, liver, pancreatic and colon. Diabetes can affect the neoplastic process by several mechanisms, including hyperinsulinemia, hyperglycemia, or chronic inflammation.

Keywords: : *Diabetes mellitus, Hyperglycemia, Hyperinsulinemia, Tumorigenesis, Cancer*

JEL Codes: *I1, I12*

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THE ROLE OF THE NURSE IN ADOLESCENT NON-SUICIDAL SELF-HURTING

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Abstract: Non-suicidal self-harm and suicide are deliberate acts of self-destruction, but they have a fundamentally different purpose. Non-suicidal self-harm is deliberate and repeated physical trauma to an individual, without clear suicidal intent, that has negative effects on the person's physical and mental well-being. Timely and accessible nursing care plays an important role in the process of survival and rehabilitation in case of self-aggression. Self-injury is a complex behavior that usually occurs in a protected environment. A large percentage of nurses accept that consumers who self-injure are motivated by a desire to seek attention and manipulate others. Most adolescents who self-injure experience strong emotions due to past encounters with violence (physical or psychological). They self-harm to regulate their emotions. A better understanding of self-harm and its motivations can lead to improved nurse-patient relationships and thus safer and more effective care delivery. Non-suicidal self-harm among adolescent psychiatric patients is a common phenomenon associated with a wide range of co-morbidities. Furthermore, while autoaggression is conceptualized as an act without suicidal intent, it tends to occur in patient groups with suicidal ideation or a history of suicide attempts. With increasing attention given to psychological problems, the effective care of patients with non-suicidal self-injurious behavior has become one of the priorities of multidisciplinary treatment. Hospitalized patients should be closely monitored by at least one nurse with clinical experience to avoid the use of dangerous objects such as scissors or knives that could be used for self-harm. "Ensuring a safe hospital environment" by checking belongings on admission, clearly informing the patient of the negative consequences of behaviour, through auto-aggression, paying special attention to hospital activities and distracting the patient was specifically emphasized in an Irish study with psychiatric sisters. Nurses need to assess patients' risk for more severe self-injurious behavior and accidental death and understand differences in patient behavior in NS in terms of presentation, characteristics, and function. Although many use self-harm as a short-term relief from their problems, it is repetitive in nature. If nurses are able to help adolescents interrupt emerging patterns of self-aggression, future self-harm can be prevented. Teens at risk for self-injurious behavior are looking for a way to express their pain. A positive approach with a caring attitude, purposeful listening, and even the nurse's authentic presence is indispensable to the autoaggressor.

Keywords: Mental health, non-suicidal self-harm, auto-aggression, nursing care.

JEL Codes: I, I 12

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THE ESSENCE OF THE MEASURES OF THE LEGAL PROTECTION

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Abstract: The measure of law acquires its characteristic through its function as part of the legal-sociological system of society. The general theoretical and sectoral specificity of the legal measure precedes the legal-philosophical substance of the law. The measure of law is part of the legal values that justify legal legitimacy. The paper investigates various institutional manifestations of the measure as protection measures.

Keywords: substance of the law, measure of law, protection, labour mobility

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FRI-2B.313-1-L-02

SOCIAL LEGISLATION OF THE BULGARIAN STATE UNDER THE RULE OF ALEXANDER TSANKOV (9. 06. 1923 – 4. 01. 1926)

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Abstract: The topic of the report is motivated by the fact that the legal history of the New Bulgarian state is in debt to the time when the country was ruled by Prof. Alexander Tsankov (9. 06. 1923 – 4. 01. 1926). This is explainable, since it is about one of the most controversial and discussed periods in the recent history of Bulgaria, evaluated controversially and one-sidedly both before and after 1989. The report does not aim to express an attitude towards the dramatic and bloody events of this era, and focuses on the social politics of the Democratic Agreement, undeservedly but understandably neglected amid the highly aggravated political struggles. Special attention is paid to the Law on Public Insurance (Promulgated SG No. 289 of 1924) and the Law on Job Placement and Unemployment Insurance (Promulgated SG No. 26 of 1925).

Keywords: social, law, legislation, Democratic Agreement, insurance

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FRI-2B.313-1-L-03

UNDERSTANDINGS OF THE NOTION OF "FREEDOM" IN LAW

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Abstract: Freedom is essential both for the individual and for law as a regulator. The concept of "freedom" has a different meaning related to law - as a factual state, as a subjective right, as a philosophical concept, freedom as a value; freedom as a measure of right.

The purpose of this report is to analyze the various understandings of the concept and outline their connections with law as a regulator.

Keywords: law, freedom, meanings, regulation, essence, value, measure

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FRI-2B.313-1-L-04

TRUTH IN LAW

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Abstract: Truth is a concept indisputably related to law. The concept of "truth" has a different meaning related to law - the objective truth, a subject of proof in the law enforcement process, the truth from the standpoint of logic, the subjective truth of the parties, the truth as a fact of reality, sometimes impossible to prove, etc.

The purpose of this report is to analyze the various understandings of the concept and outline their connections with law as a regulator.

Keywords: law, truth, law enforcement, meanings, regulation

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FRI-2B.313-1-L-05

STUDIES ON THE GENESIS OF THE STATE

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Abstract: Part of the teachings about the state provide the answer to the question of its genesis, about how it founding. The answers are related to historical conditions, but not bound by historical sequence. Despite the wide variety of theories, the answers to this question are reduced to three: a supernatural origin; natural origin and social origin of the state.

Keywords: State, Mission, Social values, Genesis

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FRI-2B.313-1-L-06

PROCEDURAL LAW BEYOND MECHANISM

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Abstract: The report proposes a concept for enriching the theoretical understanding of procedural law by explaining with new arguments the grounds of formal determination and its essence as a protective mechanism of material law. The starting point of the presentation is the attempt to compare the ways in which justice is instrumentalized in material and procedural law. The thesis is defended that procedural law is not only a mechanism for the realization of material rights in general, but implementing the principle of equality before the law in practice, it is directly oriented toward universal categories.

Keywords: Law, justice, material, procedural, rights

JEL Codes: K10, K40

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FRI-2B.313-1-L-07

LEGAL REGIME OF TRAINING OF STUDENTS AND SPECIALISTS IN MEDICAL INSTITUTIONS

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Abstract: The paper reveals the criteria and conditions that must be met by the structure and organization of the activity in the medical facility, the necessary equipment and the qualification of the staff, in order for the medical facility to carry out the activities of clinical training of students and doctoral students in medicine, dentistry and pharmacy and students in specialties from the professional direction "Health Care" and also the postgraduate training for acquiring a specialty in the healthcare system.

Keywords: healthcare system, medicine dentistry, health care

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THE PLACE OF TERRITORIAL SOVEREIGNTY IN THE UN CHARTER

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***Abstract:** The UN Charter refers to the principle of sovereignty in several contexts. One of the most important references to sovereignty is found in the Preamble to the Charter, which emphasises the determination to "reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small". However, it is important to note that the principle of sovereignty is not absolute. The UN Charter also contains provisions that authorise the UN to take action when there are threats to international peace and security. Chapter VII of the Charter, for example, deals with measures that the UN Security Council can take in response to such threats. These measures can include economic sanctions, diplomatic action and, in certain circumstances, the use of force. In these cases, the principle of state sovereignty can be overridden in order to address issues that affect international peace and security. It's important to remember that interpretations and understandings of international law and principles, including sovereignty, can evolve over time through various legal and diplomatic processes.*

***Keywords:** sovereignty, territory, UN, charter, development.*

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FRI-2B.313-1-L-09

PERSONS NEEDING PROTECTION ACCORDING TO THE CONSTITUTION OF THE REPUBLIC OF BULGARIA

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Abstract: *The paper treats a proposed amendment in the Constitution of the Republic of Bulgaria concerning the functions of the Prosecution office. According to it, the competences of the prosecutors to take part in civil and administrative suits shall be diminished and limited only to the protection of the rights and legal interests of minors, juveniles and for the defense of significant public interest of persons needing protection. The author criticizes this and suggests a correction in the proposed text.*

Keywords: *Constitution, special protection, Prosecution office*

JEL Code: K38

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FRI-2B.313-1-L-10

ADMINISTRATION IN THE OTTOMAN STATE

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Abstract: *Administrative law is usually assumed to be creature of the New Time. Administration, however, plays a key role to fulfil the sovereign will and governing acts of rulers of all kind of states and in all historical periods. In other words, administration is linked to the state as stable and sustainable form of social unity. Theoretically, state exists and appears at three levels – substantial (people and territory), attributive (social relations) and institutional (powers and authorities). Namely at institutional level administration and authorities are researched. They provide sustainability and enforceability of state actions despite of the type of state.*

This is why the paper reviews administration and its organization and functioning during the period of Ottoman domination over Bulgarian territory. Historical approach to that matter is expected to show some relations with the Europe-wide trends in the time after 1789 French Revolution. and the attempts to reform the Ottoman state governance during the centuries of domination in European South-East would propose ideas for achieving more efficiency of administration and sustainability of the large-scaled state.

The paper tries to present a new view to administration as bound to the state as institution, and to analyze the interest this administration represented, as well as the legal bases of its actions.

Keywords: *State, Administration, Ottoman Empire, Ottoman domination*

JEL Codes: *L10, L11*

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FRI-2B.313-1-L-11

TO THE ISSUE OF SPECIAL ADMINISTRATIVE PROCEEDINGS

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Abstract: *The broad concept of administrative process is adopted in the Bulgarian administrative law theory. The administrative process covers both contentious and non-contentious proceedings. The executive power is realized on the basis of these proceedings. The main procedural law is the Administrative Procedure Code. This act establishes the general procedural rules. There are also a number of special legal regulations (in other acts), which establish special procedural rules. In this case there are special administrative proceedings.*

Keywords: *Administrative Proceedings, special acts, special administrative proceedings, special case, administrative act*

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FRI-2B.313-1-L-12

THE RES JUDICATA EFFECT AND THE BINDING FORCE OF THE JUDICIAL INSTRUCTIONS TO THE ADMINISTRATIVE BODY ON THE INTERPRETATION AND APPLICATION OF THE LAW

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Abstract: The report indicates the most important characteristics of the judicial instructions to the administrative body on the interpretation and application of the law. In view of these characteristics, the similarities and differences between the judicial instructions and the res judicata effect are explained; from a practical point of view, the most important difference is reduced to the following: In case of contradiction with the res judicata effect, the administrative act is always null and void, while in case of contradiction with the judicial instructions, the administrative act could be either null and void or voidable depending on the intensity of the violation that has been reached due to non-compliance with the instructions. At the end of the report, the interaction between the judicial instructions and the res judicata effect is briefly described.

Keywords: Res Judicata, Judicial Instructions, Administrative Process

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FRI-2B.313-1-L-13

PROTECTIVE MEASURES TO GUARANTEE THE APPLICATION OF FINANCIAL LEGAL NORMS

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Abstract: Bulgarian legislation regulates various types of mechanisms designed to limit the commission of illegal encroachments. They can be divided into institutional, functional and protective. In this regard, legal theory divides legal relations into regulatory and protective. Protective measures to guarantee the operation of financial legal norms include various forms – such as the imposition of sanctions, coercive measures, forced fulfillment of the initial financial obligation, rearrangement of financial legal consequences or refusal to generate targeted ones. The purpose of all protective measures is to defend certain goods subject to the regulatory financial legal institutes through different types of legal means. The paper presents a broader paradigm for researching the problem of safeguarding the application of financial law norms, since the focus in financial law theory is mainly limited to protection through sanction.

Keywords: application, financial law, legal norms, legal relation, sanction, protection

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FRI-2B.313-1-L-14

FISCAL DECENTRALIZATION IN THE REPUBLIC OF BULGARIA

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Abstract: *It would not be an exaggeration to say that there is a misunderstanding in both public and political circles about the possibilities that fiscal decentralization holds. It is generally seen as a niche issue of regional development and administration – a relatively rare and unpopular stop for the central government-dominated public debate. The last significant steps in this direction were made way back in 2007, when, following constitutional amendments and changes to the Local Taxes and Fees Act, municipal councils were given the right to determine the amount of local taxes and fees within pre-set limits. The purpose of this paper is to present the arguments in support of fiscal decentralization in Bulgaria. The current state of municipal budgets has been reviewed, the implementation up to date of the goals set in the Decentralization Strategy 2016-2025 has been monitored, and the possible alternatives for fiscal decentralization and their effects have been analyzed.*

Keywords: *local taxes, competence, enforcement procedure*

JEL Codes: *H 71, K 34*

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FRI-2B.313-1-L-15

AMENDMENTS TO THE LAW ON THE CADASTRE AND PROPERTY REGISTER (PUBLISHED SG NO. 8 OF 2023) - A STEP TOWARDS THE CREATION OF THE PROPERTY REGISTER

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Abstract: The amendments to the Law on the Cadastre and Property Register were adopted by the National Assembly on 19.01.2023, promulgated in the State Gazette No. 8 of 25.01.2023 and entered into force on 30.01.2023, with the exception of paragraphs 6 and 7, which enter into force on 30.01.2025. They establish the requirements for the content of the property lots in the property register and the process of their creation based on the existing personal lots. The responsibilities of the registration judges and the Registration Agency in the process of creating the property lots in the register have been settled.

Keywords: Cadastre and Land Registry Act, Registry Agency, Land Registry Judge, Land Registry.

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Motives for a draft Law on Amendments and Supplements to the Law on Cadastre and Land Registry (**Оригинално заглавие:** Мотиви към проект на Закон за изменение и допълнение на Закона за кадастъра и имотния регистър)

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FRI-2B.313-1-L-16

CENTRAL REGISTER OF SPECIAL BETS AT THE REGISTRY AGENCY

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Abstract: *As of July 1, 2023, the central register for special bets has been transferred from the Ministry of Justice to the Registry Agency. This is the sixth national register maintained by the Registration Agency. All administrative services are provided upon request to registered users online through the Unified Portal for requesting electronic administrative services, as well as in the territorial units of the Registration Agency. With the adoption of the Central Register for Special Betting, the comprehensive reform of the office, laid down in the 2016 amendments to the Law on Special Betting, was completed. More reliable guarantees have been created with the introduction of publicity through the introduction of electronic access, for credit institutions, as well as for the deployment of business initiative and investment attraction.*

Keywords: *Central Registry for Special Bets, Ministry of Justice, Registry Agency*

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REQUIREMENTS TO THE MEMBERS OF THE MANAGEMENT AND CONTROL BODIES OF PUBLIC ENTERPRISES

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Abstract: The Law on Public Enterprises, in Chapter Five "Requirements to Management and Control Bodies", Art. 20 - 24 and the Regulations for the Implementation of the Law on Public Enterprises, in chapter five "Requirements to the management and control bodies of public enterprises and promotion of candidates", art. 31 - 56 determine the requirements for the management and control bodies of public enterprises, the criteria for the selection of candidates; the nominations committee and the nomination procedure. These requirements, according to the provisions of Art. 3 of the Law on Public Enterprises, are also applicable to local self-government bodies and municipal public enterprises, which apply the provisions of Chapters Five of the Law and Eight of the Rules for its Implementation, respectively. The report examines the special requirements for the members of the management and control bodies of public enterprises in the context of the amendments and additions to the Regulations for the Implementation of the Law on Public Enterprises, published DV. No. 11 of February 2, 2023.

Keywords: Law on Public Enterprises; Regulations for the implementation of the Law on Public Enterprises; Requirements for management and control bodies; Public enterprises; Municipal public enterprises

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FRI-2B.313-1-L-18

PROBLEMS OF THE NOTARIAL WILL IN BULGARIAN LEGISLATION

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Abstract: This paper examines the historical development of notarial will as a form of testamentary dispositions in Bulgarian inheritance law. The paper analyses the case law on the drafting procedure, focusing on the existing serious problems related to the exercise of the rights of heirs and legatees under the notarial will after it has been announced. Proposals are made for changes in the legislation in force to resolve these problems.

Keywords: notarial will, rights of heir and legatee, testamentary disposition

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SAT-2B.313-1-L

SAT-2B.313-1-L-01

ON THE SIGNIFICANCE OF THE DNA EXPERTISE IN LEGAL PROCEEDINGS FOR DISPUTE/ESTABLISHMENT OF ORIGIN

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Abstract: *The institute of origin has always had and will have a very wide theoretical and practical significance, as far as the legal consequences of its establishment or contestation occur in a variety of legal relationships. of decisive importance for the outcome of court proceedings for contesting/establishing origin are judicial expertises, with the emphasis on the priority nature of DNA expertise. in this direction, the question of whether the appointment of the DNA expertise is mandatory in any legal proceedings for disputing/establishing origin, and especially in the case of descent from the father, is being discussed.*

Keywords: *legal proceedings; dispute/establishment of origin; court practice; prove; DNA testing.*

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SAT-2B.313-1-L-02

FINALITY A LEGAL EFFECT OF THE ACTS ON THE ADMISSIBILITY OF THE LAWSUIT. SOME PRINCIPAL ISSUES.

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Abstract: *The problems of res iudicata are central for the theory and practice of civil procedure. Bearing this in mind, it is to be established that the issues of the finality of the acts/orders/decrees of the court aimed to decide upon the admissibility of the lawsuits. This is due to the fact that in the national doctrine and practice is applied the view that res iudicata relates solely to judgments on the subject-matter. The aim of the report is to address some hypotheses, which might request a re-thinking of this legal construction..*

Keywords: *res iudicata, finality, admissibility, lawsuit, legal effect.*

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SAT-2B.313-1-L-03

**THE PROBLEMS OF RENVOI UNDER REGULATION (EU) NO. 650/2012
ON JURISDICTION, APPLICABLE LAW, RECOGNITION AND
ENFORCEMENT OF DECISIONS AND ACCEPTANCE AND
ENFORCEMENT OF AUTHENTIC ACTS IN THE FIELD OF
SUCCESSION AND ON THE CREATION OF THE EUROPEAN
CERTIFICATE OF INHERITANCE.**

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Abstract: *In modern European private international law renvoi is practically inadmissible. This is evident from a number of Regulations on applicable law that expressly exclude its application. Only, in art. 34 of Regulation (EU) No. 650/2012 on jurisdiction, applicable law, recognition and enforcement of decisions and acceptance and enforcement of authentic acts in the field of inheritance and on the creation of the European Certificate of Inheritance, the partial admissibility of renvoi in certain cases is regulated prerequisites. in this report, the emphasis will be placed on the problems that could arise before the seised court in determining the law applicable to the succession.*

Keywords: *renvoi, conflict of law, applicable law, habitual residence, inheritance;*

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SAT-2B.313-1-L-04

BAREBOAT CHARTER

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Abstract: *The regulatory framework of the bareboat charter contract is contained in Chapter VII, Section II, Art. 199a - 199m of the Merchant Shipping Act. The bareboat charter was first settled in the Bulgarian legislation in 2002. With the same changes in the Merchant Shipping Act, the possibility of registering ships chartered under a bareboat charter contract in the Register of Ships for the Republic of Bulgaria (Art. 39a MSA) is explicitly regulated, the keeping of the relevant register books, as well as the possibility of entering a Bulgarian ship temporarily in the register of another country as a ship hired under a bareboat charter contract (Art. 39b MSA). In view of the limited volume of the report, the exhibition examines the rights and obligations of the parties, the requirements for the form of the contract for bareboat charter, analyzes the controversial register practice in order to clarify under what conditions exactly a ship can be entered in the register books of ships chartered under a bareboat charter contract (Art. 34, Item 3 MSA)*

Keywords: *bareboat charter, rights and obligations;*

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SAT-2B.313-1-L-05

SET-OFF IN CROSS-BORDER INSOLVENCY PROCEEDINGS

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Abstract: *The opening of cross-border insolvency proceedings leads to various legal consequences for a debtor regarding his legal capacity, the validity of different acts, pending lawsuits etc. One of these consequences is the specific rules for set-off between the creditor and his insolvent debtor. The aim of this paper is to analyze the conditions for set-off in cross-border insolvencies and the differences between the relevant rules and these of the national legislation. for this purpose, a comparison between Bulgarian insolvency law and Regulation 2015/848 will be made and relevant practice of Bulgarian and European courts analyzed.*

Keywords: *Cross-border insolvency, set-off.*

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SAT-2B.313-1-L-06

THE PROFESSION KINESIOTHERAPIST - LEGAL ASPECTS

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Abstract: *There are various specialists who work to improve health through movement.*

According to the Health Act, the professional competence of persons working in the national health care system who have completed higher education in individual specialties, incl. "kinesitherapy" should be regulated by ordinance. The regulation governing the professional competence of graduates in kinesiotherapy has been in force since 2006. An amendment to the List of Regulated Professions (2012) recognised kinesiotherapy as a regulated profession.

The article discusses the legal aspects of the profession of Kinesiotherapist. A kinesiotherapist may be employed or self-employed. The professional competence of kinesiotherapists in medical institutions is regulated by ordinance. The question is raised about the professional competence of kinesiotherapists who practice their profession outside medical institutions.

Keywords: *kinesiotherapist, kinesitherapy, professional competence*

JEL Codes: *I18*

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SAT-2B.313-1-L-07

THE CONVERSION OF THE NATURAL OBLIGATION UNDER THE MAINTENANCE AND SUPPORT AGREEMENT INTO MONETARY COMPENSATION

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***Abstract:** The report examines the practices and issues related to the conversion of natural obligations into monetary fulfillment within the context of maintenance and support contracts. It analyzes the legal, social, and ethical aspects of this process and offers solutions and recommendations for a more effective and equitable regulation of matters concerning maintenance and support. Special attention is given to the potential benefits and risks for the parties involved in the contract.*

***Keywords:** contract, private law, maintenance obligation, monetary obligation, transformation*

SAT-2B.313-1-L-08

CONTRACT FORMATION – OFFER, ACCEPTANCE, OBLIGATION TO NEGOTIATE AND REQUIREMENT OF GOOD FAITH

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Abstract: Contract is a fundamental institution of private law. It facilitates the exchange of goods in civil and commercial transactions. This report will explore the steps involved in contract formation - what constitutes an offer, the binding nature of the offer, irrevocability of the offer, property transfer, offeror's liability, acceptance, the peculiarities of electronic contract formation, and the duty of good faith in negotiations for contract formation.

Keywords: contract, private law, offer, acceptance, electronic contract formation.

SAT-2B.313-1-L-09

ARTICLE 7 OF THE SPECIAL PLEDGES ACT - POSSIBILITY FOR THE CONTINUATION OF THE PLEDGER'S COMMERCIAL ACTIVITY OR A WAY TO HARM THE PLEDGE CREDITOR

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Abstract: *The report examines the theoretical and practical aspects of the application of Article 7 of the Special Pledges Act, as well as the possible issues accompanying its use. The scope of the report also encompasses the consequences of potential bad faith on the part of the pledger, which could result in subsequent difficulties for the pledge creditor to satisfy his claim from the transformed property subject to a special pledge. The balance between the continuing commercial activity of the trader and the protection of the pledge creditor does not appear to be as stable as expected, but this is perhaps anticipated given the complex situation that Article 7 is intended to address. It is precisely the specificity of Article 7 of the Special Pledges Act and the lack of sufficient judicial practice addressing the legal matter governing the arising issues that serves as the motivation for the preparation of this report.*

Keywords: *special pledge, Special Pledges Act, commercial pledge, Commerce Act, commercial activity, pledgor, pledge creditor, debtor.*

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SAT-2B.313-1-L-10

THE ACTUAL LIMITATION OF THE EXERCISE OF PARENTAL RIGHTS BY ONE PARENT IN THE CASE OF SOLE EXERCISE OF THE SAME BY THE OTHER PARENT IN THE CASE OF A DECISION ISSUED AFTER A DIVORCE OR SEPARATION.

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Abstract: *The topic of the exercise of parental rights is widely discussed in theory, the present report does not aim to analyze their content, but to examine the actual limitation of the parent not preferred by the court and his inability to participate in the life of his child after the divorce or separation. for this purpose, a comparison was made between the preferential exercise of parental rights and the institution of restriction and deprivation of parental rights, other points of view were also considered, those of shared parenting and shared residence.*

Keywords: *Parental rights, Restriction and deprivation of parental rights, Shared parentage, Shared residence*

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SAT-2B.313-1-L-11

WAIVER OF PROPERTY RIGHTS, EXERCISED BY A SUCCESSOR

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Abstract: The paper compares the waiver of succession and waiver of property rights instruments, established in Bulgarian law. It addresses specific problems, arising in cases where a declaration of property rights has been submitted by a successor. There is a collision of provisions, concerning the passing of rights according to the succession rules and these, governing the rules of establishing of property rights on entities without an owner. In general, the succession institute provides the passing of rights to the other successors, whereas the property of entities without an owner is assigned as a rule to the municipality or the state.

Keywords: Succession, Waiver, Property rights, Public ownership, State, Municipality

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SAT-2B.313-1-L-12

ENTRY AND DELETION OF THE MEMBERS OF THE MANAGEMENT BODY OF THE JOINT-STOCK COMPANY IN THE COMMERCIAL REGISTER

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Abstract: *The report reveals: What is the entry action? Does entry in the commercial register have a declaratory or constitutive effect? in the notification action, the registered circumstance is considered to have become known to the third parties in good faith from the moment of the registration. Unscrupulous third parties can refer to a circumstance subject to registration, even though the registration has not yet taken place. While in the constitutive action, the circumstance subject to registration gives rise to an action only after its registration against all third parties.*

Keywords: *Bulgarian law, Joint stock company, Management bodies, Commercial Law, Supervisory boards, Requirements, Shareholders, Registration*

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SAT-2B.313-1-L-13

REQUIREMENTS FOR THE MEMBERS OF THE MANAGEMENT AND SUPERVISORY BOARD OF THE JOINT-STOCK COMPANY

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Abstract: The report reveals how the law establishes a definition of the requirements for the members of the management body of the company, which require the aim to guarantee reasonable, careful, at a measured risk, the management and representation of the company in its interest and in the interest of the shareholders. These requirements are also important in a general economic plan, as they are predicted for the consumption for professional, reasonable and careful management of the economic resources available to the society, as a necessary prerequisite for economic prosperity.

Keywords: Bulgarian law, Joint stock company, Management bodies, Distribution of functions, Commercial Law, Supervisory boards, Requirements, Shareholders, Economic plan, Professionalism.

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SAT-2B.313-1-L-14

SUBSTANTIVE LEGITIMATION ON FILING A CLAIM UNDER SECT. 74 OF THE TRADE ACT

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Abstract: The article deals with one of the three claims by which judicial control over the activity of the authorities of trading companies is exercised. The main substantive legal prerequisites for the filing of the claim are analyzed, and considering the substantial practical necessity of such a study, the issues concerning the procedural legitimation of the parties in the court proceedings, who, when, and against whom may file this claim are addressed. The article treats the latest case law concerning the claim.

Keywords: Control rights, Trading companies, Procedural legitimation.

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SAT-2B.313-1-L-15

CONTESTING ENTRIES IN THE COMMERCIAL REGISTER. GROUNDS, PROCEEDINGS, CHALLENGES, RECOMMENDATIONS.

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Abstract: The entries in the commercial register go with the presumption that such entries are legally accurate and true to the facts of reality. Such is after all the core purpose of the commercial register, namely to grant awareness and to protect public interest. Although commercial register entries are a claim for the existence of certain circumstances, in practice this claim may not always match the actual state of affairs. In other cases the registry proceedings turn out to be substantially flawed in terms of legal requirements. Such inconsistency between entries and facts, on one hand, resp. with the applicable legal provisions, on the other hand, calls for establishing adequate mechanisms for restoring the relevance between entries and real state of affairs, while following all legal requirements.

The report provides analysis of the legal grounds for contesting trade register entries, addresses the applicable proceedings and identifies certain practical and legal challenges along with their possible future solutions.

Keywords: commercial register, contesting entries, legal framework, challenges, solutions.

JEL Codes: K410, K420

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SAT-2B.313-1-L-16

COMMERCIAL REGISTER ENTRIES. AN OVERVIEW. LEGAL AND PRACTICAL IMPLICATIONS.

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Abstract: *Effecting entries in the commercial register is the principal aim and task of trade registration. The entries as such are not reduced to the mere announcing of facts in the trade register, but are derived from a complex procedure, involving a set of terms, participants and a specific legal and technical framework. The subject of commercial register entries tackles issues, such as regulation of data bases, core authorities and functions, scope and type of the recorded information, its structuring and management. Commercial register entries are dependent on a number of legal, administrative and technical factors combined. These processes are largely directed by sub-statutory regulations, which calls for strict abidance by the primary law, the principles of trade registration and the public interest.*

The report provides an overview of the current state of affairs regarding the commercial register entries identifies certain legal and practical problems and proposes their respective solutions.

Keywords: *commercial register, trade registration, entries, legal framework, practical issues, challenges*

JEL Codes: *K410, K420*

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SAT-2B.313-1-L-17

SIGNIFICANT PROBLEMS OF THE APPELLATE REVIEW PROCEEDINGS UNDER THE CRIMINAL PROCEDURE CODE OF THE REPUBLIC OF BULGARIA.

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Abstract: This report refers to some of the more important complications of intermediate appellate review proceedings. They are related to the interpretation and application of Art. 318, 335 and 337 of the Criminal Procedure Code of the Republic of Bulgaria. The publication proposes normative solutions to the outlined problems in accordance with the philosophy and controlling nature of the judicial proceedings itself and with the need to preserve the role of the appellate court as a full-fledged guarantor against procedural error in criminal cases. It necessarily follows that the report recommends and insists on the principled compatibility of the appellate proceedings, both with Chapter Two of the Code and with the tasks of criminal proceedings. Only such compatibility can ensure the achievement of a fair trial and strengthen citizens' confidence in the judiciary.

Keywords: criminal proceedings, intermediate appellate review proceedings, fair trial, prosecutor, accused party, court.

JEL Codes: K410, K420

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SAT-2B.313-1-L-18

THE SOCIAL AND BIOLOGICAL IN THE PERSONALITY OF THE CRIMINAL

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Abstract: The report examines some basic social and biological components in the personality of the criminal, deduced on the basis of theoretical and empirical developments in criminological science, as well as the direct observations of the author. Various conscious and volitional processes that take place in the personality are analyzed. Some of them are biologically determined, while others are the result of the interaction between the person and the social environment. All of these are presented in the context of causality for individual criminal behavior, noting their individual and cumulative influence on criminal behavior.

Keywords: Criminal behaviour, personality of the criminal, crime, prevention, correction and re-education

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FRI-2B.312-1-NS-01

**PROBLEMS OF THE IMPLEMENTATION OF INTERNATIONAL
HUMAN RIGHTS LAW RATIONE LOCI**

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***Abstract:** The fundamental possibility of applying the norms of international human rights law in armed conflicts does not mean that this or that international treaty will be valid in a specific situation: each treaty has a corresponding scope of application in space, which can be established in its text or stem from the application of general rules, enshrined in the Vienna Convention on the Law of Treaties of 1969.*

The UN Human Rights Committee took the path of a very broad interpretation of paragraph 1 of Art. 2 of the Covenant: as stated in General Comment No. 31, "States Parties have an obligation, in accordance with article 2, paragraph 1, to respect and ensure the rights set forth in the Covenant to all persons who may be present in their territory and to all persons subject to their jurisdiction."

Keywords: Human Rights, Vienna Convention

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FRI-2B.312-1-NS-02

PROTECTION OF THE LABOR RIGHTS OF REFUGEES

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Abstract: The right of labour is a fundamental right of citizens, guaranteed in international treaties and national regulations. Refugees' right to work is directly dependent on their status. Council Directive 2001/55/EC of 20 July 2001 on minimum standards for the granting of temporary protection that foreigners benefiting from temporary protection have the right to work and vocational training. The Labor Migration and Labor Mobility Act regulates different legal regimes depending on origin and nationality.

Keywords: right of labour, refugees, labour mobility

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FRI-2B.312-1-NS-03

CONTROL OF THE TERRITORY OF THE STATE BY THE LAW ENFORCEMENT AUTHORITIES

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Abstract: *The report examines the system by which the state authorities control the residence on the territory of the state of the different categories of citizens and the role of this control for the security of the state. The principles and methods of monitoring persons and vehicles in the context of the performance of the functions of law enforcement authority are analyzed.*

Keywords: *security, enforcement authority, territory of the state*

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FRI-2B.312-1-NS-04

THE ROLE OF INTELLIGENCE FOR THE DEFENSE OF THE STATE

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***Abstract:** The report analyzes the problems related to the definition of the functions of the intelligence services of Bulgaria and the relevance of these functions to the defense of the country in the context of the intentions of the legislative body for reforms in this sphere of national security.*

***Keywords:** national security, intelligence services*

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FRI-2B.312-1-NS-05

THE STATE SERVICE - DUTY OR WORK

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***Abstract:** The report defines the main problems related to the status of the civil servant, the meaning of the civil service and the challenges to the improvement of the legal basis, through the prism of the meaning of the existence of this activity specific to the state. The state of the civil service system in the context of international law and national legislation is also analyzed.*

***Keywords:** state service, international law, national legislation*

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FRI-2B.312-1-NS-06

SPECIFIC PROTECTION NEEDS IN THE MEANING OF § 1, AL. 4 OF THE ADDITIONAL PROVISIONS OF THE CRIMINAL PROCEDURE CODE

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***Abstract:** The following presentation examines the new provisions introduced by the Criminal Code of Criminal Procedure in force since 01.09.2023, intended to bring the Bulgarian legislation into harmony with the European requirements, guaranteeing the effective protection of human rights and aimed at speeding up the criminal process as well as expanding the guarantee for protection for both the victims of crime. The approaches for carrying out the individual assessment of the persons in respect of whom specific protection needs have been established have been considered.*

***Keywords :** victim of a crime, juvenile, accused, investigation, criminal proceedings, specific protection needs*

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FRI-2B.312-1-NS-07

SPECIFIC PROTECTION NEEDS IN THE MEANING OF § 1, AL. 4 OF THE ADDITIONAL PROVISIONS OF THE CRIMINAL PROCEDURE CODE

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***Abstract:** The current presentation discusses the general regulatory regime, which covers the issuing procedures of a permit for acquisition, storage, carrying and use of firearms and ammunition.*

***Keywords :** firearm, ammunition, firearm acquisition, firearm storage, firearm carrying and use, individual administrative act*

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FRI-2B.312-1-NS-08

LEGAL ESSENCE OF NATIONAL SECURITY – ACTS FORMATING LEGALITIES FRAMEWORK OF NATIONAL SECURITY POLICY

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Abstract: National security is the system of measures taken by a country to ensure its security. National security includes the prevention of internal and external threats, as well as the protection of citizens. The institutional mechanism for the formation and management of the national security of the state includes the establishment of the powers and responsibilities of the National Assembly, the Council of Ministers, the President of the Republic and the Minister of Defense, based on the Constitution and laws, the National Security Strategy, Armed Forces Development Program and other strategic documents. The legislative power, the executive power and the presidential institution take part in the formation of the defense policy.

Keywords: national security, legal sources, decision, juridical acts

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Organizational regulations of the Ministry of Defense

The Constitution of the Republic of Bulgaria

Updated National Security Strategy of the Republic of Bulgaria (2018 – 2025)

FRI-2B.312-1-NS-09

FORENSIC PSYCHOLOGICAL EXAMINATION OF OFFENDERS WITH PERSONALITY DISORDERS POLICY

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***Abstract:** The paper reviews presents the mechanism of preparation of psychological expertise for perpetrators of serious criminal crimes. The various types of personality disorders are examined as well as the specific criminal markers that characterise them. Attention is paid the specifics of the behaviour of criminals with personality disorders. Emphasis is placed on the importance of this type of expertise the investigation.*

***Keywords:** forensic psychology, crimes, personality disorders.*

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FRI-2.104-1-QHE

FRI-2.104-1-QHE-01

**IMPACT OF PUBLICLY AVAILABLE SCIENTIFIC DATABASES ON THE
QUALITY OF THE ACADEMIC STAFF**

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Abstract: The report presents a study of the impact of available international, national and local scientific databases on improving the quality of academic staff. There are reviewed the possibilities of: international databases - Scopus, Web of Science, Publons; national databases - Register of academic staff, Register of scientific activity, National reference list of modern Bulgarian scientific publications with peer review, etc.; local databases – Publications System, Academic Staff Development Site, etc. The information contained in the various databases could be used to track the life path of the relevant scientist and support his growth, as well as to improve the quality of the university's academic staff. In the conclusion to the report, some recommendations are made to improve the work and monitoring, as well as the relevant conclusions.

Keywords: Academic Staff; Scientific databases; Quality

JEL Codes: I21

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**METHODOLOGY FOR PILOT ASSESSMENT OF HIGHER EDUCATION
TEACHERS, INSTRUCTIONAL TECHNOLOGIES DESIGN MATERIALS
AND E-LEARNING PLATFORM**

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Abstract: The paper presents methodology for pilot assessment of higher education teachers, instructional technologies design materials and e-learning platform. The learning materials for instructional technologies design and e-learning space were developed under the project “HE Teachers and Institutions and Instructional Technology (HIIT)”, Erasmus+ programm; Action type KA220-HED - Cooperation partnerships in higher education. The methodology for pilot testing includes two phases: The first one – with 105 HE STEM teachers and the second 24 of them will put the skills into practice with interaction with 480 students from the 4 Universities, partners in the project. A blended approach has been selected for the external piloting of the platform and training contents of the HIIT project. The main purpose of the HIIT-Pilot Survey-Teachers is to get first-hand feedback from the 105 teachers as users on the online learning space and the learning content that the HIIT consortium will make available to all HE engineering teachers and professionals. From the participants in the piloting evaluation 8 (2 per pilot country) will be selected for a guided interview/dialogue, to gain deeper insight in their experience with the programme, learning content and e-platform. A total of 24 HE teachers from the participants (6 per university partner) who participated in the learning activity and/or pilot testing will be mobilized to apply the skills and competences acquired and apply at least one of the tools in their online teaching activity. This will allow partners to assess and evaluate the impact on students in a real-life teaching environment.

Keywords: Instructional Technologies, Pilot Testing Methodology, Innovative Approaches

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WEB SYSTEM FOR SERVICING OF USERS AT RUSE UNIVERSITY COMPUTER NETWORK

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Abstract: *The paper presents the web-based system for servicing of network users at Ruse University (help-desk system). Different functions for users and for the management team of the computing center are available. The system has wide possibilities for documentation and searching of reported alerts. The management team can easily control the process of solving problems. In result, the using of such system realistically increases the activity and responsibility of the staff at University computing centre. The network users can rely on described system at any time from the web. The system can also be used for attestation of staff working at the centre.*

Keywords: *University Computing Centre, Information Service, Computer network services, Web-system, Help-desk.*

JELCodes: I23

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ADAPTING THE UNIVERSITY ENVIRONMENT FOR LEARNING STUDENTS WITH DISABILITIES

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Abstract: *The higher school should be the place where for each type of disability the methods of training and service are well analyzed and provided within the relevant building stock, so that each student can progress in society without discrimination. in this sense, awareness, accessibility and the development of equality policies are crucial. They are key to realizing the potential of people with disabilities. Strategic planning is required in faculties and student residences, provision of assistive technologies and facilities, as well as professional and scientific literature in accessible formats, i.e. adapting the learning and living environment.*

Keywords: *learning and living environment; students with disabilities*

JEL Codes: I 23

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ANALYSIS OF THE RESULTS OF SURVEYS CONDUCTED AMONG THE EMPLOYER PARTNERS OF THE UNIVERSITY OF RUSE

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Abstract: The Center for Career Development at the University of Ruse "Angel Kanchev" permanently conducts a survey among partners, companies and institutions - employers, thus striving to comply with business requirements regarding staffing needs and quality of students graduating from the University of Ruse, here a survey of student opinion is also included. Based on the conducted research, feedback is provided to universities, faculties, departments and specialties on improving the quality of the educational process and its effectiveness in a competitive environment and good implementation in the labor market. the results were obtained as a result of conducted questionnaire surveys, both personally and at group events with employers, respectively: In the first six months of 2023. On the basis of the conducted surveys, feedback is provided to the university, faculties, departments and specialties, regarding increasing the quality of the educational process and its effectiveness in a competitive environment and good realization on the labor market.

Keywords: Surveys, Analysis, Recommendations.

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FRI-2.104-1-QHE-06

A CLIMATE CHANGE TECHNOLOGY ENHANCED CURRICULUM FOR TEACHING PRESERVICE TEACHERS

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Abstract: *The education system is one of the fundamental means used to form the society's worldview. Global problems such as climate change, biodiversity decrease, social inequalities, and tensions, are systemic challenges in which education has a key role to play. The ability of the teachers to influence the worldview of their students strongly depends on their qualification as well as their own character and values. The project TECCHED is aimed at developing technology-enhanced climate change educational resources, that could support the education of preservice teachers. This study aims to present a curriculum, which promotes the values and character concerning ecological worldview, socioscientific accountability, social and moral compassion and encouraging active participation in mitigation of climate change.*

Keywords: *climate change, curriculum, character and values, technology enhanced, project TECCHED*

JEL Codes: *I20, I21*

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ANALYZING THE NATIONAL EDUCATIONAL FRAMEWORK OF SOCIAL WORK FOR BETTER ALIGNMENT WITH SOCIAL SERVICES QUALITY MANAGEMENT REQUIREMENTS

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Abstract: Dynamics in social relationships, demographic problems, and the consequences of economic crises on people's well-being and health are among the main reasons explaining the growing need for social support. It focuses on the academic community's attention not only on the innovation potential related to the formulation and testing of new approaches in social activities but also on the need for qualified social workers who have the knowledge and skills to provide quality social support to various vulnerable groups. This report examines the existing educational framework for the training of bachelors in social work. It compares it with the newly introduced regulation on the quality of social services in the Republic of Bulgaria to define proposals for optimizing curricula as a response to the changing scope of social work and management of its quality.

Keywords: social work, social services, education, quality management

JEL Codes: I20, I30, I28

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TRANSFERING KNOW-HOW AND GOOD PRACTICES IN EVALUATING STEM CURRICULA FOR BETTER QUALITY OF EDUCATION

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Abstract: Enhancing the quality and equity in education and training is a key focal point pertaining to the establishment of the European Education Area. The European Union, through its policies, provides support to Member States in their endeavors to offer optimal education and training opportunities and enhance the quality and effectiveness of their education systems. Accreditation is crucial in higher education, as it provides standardized frameworks and methodologies for evaluating the quality of educational programs. Without accreditation, it would be challenging to determine the value and relevance of higher education. It acts as a bridge between schools, students, parents, and the community, offering assurance that the education provided is of high quality. Recent reforms in Bulgarian schools have created innovative STEM learning centers for quality education and modernized infrastructure. These initiatives also provide high-level access to state-of-the-art ICT infrastructure and internet connectivity. However, these efforts pose new challenges, not only in terms of enhancing the qualification of pedagogical specialists but also in developing uniform standards for ensuring and maintaining the quality of the educational STEM environment in Bulgarian schools. The provision of a high degree of access to state-of-the-art ICT infrastructure and Internet connectivity pose new challenges not only to increasing the qualification of pedagogical specialists but also to the creation of uniform standards for ensuring and maintaining the quality of the educational STEM environment in Bulgarian schools. The present paper examine the foreing experience in evaluating STEM curiculla and the applicable tools in order to propose relevant adaption of existing solutions and good practice for better quality management of the STEM based education.

Keywords: education, STEM curricula, European educational area, evaluation and quality

JEL Codes: I23, I20

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FRI-2.104-1-QHE-09

DEVELOPMENT OF THE QUALITY OF HIGHER EDUCATION IN THE FIELD OF LIGHTING AND LIGHTING DESIGN

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Abstract: Contemporary lighting engineering and design is in the process of dynamic development. Changes in the lighting environment have a significant impact on the quality of life of modern society. Lighting and lighting design follow these trends, as they also affect the quality of higher education. This paper presents new conceptual models that have the potential to be applied both in lighting engineering practice and in the education of lighting and lighting design as a guarantee of the quality development in higher education.

Keywords: higher education, lighting, lighting environmen, lighting design, holistic approach, concept models.

JEL Codes: I23

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FRI-2.104-1-QHE-10

USING SERIOUS GAMES TO ENHANCE THE QUALITY OF HEALTHCARE EDUCATION

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Abstract: The paper presents the use of serious games in health education. Serious games are games that have a primary purpose other than entertainment and are designed to achieve specific goals, such as education, training, or healthcare. The purpose of serious learning games is to achieve the intended educational outcomes in a pleasant and effective way. At the same time, they contribute to increasing the motivation for learning among students, which is a major factor in increasing the level and quality of the knowledge achieved. In recent years, scientific research shows an increasingly widespread entry of serious games into the modern pedagogical process. Innovative technologies are an essential part of education today, with the focus shifting to the use of mobile and digital platforms, virtual reality and machine learning. The paper provides the basic concepts as well as a classification of serious games used in health care and medical education and their main characteristics. The report presents an educational game that can be used to improve the knowledge and skills of midwifery and nursing students in the "Health Care" professional field at the University of Ruse. Serious educational games can be used both in traditional face-to-face learning and in distance and online learning.

Keywords: Quality of Education, Health Education, Nurses and Midwives, Serious Educational Games.

JEL Codes: I23

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NOVEMBER RESEARCH CONFERENCE IN RAZGRAD

FRI-LCR-KS(R)

FRI-LCR-KS(R)-01

**PROFESSIONS OF THE FUTURE
(PROFESSIONS WITH A FUTURE)**

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Abstract: At the beginning of the report, the reason for the disappearance of certain professions and the emergence of others is noted - the rapid development of science, technics, and technology, specifically robotics and artificial intelligence. Examples of already extinct professions are given. for instance, the profession of "lamplighter" - this used to be the person who lit and extinguished streetlamps in the past. It is emphasized that the profession of TEACHER, or rather, LECTURER, will not disappear because children cannot be born already educated. The profession of DOCTOR will not disappear either, as unfortunately, people are not likely to stop getting sick. However, it is highlighted that these two professions will undergo significant changes. Several professions of the future are listed, such as ARCHITECT OF SMART BUILDINGS AND SMART CITIES, ICT SPECIALIST, CYBERSECURITY SPECIALIST, ETHICAL HACKER, DIGITAL TRANSFORMATION SPECIALIST, TRANSPORT TECHNOLOGY AND TECHNOLOGY SPECIALIST. Some exotic professions are also mentioned, such as SPACESHIP PILOT, SPACE TOUR OPERATOR, and the profession of DIGITAL DETOX THERAPIST, who will help us break free from excessive digital dependencies, i.e., from excessive addiction to digital technologies. This therapist will encourage us to disconnect from screens and once again open our eyes to the beauty of nature.

Keywords: professions of the future

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<https://www.world-education.eu/news/article-110.html> How to choose the profession of the future?

<https://hotmart.com/en/blog/jobs-of-the-future> the top professions of the future that are already trending!

https://www.karieri.bg/news/39730_profesiite-na-bdeshcheto-koi-shche-gi-ima-i-koi-shche-i the Professions of the Future: Which Will Exist and Which Will Disappear

<https://futurist.bg/professions-of-the-future/> 100 Professions of the Future

<https://jobtiger.tv/hr-industriya/sabitia/profesiite-na-budeshteto-2025-2050-g> the Professions of the Future: 2025-2050

FRI-LCR-KS(R)-02

HYDRATES AND COMPLEXES OF MAGNESIUM SULPHATES - SYNTHESIS, STRUCTURE, PROPERTIES.

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Abstract: Magnesium is the eighth most common element in the Earth's crust. Its content is about 2.4% (1) and is mainly associated with the carbonate minerals magnesite and dolomite. The richest source of bioavailable magnesium, is the hydrosphere. In seawater, the concentration of magnesium is about 55 mmol/L, and smaller, but also significant, amounts of magnesium are found in river environments and surface waters (2). Magnesium is one of the main bioelements and performs important functions for the development of living organisms - animals and plants. Magnesium is part of the chlorophyll structure and it is most commonly associated with plant growth, which is why magnesium salts find wide application in agrochemistry. Natural (kieserite, epsomite) and synthetic crystal hydrates of magnesium sulphate are used as stand-alone preparations or in the composition of microfertilizers, because in addition to magnesium, they contain another important bioelement - sulphur. Urea, on the other hand, is a commonly used nitrogen fertiliser. Approximately 60% of the bound nitrogen used for fertilization is applied as urea (3). Urea forms compounds with many of the magnesium salts including magnesium sulphates. In such a compound urea molecules displace water ones from the magnesium coordination surrounding, thereby reducing the hygroscopicity of the salt. Various approaches for synthesis of urea complexes of $MgSO_4$ will be presented and structural peculiarities of the studied compounds will be discussed (4,5). The single-crystal X-ray Diffraction as one of the most powerful, non-destructive analytical technique for structural analyses will be introduced. The presented results are part of the scientific project KII-06-H64/4 scientific team: R.Nikolova, K.Koshev, V.Kostov, N.Petrova, R.Titorenkova, G.Velianova.

Keywords: Urea complexes, Magnesium sulphate, single crystal analyses

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**CERAMIC PIGMENTS OBTAINED BY SOLID-STATE SINTERING OF
LOESS WITH ADDITION OF Cr_2O_3**

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Abstract: Loess from the Danubian Plain (Bulgaria) was used as a raw material for the solid-state synthesis of ceramics. The chemical composition and phase composition of the loess were determined using X-ray fluorescence and XRD analysis, respectively. Experiments were carried out with the sintering of loess with the addition of MgO , Na_2O , and Cr_2O_3 in order to obtain ceramic pigments. The phase composition, spectral characteristics and color coordinates of the obtained ceramics sintered at 1000, 1100 and 1200 °C were determined. The results show that the major mineral phases are quartz, augite and chromite. The lightness of the color of the ceramics decreases with the temperature of sintering, which is related to an increase in the amount of chromite in the ceramic.

Keywords: Loess, ceramic, pigments, augite, color measurement

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ANTIOXIDANT ACTIVITY AND CHEMICAL COMPOSITION OF EXTRACTS FROM AN ENDEMIC PLANT SIDERITIS SYRIACA

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Abstract: The plant world contains a huge number of phytochemicals with important pharmacological properties and is perceived as a treasure trove of potential drugs. Due to their wide availability, lower cost, safety and effectiveness, there has been a strong increase in their use in recent years. In the last decade, there has been serious scientific activity related to the study and analysis of representatives of the family Lamiaceae Lindl., which is one of the most diverse and widespread in the world - it includes 200 genera and about 7000 plant species. The genus *Sideritis* belongs to the Lamiaceae family and consists of more than 150 species found throughout the world. Many species of the genus *Sideritis* L. (Lamiaceae), such as *S. scardica*, *S. clandestina*, *S. syriaca*, *S. raeseri*, *S. euboea* and *S. sipylea* are endemic species used in traditional medicine. Worldwide, a large number of studies have been dedicated to the phytochemical composition of plants of the genus *Sideritis*. However, most of the researches cover populations inhabiting Spain, Italy, Greece and Turkey and research on Bulgarian *Sideritis* populations, especially *Sideritis syriaca* L., is limited. Current study aims to determine the phytochemical composition of extracts from the cultivated plant *Sideritis syriaca* and to investigate their biological activity in terms of antioxidant activity.

Keywords: *Sideritis syriaca*, phytochemical composition, antioxidant activity.

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**STORAGE STABILITY, ANTIOXIDANT AND ANTILIPID ACTIVITY
OF SEED EXTRACT FROM PINOT NOIR GRAPE**

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Abstract: The seed extract from Pinot Noir grape (GSE) was prepared. Extraction yield (12%) and total phenolic content (111.22 mg GAE/mg DW matter) of GSE was evaluated. The antioxidant capacity of GSE was determined by ABTS and DPPH methods. The effect of storage conditions of GSE on its TPC values has been investigated. It was found that when GSEs kept at 31%, 52% and 71% relative humidity for 60 days at 25 °C, the TPC values decreased from 111.22 to 86.83, to 83.00 and to 62.00 mg GAE/g DW, respectively. For that period TPC value of the sample stored at 4 °C decreased slightly to 109.50 mg GAE/g DW and TPC value of lyophilized sample retained. The lipid oxidation of extracted fats from ground pork without and with added GSE and a synthetic antioxidant (butylated hydroxyl toluene) was studied at 40 °C, 4 °C and -18 °C. It was found that at 4 °C for 48 hours there was no lipid oxidation of the fat samples with added antioxidants (AO), in contrast to the sample without AO. After 48 hours at -18 °C, no lipid oxidation was observed in all samples - without and with added AO.

Keywords: grape seed extract, storage stability, fat, lipid oxidation

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SURVEY ON INFORMED FOOD CHOICES

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Abstract: A survey was conducted regarding consumer interest in food label information. When buying food products, the shelf life is the most important. The following is the composition (96.57%), the presence of allergens (95.11%), the sign of a healthy product (94.03%), the content of fats, fatty acids, carbohydrates, sugars, proteins, salts, vitamins, minerals (90.31%). The easiest to understand is the list of ingredients and the nutritional value of the products. The respondents had difficulty with the information about cholesterol and fiber in the products. The difficulty in reading the labels comes from the large volume of information that is difficult to understand and in small print. 24.10% of respondents are not interested in the information on product labels. The current questionnaire survey shows better awareness, knowledge and orientation on the part of the respondents compared to previous surveys.

Keywords: Food products. Food label, Composition of food products, Surveys.

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ADDITIVES IN FOOD PRODUCTS

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Abstract: The information on additives from labels of frequently consumed food products was analyzed: bread and pasta, carbonated drinks and meat products. Sweeteners, acids, colorings, preservatives, etc. have been found in carbonated drinks. Synthetic sweeteners, usually used in combination, have a negative effect on the body. Also, the combination of synthetic dyes and sodium benzoate in food lead to increased hyperactivity in children. Additives in bread are emulsifiers, antioxidant, acidity regulator, anti-caking agent and preservative. Calcium propionate is the preservative used in all brands of sliced and packaged bread, but its safety is controversial, given that a cumulative effect is observed. A total of 13 additives were found in a dough product - patty. Meat products contain preservatives, antioxidants, stabilizers, dyes, flavorings. Nitrites, red dyes, sodium monoglutamate flavoring can be dangerous to health.

Keywords: Additives, Food products, Label.

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APPLICATION OF ALGINATE

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Abstract: Alginates have been widely applied and explored in many fields due to their significant advantages. They have a vast application in the food, pharmaceutical, and environmental areas due to their excellent gelling capacity. Concerns about environmental issues and pursuits of material functionalities have driven the development and application of biopolymers with diverse physical, chemical, and biological properties. Alginates are also used in 3D printing, fire-resistant materials, drug delivery, model foods and active packaging. Their excellent biocompatibility and biodegradability further extend their application to biomedical fields.

Keywords: alginate, application, gel formation, encapsulation, films, emulsions, fibers, food, environment

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**SUSTAINABLE STRATEGY FOR DESIGN AND MANAGEMENT OF
BIOFUEL SUPPLY CHAINS ON A BULGARIAN CASE STUDY**

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Abstract: This article represents the application of a mixed integer linear programming (MILP) mathematical model for optimal design and planning of the biodiesel supply chain on a case study of the territory of Republic of Bulgaria. Sunflower and rapeseed are used as raw materials for biodiesel production. The country is divided into twenty-seven regions corresponding to its districts. Existing crops in each region, oil processing and biodiesel production plants, as well as potential crops are represented as discrete variables in the model. The mathematical model is solved using GAMS software and is a comprehensive decision making tool. The proposed strategy can also be applied to different time intervals as well as to different countries or regions by adjusting the necessary modeling data.

Keywords: Biodiesel, Sply chain, Multi ciriteria decision making

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GRAVIMETRIC ASSESSMENT OF THE EFFECT OF 2-ACETYL-6-(10H-PHENOTHIAZIN-10-YL)-3A,6-DIHYDRO-1H-BENZO[DE]ISOQUINOLINE-1,3(2H)-DIONE ON THE CORROSION BEHAVIOR OF STEEL IN SULFURIC ACIDIC ENVIRONMENT

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Abstract: In this study, we present the results of research on the inhibitory properties of the organic substance (2-acetyl-6-(10H-phenothiazin-10-yl)-3a,6-dihydro-1H-benzo[de]isoquinoline-1,3(2H)-dione) concerning the corrosion of steel in a sulfuric acid environment. The experiments were conducted under laboratory conditions, and the inhibitory action of the substance was investigated using the gravimetric method. Although this method does not provide insights into the mechanism of corrosion processes, it is suitable for evaluating the inhibitory effects of various substances. Studies were carried out to examine the influence of the inhibitor's concentration ($0 - 1 \times 10^{-4} \text{ mol dm}^{-3}$) on the corrosion rate, degree of protection (Z), and the inhibitor's efficiency coefficient (Y). The impact of the inhibitor on the corrosion process characteristics was studied at three temperatures (25°C, 35°C, and 45°C). Due to the strong temperature dependence of corrosion processes, sample exposure at different temperatures was chosen for 48, 23, and 2 hours, respectively.

The obtained results clearly demonstrate that with an increase in the concentration of the inhibiting substance under all investigated conditions, the protective effect noticeably increases. Considering the fact that the substance is practically insoluble in water and has very low solubility in ethanol, it is worthwhile to explore other suitable solvents that would allow for the introduction of larger quantities into the corrosion environment.

Keywords: corrosion, inhibitors, 2-acetyl-6-(10H-phenothiazin-10-yl)-3a,6-dihydro-1H-benzo[de]isoquinoline-1,3(2H)-dione

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WASTE TO BIOFUEL: UTILIZATION OF WASTE DAIRY SCUM FOR SUSTAINABLE SYNTHESIS OF BIODIESEL - BULGARIEN SCALE

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Abstract: *The transformation of waste into energy, respectively into fuel is one of the main issues to be solved in achieving the developed low-carbon society. Despite this, in the waste-to-energy studies, the possibilities for the utilization of alternative organic wastes have not been comprehensively considered. In order to achieve a balanced solution to this problem, improvements and innovations are needed in terms of strategic management of resources (in particular potential energy resources), ensuring healthy ecosystems and a sustainable economy.*

The presented study focuses on the production of biodiesel based on waste generated in the dairy industry. The article investigates the design of an efficient supply chain, in order to minimize the total costs of operating the chain, providing an optimal scenario for reducing the environmental impact of the entire chain. A mathematical model has been developed which is defined in the field of MILP. The task was solved with the GAMS software package and was assigned to the territory of the Republic of Bulgaria.

Keywords: Biodiesel, Sustainability, Waste, Dairy, Supplay Chain

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ENVIRONMENTALLY ACCEPTABLE SYNTHESIS OF MAGNESIUM BEARING FERTILIZERS

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Abstract: Urea complexes of magnesium sulfate have been studied since the beginning of the last century. Studies on the solubility and interactions in the system $\text{MgSO}_4 - \text{OC}(\text{NH}_2)_2 - \text{H}_2\text{O}$ were published in the period between 1936 and 1997 (1-4). The main part of the investigations of magnesium sulfate urea complexes conducted recently have been directed to the preparation of products for agricultural chemistry (5-8). Mechanochemical synthesis of magnesium bearing fertilizer by using magnesium hydrates (epsomite, kieserite) is reported. The use of mechanochemical synthesis methods has a number of advantages. Solvent-free synthesis, low-temperature operation, high yields, and the absence of by-products make this method most environmentally acceptable. Based on the widely used fertilizer compounds – magnesium salts and urea, a new compound with chemical formula $\text{MgSO}_4 \cdot 6\text{OC}(\text{NH}_2)_2 \cdot 0.5\text{H}_2\text{O}$ is prepared. The high ratio of urea to magnesium sulphate corresponds to the use of nitrogen as a major bioelement, and sulphur and magnesium as trace elements, which meets certain desired requirements for appropriate fertilizer products and mixtures. The new product implies smaller losses of nitrogen and its low hygroscopicity supposes good storage stability. The presented results are part of the scientific project KII-06-H64/4 scientific team: R.Nikolova, K.Kossev, V.Kostov, N.Petrova, R.Titorenkova, G.Velanova.

Keywords: mechanochemistry, fertilizers

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COMPARATIVE STUDY OF ABRASIVES CONTENT IN TOOTHPASTE

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Abstract: Toothpastes are a cosmetic product that is used to clean the teeth from food residues. The cleaning action of toothpastes is achieved with the inclusion of various abrasive substances. The aim of the present study was to determine the amount of abrasives included in toothpastes purchased from the commercial network. 15 different brands containing silica and/or calcium carbonate were analyzed. An analysis of the composition of the toothpastes was carried out, according to the information on the packaging. The data show that the total amount of abrasives examined is over 30%.

Keywords: abrasives, toothpaste

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COMPARISON AND EVALUATION OF DIFFERENT THEORETICAL METHODS FOR CONSTRUCTIVELY SIZING OF CYCLONES

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Abstract: *The present work aims to compare and evaluate the possibilities of the known theoretical methods for the constructive sizing of cyclones. Three theoretical methods for the constructive sizing of cyclones have been considered, and their application has been realized through the calculation of specific methodologies for the selection and calculation of cyclones for given initial data. The calculation procedures of the three methods were made for a specific site with the aim of separating gas from a cement clinker incinerator in a cyclone with a capture efficiency of not less than 60%. A comparison of the capabilities of the three theoretical methods used for the constructive sizing of cyclones was made.*

Keywords: *Efficiency of cyclones, Sizing of cyclones, Selection of cyclones, Methods*

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PECULIARITIES IN THE SIZING OF REACTORS WITH STIRRING DEVICES DURING AN EXOTHERMIC REACTION

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***Abstract:** The present work aims to address some aspects in the sizing of stirred tank reactors where the exothermic reaction leads to a shortage of heat exchange surface and problems with the utilization of the heat released by the reaction. After computational procedures and applied specific methodologies, a reactor with mechanical stirring, with an irreversible first-order exothermic reaction taking place, has been sized to reach a 70% degree of conversion. In accordance with the specifics of the reaction, a batch reactor with an elliptical bottom and cover and an open turbine agitator with baffles was chosen. Thermal calculations of the reactor have been made to ensure the thermal regime in the presence of a jacket and an external heat exchanger.*

***Keywords:** Stirred tank reactors, Exothermic reaction, Sizing of reactors, Methods*

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INVESTIGATION OF THE STRUCTURE OF GARNET PIGMENTS OBTAINED FROM PURE AND WASTE RAW MATERIALS BY USING OF ELECTRON PARAMAGNETIC RESONANCE

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Abstract: Garnet ceramic pigments were synthesized by the method of solid-phase sintering. The aim of the present work is to synthesize garnet pigments from pure and waste materials and to investigate their structure. As raw materials we used CaO , Cr_2O_3 , Fe_2O_3 and V_2O_5 , and as a source of silicon oxide - $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ and rice husk burned at 650°C . The pigments were synthesized at a final firing temperature of 1000°C and 1100°C . The synthesized materials were investigated mainly by electron paramagnetic resonance.

Keywords: Garnet pigments, Rice husk, Solid-state sintering, Electron paramagnetic resonance

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COMPARATIVE PHYSICOCHEMICAL ANALYSIS OF MINERAL, MOUNTAIN AND SPRING WATERS FROM BULGARIA

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Abstract: Physical and chemical characterization of 90 mineral, mountain, and spring waters from 11 regions in the country – Haskovo, Stara Zagora, Yambol, Sliven, Burgas, Varna, Plovdiv, Pazardzhik, Sofia, Lovech, and Blagoevgrad – was carried out.

Keywords: water sources, characteristics.

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FRI-LCR-P-1-CT(R)-10

APPLICATION OF NATURAL ADDITIVES TO METALWORKING FLUIDS BASED ON AQUEOUS EMULSIONS OF VEGETABLE OR MODIFIED VEGETABLE OILS - A REVIEW

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Abstract: A large part of metalworking fluids (MWFs) are used in the form of 5-10% aqueous emulsions of lubricating oils. This requires metalworking fluids to have good lubricating properties, good thermo-oxidative stability, low corrosiveness, low toxicity, good viscosity-temperature properties and optimal pH, as well as emulsion stability. Vegetable oils lubricants are biodegradable but most of conventionally used additives are water and soil pollutants. In this report, possible natural additives that are compatible with MWFs based on vegetable oils and their derivatives are tracked.

Keywords: Metalworking fluids, vegetable oils, eco-friendly lubricant, additives

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FRI-LCR-P-1-CT(R)-11

OVERVIEW OF THE POSSIBILITIES OF REPLACING MINERAL BASE OILS IN METAL WORKING FLUIDS WITH VEGETABLE OILS AND THEIR DERIVATIVES

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Abstract: *Metal working fluids (MWFs) are widely used in industry. Most often these are water-oil emulsions based on mineral oil. Huge amounts of MWFs are used annually worldwide, and recycling MWFs after the end of their working life is difficult and expensive. This report investigates the possibilities of replacing mineral oils with biodegradable vegetable oils and their derivatives by reviewing physicochemical and tribological parameters. Possible additions and modifications of vegetable oils are being investigated in order to improve their qualities as base oils for MWFs.*

Keywords: *Metalworking fluids, vegetable oils, eco-friendly lubricants*

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FEATURES OF COORDINATION OF SHRINKAGE PROCESSES OF CERAMIC MASSES AND ENGOBE COATINGS IN BRICK PRODUCTION

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Abstract: Applying engobe coatings to the surface of ceramic bricks is a reliable way to diversify the product range and improve its quality. But such a coating effect is provided in the case when they are coordinated with ceramic masses by shrinkage processes during drying and firing. This work presents the results of research on the shrinkage processes of engobe coatings and ceramic masses when engobes are applied to freshly formed and dried semi-finished products. The probability of the occurrence of internal stresses between the ceramic mass and the coating was analyzed and the maximum permissible deviations of their shrinkage indicators were established. It is noted that with a discrepancy of 13–15% of air and fire shrinkage of masses and engobes, internal stresses are not critical and do not lead to defects in the form of cracks or chips. At the same time, the difference in shrinkage of 17–20% caused the appearance of deep and numerous cracks on the surface of the products. The most versatile composition of the engobe coating is offered, which can be suitable for engobing both face and clinker bricks.

Keywords: Slip, Engobe, Grinding, Clay, Cullet, Fluidity, Roasting, Sintering, Water Absorption, Frost Resistance

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FEATURES OF BIOGLASS TECHNOLOGY FOR BONE TISSUE REGENERATION

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Abstract: One of the main directions of research in the field of regenerative medicine is focused on the replacement of bone defects with materials that interact with the cells of a living organism and provide the body with a structure on which new tissues can easily grow. Most often, bioglasses are used for this, which are obtained in various ways - from classical cooking to sol-gel technologies, while each of them has its own advantages and disadvantages. In the work, a comparative analysis of various bioglass production technologies from the point of view of practical implementation in production is carried out, and the requirements for the main indicators of the product are outlined.

Keywords: Bioglass, Hydroxyapatite, Sol-gel, Glass melting, Bone regeneration

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EFFECT OF THE TEMPERATURE DURING THE POLYMERIZATION STEP ON THE CHARACTERISTICS OF THE OBTAINED MICROCAPSULES FROM DIFFERENT ESSENTIAL OILS IN THE MICROENCAPSULATION PROCESS BY *IN SITU* POLYMERIZATION

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Abstract: This article represents the preparation of essential oil microcapsules by *in situ* polymerization of urea and formaldehyde. The research was done with the aim of optimizing the process conditions to obtain better quality microcapsules. In this regard, the influence of temperature during the polymerization stage was investigated, which proved the optimal temperature of the process in the preparation of microcapsules from different essential oils. As it can be seen from the data, the best results were obtained in the temperature interval between 40 °C and 50 °C. This is due, on the one hand, to the fact that the increase in temperature during the polymerization step accelerates the desorption process of the pre-polymer (monomethylolurea) molecules from the surface of the microdroplets obtained during the emulsification stage. Since the polymerization or polycondensation is an exothermic reaction, increasing the temperature during the polymerization step leads to a decrease in the rate of the polymerization or polycondensation reaction, and hence to a decrease in the intensity of the encapsulation process, which affects the quality and the density of the capsule shell, and hence the yield and quality of the obtained capsules. From this, it can be concluded that the increase in temperature during the polymerization step changes the ratio between the rates of polymerization (polycondensation) and desorption of the pre-polymer from the surface of the microdroplets, accelerating the desorption process and reducing the rate of polymerization (polycondensation). In other words, lower temperature decreases desorption and increases the rate of polymerization or polycondensation. From the results, it can be seen that regarding the size of the capsules, the temperature during the polymerization step does not affect this size.

Keywords: Microencapsulation, *in situ* polymerization, Polymerization step, UF polymer capsule shell, Essential oils, Monomethylol urea, Urea, Formaldehyde.

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FRI-LCR-P-1-CT(R)-15

EFFECT OF THE MICROENCAPSULATION TIME ON THE CHARACTERISTICS OF THE OBTAINED MICROCAPSULES FROM DIFFERENT ESSENTIAL OILS BY *IN SITU* POLYMERIZATION PROCESS

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Abstract: In the present work, the influence of time during the polymerization step on the microencapsulation of essential oils by *in situ* polymerization between urea and formaldehyde is considered. The synthesized microcapsules are filled up with rose oil, lavender oil, jasmine oil, eucalyptus oil and orange oil as core materials. The data are obtained by analyzing several important characteristics such as yield (%), microcapsule size (μm), encapsulation efficiency (%) and encapsulated substance content (% sample i. e. encapsulated compound, E% core), which are directly related to the efficiency of the process, the microcapsule shell thickness and quality. The results of the conducted experiments show that the most intensive step of polymerization takes place from the 1st to the 2nd hour, and in the microencapsulation of some oils - up to the 3rd hour. Thus, by controlling the duration of the polymerization step, a successful design of the capsules could be achieved, both in terms of their size and in terms of the yield, type, thickness and quality of the shell that builds them. Furthermore, control of the duration of the polymerization step allows saving time, money and energy, which is of great importance when scaling up the process for large-scale industrial production.

Keywords: Microencapsulation, *in situ* polymerization, Polymerization step, UF polymer capsule shell, Essential oils, Monomethylol urea, Urea, Formaldehyde.

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BIODIESEL SYNTHESIS FROM LOW QUALITY RAW MATERIALS USING SULFOMASS AS A CATALYST

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Abstract: As is known, for food and industrial purposes, high-quality vegetable oils obtained by special processing, for example refining, are used. Waste products, as well as oils after use, are thrown away or fed to animals. The same applies to fats with deteriorated qualities acquired as a result of improper storage or processing. However, these products are valuable sources of energy when properly processed. This necessitates the expansion of research for more efficient utilization of this type of raw materials, in particular, to optimize and expand the processes for their conversion into low-viscosity, potential fuel materials such as biodiesel. The aim of the present study is to obtain higher fatty acids methyl esters (FAME) from low-quality waste vegetable oils with high fatty acids content in order to optimize the esterification and transesterification process with sulfomass as an acid catalyst and to establish the possibilities of their application as fuels for diesel engines.

Keywords: Biodiesel, FAME, Fatty acids, Natural oils, Sulfomass, Low quality raw materials, Acid catalysis.

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FRI-LCR-P-1-CT(R)-17

MICRO-INFRARED AND RAMAN SPECTROSCOPY APPLIED FOR STUDYING ANCIENT PIGMENTS

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Abstract: Micro-infrared and Raman spectroscopy are non-destructive, local methods providing valuable information about the type of material (organic or inorganic), atomic groups, phase impurities, isomorphic substitution, inhomogeneity, i.e. carries information on both chemical composition and structural characteristics. Raman spectroscopy is based on the inelastic Raman scattering of monochromatic light in the visible, near-infrared or ultraviolet range. Fourier transform infrared spectroscopy examines the direct absorption of light at frequencies corresponding to the vibrational energy of atomic group. Due to the different selection rules for Raman scattering and infrared absorption, the two methods are complementary. The use of both methods for the study of ancient pigments gives good results in the identification of coloring substances, in the study of mixtures, as well as in alteration products. Various examples of Raman and infrared spectra of black, red, purple, yellow pigments from archaeological samples are presented. The advantages and disadvantages of the two methods for the identification of various ancient pigments with natural origin are summarized.

Keywords: Micro-infrared spectroscopy, Raman spectroscopy, ancient pigments

FRI-LCR-P-1-CT(R)-18

STUDY ON THE BIOLOGICAL DEGRADATION OF POLYLACTIC ACID IN VARIOUS ENVIRONMENTS

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Abstract: In the present study, samples of polylactic acid packaging were placed in laboratory conditions simulating close to those of the environment. Sea, ocean and fresh water, soil, sea sand and compost were used as media for studying the degradation behavior of polylactic acid packaging. The factors affecting the biodegradability of the samples, depending on the physicochemical conditions of the environments, were considered: temperature, pH, amount of dissolved oxygen, bulk density and particle size composition. The loss of mass, the thickness of the samples and the influence of the environments on the tensile characteristics of the polymer material were determined.

Keywords: Polylactic acid, Biodegradability, Enviromentals, Degradation behavior, Simulated conditions, Tensile characteristics.

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FRI-LCR-P-1-CT(R)-19

IR AND NMR SPECTRA OF SOME ISOQUINOLINE DERIVATIVES OF 1,8-NAPHTHALIC ANHYDRIDE

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Abstract: This article presents the synthesis and spectral (IR, ^1H NMR, ^{13}C NMR and DEPT-135) data of some isoquinoline derivatives of 1,8-naphthalic anhydride.

Keywords: IR, ^1H NMR, ^{13}C NMR, DEPT 135, 1,8- naphthalic anhydride.

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FRI-LCR-P-1-CT(R)-20

MICROBIOLOGICAL CHARACTERISTIC OF MINERAL, MOUNTAIN AND SPRING WATERS FROM BULGARIA

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Abstract: Microbiological characterization of 90 mineral, mountain, and spring waters from 11 regions in the country – Haskovo, Stara Zagora, Yambol, Sliven, Burgas, Varna, Plovdiv, Pazardzhik, Sofia, Lovech, and Blagoevgrad – was carried out.

Keywords: water sources, microbiological characteristics.

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FRI-LCR-P-1-CT(R)-21

STUDY ON THE EFFECT OF NANO-ADDITIVES IN THE LOW-TEMPERATURE SYNTHESIS OF CORUNDUM CERAMICS

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Abstract: In obtaining ceramic and composite materials with specific properties, nanotechnology has a significant role in obtaining the starting components in a finely dispersed state, which intensifies the synthesis process and leads to improvement and reproducibility of properties. The present article presents the preparation of finely porous corundum ceramics by low-temperature synthesis, investigating the effect of the introduction of different amounts of nanoadditives - nanosized Al_2O_3 , graphene nanoplates, TiO_2 - on the microstructure and properties of the synthesized samples. for the characterization of the starting batches and the obtained ceramics mainly the methods of X-ray diffraction, SEM, IHS were used.

Keywords: Corundum ceramics, Nano-additives, Low temperature synthesis

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SAT-LCR-P-1-BFT(R)-01

TRENDS IN THE SALES OF FOOD SUPPLEMENTS AND OTC PRODUCTS

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Abstract: Dietary supplements are concentrated sources of nutrients or other substances with a nutritional or physiological effect. They are not a substitute for rational nutrition. Their role is to correct nutritional deficiencies, thus assuring consumers that they are getting enough of certain nutrients and there is no risk of developing a deficiency or supporting specific physiological functions. Therefore, they should not be considered as products having pharmacological effects on the body. This article examines trends in the sales of dietary supplements and over-the-counter medicinal products. The aim is to track and compare the sales of three pairs of products with similar composition for a period of one year, in pharmacies in Varna. The sales data as an absolute value of various commercial products, registered as food supplements, and an over-the-counter medicinal product, were analyzed. Historical, statistical, and graphical methods were used. Results were processed using Microsoft Excel, version 2020.

Despite the variable composition and quality of dietary supplements and the lack of clinical evidence to support their effect, there is an upward trend in their sales. The dietary supplement market is subject to constant changes, including scientific discoveries, regulatory changes, and consumer preferences. Although nutritional supplements should not claim to have a healing effect on the body, more and more consumers use them daily to solve various health problems. This poses a number of risks to the health of patients. In order to achieve a rational use of nutritional supplements, consultation with a health professional, as well as a good knowledge and understanding of the patient's condition, is essential.

Keywords: food supplements, sales, OTS, pharmaceutical market

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EFFECT OF BLACKCURRANT PRESS FLOUR ON THE MAIN CHARACTERISTICS OF BREAD

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Abstract: Blackcurrant pressed flour is rich in fiber and pectin, and is used in the production of bread. By using appropriate computer-based statistical methods, the appropriate amount of chokeberry flour in bread production has been determined. An analysis was made of a total of 43 characteristics describing the change in the main physical, physicochemical, geometric, organoleptic and optical properties of the bread with the addition of black pressed flour. It was found that the added amount of blackcurrant pressed flour in the bread has a significant effect on the color characteristics, physico-chemical and organoleptic parameters and, to a lesser extent, on the spectral characteristics of the bread. The height, diameter, shape stability, electrical conductivity and oxidation-reduction potential of the bread medium, titratable acidity and organoleptic characteristics of the floor bread and two color indexes adequately reflect the changes in the bread depending on the added amount of flour from blackcurrant pressings. This dependence can be described with an accuracy of up to 83%. It was also found that the addition of 2.27% raw material from blackcurrant pressed flour improved the physico-chemical and organoleptic and optical characteristics of the resulting bread.

Keywords: blackcurrant pressed flour, color, spectra, sensory characteristics, , regression model.

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MOLECULAR DIFFUSION COEFFICIENT OF TANNINS IN ETHANOL EXTRACTS OF WHITE OREGANO (*ORIGANUM HERACLEOTICUM* L.) CULTIVATED IN BULGARIA

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Abstract: White oregano (*Origanum heracleoticum* L.) is a Herbaceous Perennial of Lamiaceae family. It is usually wild but nowadays it is cultivated in different regions of the country. It contains various biologically active substances as polyphenolic acids, flavonoids, tannins, proteins, minerals, vitamins, etc., which is why it is increasingly used as a herb and in the form of extracts. The aim of this study is to determine the molecular diffusion coefficient of tannins in ethanol extracts of white oregano cultivated in Bulgaria. A static extraction was carried out with two solvents – 50 and 70% ethanol at a hydromodule of 1:10 and three temperatures (20, 40 and 60°C) and duration of the process of 1 h as well. The data show that the values are highest at a temperature of 60°C, with the 50% ethanol extracts having a molecular diffusion coefficient of $5.26 \cdot 10^{-6} \text{ m}^2/\text{s}$ and 70% ethanol extracts having a molecular diffusion coefficient of $4.5 \cdot 10^{-6} \text{ m}^2/\text{s}$.

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THERMODYNAMIC AND KINETIC INVESTIGATION OF SUNFLOWER O/W EMULSIONS WITH ADDITION OF CITRAL

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Abstract: Thermodynamic and kinetic investigations of emulsions prepared with high oleic sunflower oil and addition of 0.1%, 0.2% and 0.3% citral were provided. Thermodynamic parameters as Gibbs free energy, enthalpy and entropy were determined. It was found that emulsions with addition of 0.3% citral and 3% soybean protein isolates are more stable. Particle size in emulsions was determined by optical microscope. The pH values were measured in all emulsions. pH interval was between 5.8–6.1 and after analysis were seen that emulsions exhibited more stability at pH around 6.1. The dynamics of emulsions were investigated at 1 to 15 days as measured of turbidity. The emulsions prepared 0.3% citral and 3% soybean protein presented high turbidity and again determined as more stable.

Keywords: Emulsions, Protein stabilizer, Particle sizes, Citral, Thermodynamic, Kinetic.

Acknowledgments: The author gratefully acknowledge the financial support of the Scientific Research Fund –University of Ruse, Bulgaria, under project "Study of the fruits of fennel (*Foeniculum vulgare* Mill.) and its products, with the aim of their application in practice" (2023-FRz-02).

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SAT-LCR-P-1-BFT(R)-05

CHARACTERISTICS OF DRINKING WATER FROM THE REGION OF SLIVEN

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Abstract: The drinking water, regardless of its origin, must meet the drinking water requirements. in this way, its quality and human health are guaranteed. The aim of the present work is to determine the 20 controlled physical, chemical and microbiological indexes of drinking water in Sliven region. The investigated water sample comply with all controlled physical and chemical parameters on the drinking water, but does not comply with all controlled microbiological parameters.

Keywords: Drinking water, region of Sliven, characteristics.

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SAT-LCR-P-1-BFT(R)-06

CHEMICAL COMPOSITION OF PROCESSED FENNEL FRUITS AND THEIR APPLICATION IN FEED MIXTURES.

1. PROTEIN AND AMINOACIDS

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Abstract: The fruits of fennel (*Anethum graveolens* L.) are mainly processed to obtain essential oil, which is used in the food industry, medicine and cosmetics. After separating the essential oil, the distilled fruits can also be processed to extract the glyceride oil, which is mainly used in cosmetics and technology. The spent fruits also contain various biologically active substances, which is why they are a suitable additive to feed mixtures. The aim of the present work is to determine the content of protein and amino acids in them and follow the possibilities of their application. In this way, a "closed circle" is obtained, as the waste raw material does not pollute the environment. The spent fennel fruits are high in protein (18.3%), aspartic acid (24.26 mg/g), histidine (21.17 mg/g), serine (18.19 mg/g) and glutamic acid (17.98 mg/g). They also contain significant amounts of essential amino acids, which makes them a suitable addition to various feed mixtures.

Keywords: processed dill fruits, protein, amino acids, feed mixtures.

Acknowledgements: Authors gratefully acknowledge the financial support of the Scientific Research Fund – Bulgaria, under project "Investigation of new possibilities for obtaining multifunctional properties of paper", No 920 (KП-06-H49/1) and the financial support of the Scientific Research Fund –University of Ruse, Bulgaria, under project "Study of the fruits of fennel (*Foeniculum vulgare* Mill.) and its products, with the aim of their application in practice" (2023-FRz-02).

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SAT-LCR-P-1-BFT(R)-07

DIETARY FIBER CONTENT OF WHEAT BREAD ENRICHED WITH NON-TRADITIONAL TYPES OF FLOUR

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Abstract: In recent years, there has been a growing interest in the healthy aspects of nutrition. The benefits for the body of consuming foods rich in fiber have been proven indisputably - they play the role of a preventive factor regarding obesity conditions, reduce the risk of cardiovascular diseases, type 2 diabetes and some oncological diseases. in order to increase the intake of dietary fiber, it is appropriate to enrich traditional and systematically consumed products, such as bread. The aim of the present study is to determine the dietary fiber content of wheat bread enriched with rosehip flour, chestnut flour and pumpkin seed flour (in amounts of 5% or 10% relative to the mass of wheat flour). Dietary fiber content was evaluated according to AOAS method 985.29:1986. From the obtained results, it was found that the amount of fiber in the bread increased with all enriched samples. The highest results were recorded when the bread was enriched with rosehip flour. When it is in the amount of 10%, the fibers are 6.91% of the total mass of the bread, which is 4.6 times more compared to the control sample. An average daily consumption of bread enriched with 10% rosehip flour would provide almost 70% of the recommended daily fibre intake.

Keywords: Dietary fiber, Wheat bread, Rosehip flour, Chestnut flour, Pumpkin seed flour

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SAT-LCR-P-1-BFT(R)-08

DIFFERENT WAYS TO PRODUCE BIOGAS

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Abstract: *Biogas is considered as alternative to conventional fuels. It is produced by anaerobic digestion of different organic materials. Generally, those materials include mostly manure and municipality waste. Our research focuses on the possibility to utilize new types of organic materials in combination with the traditional ones.*

In today world, humanity uses mainly oil, nature gas and coal, which are non renewable energy sources. Their usage throughout XXth century, have lead to economic prosperity, but also to a large scale pollution of the environment. Mostly that pollution is expressed by the carbon emissions, which have direct effect on global warming. The reason is that for a very short time scale, large amounts of fuels have been burnt. That leads to the release of the carbon, contained in those fuels for hundreds millions of years. According to the International Energy Agency¹, worldwide oil demand for 2023 is estimated to be around 100 mb/d (1 oil barrel is 159 liters). As the fuels are exhaustible, their depletion leading to economical, social and political consequences, it is important to research and develop new alternative fuels. Such fuels could be biogas, biodiesel, ethanol, hydrogen and others.

Keywords: *Biogas, Biomethane, Environment, Alternative non – fossil fuels*

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CHITOSAN – OBTAINING AND APPLICATION

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Abstract: Chitosan is obtained by deacetylation of chitin, which is found in the covers of shells, crustaceans, on the wings of beetles, crickets, bees and other insects, where it performs structural support functions. The amount of chitin that is annually synthesized in the biosphere is estimated at $10^{10} - 10^{12}$ tons. Marine crustaceans alone synthesize 10 billion tons per year, which means that the stock is a renewable and virtually inexhaustible resource. Another alternative source of chitin and nutrients are various types of edible insects, for example crickets, beetle larvae and mealworms. Today, interest in chitosan is related to its diverse properties: antioxidant activity, selective binding to heavy metals and organic compounds, ability to form films and membranes, many modified products can be obtained from it. Therefore, it is widely used in the food industry, medicine, agriculture, military industry, cosmetics and other fields.

Keywords: chitosan, isolation, properties, application.

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SAT-LCR-P-1-BFT(R)-10

ALGINATE GENERAL CHARACTERISTICS AND PROPERTIES

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Abstract: Alginates are anionic natural polysaccharides, salts of alginic acid. Alginate is being extracted from algal or bacterial sources, as for commercial production, algal sources are preferred. It is a linear copolymer composed of acids and acid residues, and its structure is mainly defined by sequence pattern - the G-block length, M/G ratio, and molecular weight are key in determining its physicochemical and technological properties. The diverse physical and chemical properties of alginate lead to the performing of derivatization reactions on the polysaccharide backbone. To meet the specific needs, alginates may need modification by acetylation, phosphorylation, sulfation, hydrophobic modification, covalent crosslinking of alginates, graft copolymerization of alginates, or other methods. Due to their properties and characteristics, alginates have been widely applied and explored in many fields, such as food science, pharmacy, textiles, cosmetics and many others.

Keywords: alginate, physical properties, chemical properties, derivatization, modification methods, gelling, emulsifying, encapsulation

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SAT-LCR-P-1-BFT(R)-11

TECHNOLOGICAL CHARACTERISTICS OF GRAPES AND WINE FROM THE INTRODUCED WHITE WINE CLONES ALBANA P4 AND PROSECCO ESAV 19

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Abstract: *Technological characteristic of clones of the introduced white wine varieties Albana and Prosecco was made. The mechanical and chemical composition of the grapes and the properties of the wines obtained from Albana P4 and Prosecco ESAV 19, grown under the soil and climatic conditions of the Central Northern Bulgaria were studied. The investigation was carried out at the Institute of Viticulture and Enology – Pleven and covered the 2017 and 2019 vintages. The mechanical analysis showed that the cluster of the clones had a high ratio of rachis and skins, less seeds and a high theoretical yield. The sugar accumulation in Albana P4 was better, it was more intense and the grapes reached technological maturity in early September, while in Prosecco ESAV 19 the rate was slower and the technological maturity occurred in the second half of the month. Albana P4 wines had significantly higher alcohol and titratable acid content. The values of sugar-free extract, the phenolic compounds and the colour intensity were within the range typical for white wines, as the differences between the samples of both clones were non-significant. In the organoleptic analysis of the Albana P4 samples, the wine from the 2017 vintage was rated higher, while from the Prosecco ESAV 19 samples – the wine from the 2019 vintage.*

Keywords: *Albana, Prosecco, Clones, Grapes, Wine*

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Aleksandar Kosuliev	FRI-2G.404-1-EM2
Aleksandar Tsakmanov	FRI-20.21-1-SITSTL
Alina Costea	FRI-229-2-P(S)
Ana Popova	FRI-1.322-1-SW
Anastas Georgiev	FRI-2B.313-1-L
Andrey Runchev	FRI-2B.412-1-EM1
Aneliya Ivanova	FRI-2G.303-1-CCT1
Aneta Irmanova	FRI-2B.412-1-EM1
Angel Popgeorgiev	FRI-2G.303-1-CCT1
Angel Smrikarov	FRI-LCR-KS(R)
Anife Veli	FRI-LCR-1-CT(R)
Anita Lozeva	FRI-2G.307-1-ERI
Anka Krasteva	FRI-10.326-1-EEEE
Anna Lecheva	SAT-2G.307-1-ERI
Anna Lenkova	FRI-2G.309-1-MCDA
Anna Nikolova	SAT-2B.313-1-L
Anna Varbanova	FRI-1.322-1-SW
Antoaneta Dobрева	FRI-KC.H2-1-TMS
Antoaneta Mihova	FRI-2G.307-1-ERI
Anton Grozev	FRI-1.317-1-MEMBT
Anton Nedyalkov	FRI-2B.412-1-EM1
Antonia Ilieva	FRI-LCR-P-1-CT(R)
Antonina Mihaylova	FRI-10.326-1-EEEE
Asen Asenov	FRI-20.21-1-SITSTL
Aslıhan İstanbullu	FRI-1.414-1-MIP
Asparuh Atanasov	FRI-216-1-TS(S)
Asya Veleva	FRI-2G.305-1-PP
Atanas Atanasov	FRI-2.104-1-QHE
Atanas Iliev	FRI-KC.H2-1-TMS
Aya ElSayed Hamed	FRI-2G.302-1-CCT2
Ayhan Ahmed	FRI-2B.313-1-L
Ayşe Saliha Sunar	FRI-2.104-1-QHE
Bagryana Ilieva	FRI-2G.305-1-PP
Bahadır Namdar	FRI-2.104-1-QHE
Bilyana Ivanova	SAT-2B.313-1-L
Boril Ivanov	FRI-20.21-1-SITSTL
Boris Evstatiev	FRI-10.326-1-EEEE; FRI-2.104-1-QHE

Boris Kostov	FRI-9.2-1-THPE
Borislav Valchev	FRI-1.202-1-MR
Boryana Robeva -Stoyanova	FRI-2B.412-1-EM1
Bozhana Stoycheva	FRI-2B.412-1-EM1
Chavdar Kostadinov	FRI-1.317-1-MEMBT
Christian Girginov	FRI-LCR-P-1-CT(R)
Christiana Atanasova	FRI-20.21-1-SITSTL
Cvetomir Konov	FRI-2G.204-1-ID
Danail Gospodinov	FRI-1.317-1-MEMBT
Danail Kumanov	FRI-2G.309-1-MCDA; FRI-2B.312-1-NS
Danguolė Bylaitė – Šalavėjienė	FRI-2.104-1-QHE
Daniel Bekana	FRI-1.202-1-MR
Daniel Lyubenov	FRI-20.21-1-SITSTL
Daniel Monov	FRI-2G.104-1-HC
Daniel Pavlov	FRI-2G.404-1-EM2
Daniela Ilieva	FRI-2B.412-1-EM1
Daniela Konstantinova	FRI-2G.104-1-HC
Daniela Lyutakova	FRI-2G.104-1-HC
Daniela Todorova	FRI-2.104-1-QHE
Daniela Yordanova	FRI-2B.412-1-EM1; SAT-2B.412-1-EM1
Daniela-Carmen Stoica	FRI-229-1-KS(S)
Darina Georgieva	FRI-LCR-1-BFT(R)
Denis Sami	FRI-10.326-1-EEEE
Denitsa Dimitrova	FRI-10.326-1-EEEE
Denitsa Fileva	FRI-2G.404-1-EM2
Denitsa Petrova	SAT-2B.313-1-L
Denitsa Trancheva	FRI-2G.309-1-MCDA
Desislav Gechev Ivanov	FRI-2G.204-1-ID
Desislava Atanasova	FRI-2.104-1-QHE
Desislava Baeva	FRI-1.414-1-MIP
Desislava Belomorska	FRI-2G.305-1-PP
Desislava Georgieva	FRI-2G.307-1-ERI
Desislava Georgieva	FRI-2G.307-1-ERI
Desislava Koleva	FRI-LCR-P-1-CT(R)
Desislava Nikolova	FRI-9.2-1-THPE
Desislava Nikolova	FRI-LCR-P-1-CT(R)
Despina Georgieva	FRI-2G.104-1-HC
Despina Georgieva	FRI-2G.104-1-HC
Dian Nikolov	FRI-1.202-1-MR
Diana Antonova	FRI-1.322-1-SW
Diana Bebenova-Nikolova	FRI-110-1-PPM(S)
Diana Georgieva	FRI-2G.404-1-EM2
Diana Stefanova	FRI-2G.309-1-LL
Diana Zhelezova-Mindizova	FRI-110-1-PPM(S)
Dilyana Kalinova	FRI-2B.313-1-L
Dima Spasova	FRI-2G.404-1-EM2; FRI-2G.305-1-PP
Dimitar Antonov	FRI-LCR-1-CT(R)

Dimitar Dimitrakiev	FRI-20.21-1-SITSTL
Dimitar Dimitrov	FRI-1.317-1-MEMBT
Dimitar Eskidarov	FRI-20.21-1-SITSTL
Dimitar Grozev	FRI-20.21-1-SITSTL
Dimitar Obretenov	SAT-KC.H2-1-TMS
Dimitar Stavrev	FRI-2K.201-1-HP
Dimiter 'Martin' Genovski	FRI-12.23-1-AS
Dimitrina Kiryakova	FRI-LCR-P-1-CT(R)
Dimitriya Ilieva	FRI-8.303b-1-AMT&ASVM
Diyana Kinaneva	FRI-2G.302-1-CCT2
Dobri Petrov	FRI-KC.H2-1-TMS
Dobrin Milev	FRI-20.21-1-SITSTL
Dobromir Tsonev	FRI-LCR-P-1-CT(R)
Docho Dimitrov	FRI-9.2-1-THPE
Donka Ivanova	FRI-216-1-TS(S); FRI-10.326-1-EEEE
Doroteya M. Dimova-Severinova	FRI-2B.313-1-L
Durhan Saliev	FRI-20.21-1-SITSTL
Dzhemal Topchu	FRI-20.21-1-SITSTL
Ekaterina Ivanova	FRI-2G.305-1-PP
Ekrem Ulus	FRI-2.104-1-QHE
Elena Zheleva	FRI-2G.309-1-MCDA
Elif Mehmed	FRI-2K.201-1-HP
Elina Marinova	FRI-2B.313-1-L
Elitsa Georgieva	FRI-2G.309-1-LL
Elitsa Ibryamova	FRI-2G.303-1-CCT1
Elitsa Kumanova	FRI-2B.313-1-L; FRI-2B.312-1-NS
Elitsa Nakova	SAT-KC.H2-1-TMS
Elitsa Velikova	FRI-2K.201-1-HP
Elizar Stanev	FRI-2G.404-1-EM2
Emanuil Kolarov	FRI-2B.313-1-L
Emil Kotsev	FRI-2B.412-1-EM1
Emil Yankov	FRI-1.317-1-MEMBT
Emilia Golemanova	FRI-2G.303-1-CCT1
Emiliya Velikova	SAT-2G.307-1-ERI
Eva Parvanova	FRI-2G.510-1-ESIS1
Eva Tsonkova	FRI-2G.104-1-HC
Evelina Veleva	FRI-19.206-1-EC
Evgeni Enchev	FRI-8.303b-1-AMT&ASVM
Evgenia Goranova	FRI-110-1-PPM(S)
Evgeniy Ganev	FRI-LCR-P-1-CT(R)
Evgeniya Bratoeva	FRI-1.322-1-SW
Fatima Raheem Abdul Hussein	FRI-2G.305-1-PP
Fatme Mikova	FRI-2B.313-1-L
Fila Yovkova	FRI-LCR-P-1-CT(R)
Firat Sarsar	FRI-2.104-1-QHE
Galina Atanasova	FRI-1.414-1-MIP
Galina Georgieva	FRI-2G.305-1-PP

Galina Ivanova	FRI-2G.303-1-CCT1
Galina Lecheva	FRI-110-1-PPM(S)
Galya Georgieva-Tsaneva	FRI-2.104-1-QHE
Gencho Popov	FRI-9.2-1-THPE
Georgi Georgiev	FRI-2G.302-1-CCT2
Georgi Georgiev	SAT-2B.313-1-L
Georgi Hristov	FRI-2G.302-1-CCT2
Georgi Iliev	FRI-9.2-1-THPE
Georgi Kadikyanov	FRI-KC.H2-1-TMS
Georgi Mladenov	FRI-20.21-1-SITSTL
Georgi Rusev	FRI-LCR-1-CT(R)
Gergana Staneva	FRI-KC.H2-1-TMS
Gergana Staneva	FRI-KC.H2-1-TMS
Gergana Velyanova	FRI-LCR-P-1-CT(R)
Greta Koleva	FRI-2G.104-1-HC
Gyonyul Hayredin	FRI-2G.309-1-LL
Hristo Georgiev	FRI-19.206-1-EC
Hristo Hristov	FRI-9.2-1-THPE
Igor Sheludko	FRI-2B.412-1-EM1
Iliana Ivanova	FRI-8.303b-1-AMT&ASVM
Iliana Kostova	FRI-LCR-1-BFT; FRI-LCR-P-1-CT(R)
Iliana Nikolova	FRI-LCR-1-BFT; FRI-LCR-P-1-CT(R)
Iliana Petkova	FRI-2G.307-1-ERI
Iliya Todorov	FRI-1.202-1-MR
Iliyan Damyanov	FRI-20.21-1-SITSTL
Iliyan Danev	FRI-1.317-1-MEMBT
Iliyana Minkovska	FRI-KC.H2-1-TMS
Illia Prokhorenko	FRI-LCR-P-1-CT(R)
Imren Ismail	FRI-9.2-1-THPE
Ion Mierlus-Mazilu	SAT-2G.307-1-ERI
Irena Bancheva	FRI-2G.307-1-ERI
Irena Petrova	FRI-KC.H2-1-TMS
Irina Karaganova	FRI-2K.201-1-HP
Irina Kostadinova	FRI-1.322-1-SW
Irinka Hristova	FRI-2G.104-1-HC
Ivailo Ivanov	SAT-KC.H2-1-TMS
Ivan Beloev	FRI-20.21-1-SITSTL
Ivan Conev	FRI-20.21-1-SITSTL
Ivan Dimitrov	FRI-2B.412-1-EM1
Ivan Iliev	FRI-229-1-P(S)
Ivan Ivanov	FRI-1.202-1-MR
Ivan Petrov	FRI-9.2-1-THPE
Ivan Stefanov	FRI-1.414-1-MIP
Ivanichka Serbezova	FRI-2G.104-1-HC; FRI-2.104-1-QHE
Ivanka Peeva	FRI-1.317-1-MEMBT
Ivaylo Borisov	SAT-KC.H2-1-TMS
Ivaylo Ivanov Natzev	FRI-12.23-1-AS

Ivaylo Nikolaev	FRI-9.2-1-THPE
Ivelin Velchev	FRI-2B.313-1-L
Ivelina Balabanova	FRI-2G.302-1-CCT2
Ivelina Stefanova	FRI-2K.201-1-HP
Ivelina Vasileva	FRI-2B.313-1-L
Ivita Pelnena	FRI-2.104-1-QHE
Julia Doncheva	FRI-2G.305-1-PP
Juliana Popova	FRI-20.21-1-SITSTL
Kaloyan Stoyanov	FRI-2.104-1-QHE
Kamelia Shoilekova	FRI-1.414-1-MIP
Kamen Ivanov	FRI-20.21-1-SITSTL
Kamen Simeonov	FRI-10.326-1-EEEE
Kamen Uzunov	FRI-2G.204-1-ID
Karl Donert	FRI-2.104-1-QHE
Katerina Gabrovska-Evstatieva	FRI-10.326-1-EEEE
Kathryn Cormican	FRI-2.104-1-QHE
Kina Velcheva	FRI-1.322-1-SW
Kina Velcheva	FRI-1.322-1-SW; FRI-2G.309-1-MCDA; FRI-2G.104-1-HC
Kiril Hadjiev	FRI-KC.H2-1-TMS
Kiril Panayotov	FRI-2G.309-1-MCDA
Kiril Sirakov	FRI-10.326-1-EEEE
Kiril Veselinov	SAT-2B.313-1-L
Kliment Klimentov	FRI-9.2-1-THPE
Konstantin Koev	FRI-216-1-TS(S); FRI-10.326-1-EEEE; FRI-19.206-1-EC
Konstantina Galcheva	FRI-LCR-P-1-CT(R)
Krasen Kostov	FRI-9.2-1-THPE
Krasi Panayotova	FRI-LCR-P-1-CT(R)
Krasimir Dimitrov	FRI-2B.313-1-L
Krasimir Koev	FRI-2G.510-1-ESIS1
Krasimir Kossev	FRI-LCR-P-1-CT(R)
Krasimir Ormandzhiev	FRI-9.2-1-THPE
Kremena Mineva	FRI-20.21-1-SITSTL
Kremena Rayanova	FRI-2B.312-1-NS
Kristian Velkovski	FRI-2G.302-1-CCT2
Kristina Ilieva-Stoycheva	FRI-216-1-TS(S)
Kristina Stefanova	FRI-1.414-1-MIP
Kristina Zaharieva	FRI-2G.309-1-MCDA
Lachezar Kamenov	FRI-9.2-1-THPE
Lachezar Yordanov	FRI-2G.303-1-CCT1
Laimutė Ruzgienė	SAT-2G.307-1-ERI
Lenia Gonsalvesh	FRI-LCR-1-CT(R)
Linda Pavitola	FRI-2.104-1-QHE
Liqaa Habeb Al-Obaydi	FRI-2G.305-1-PP
Lora Radoslavova	FRI-2G.305-1-PP
Ludmila Dimitrova	FRI-2G.305-1-PP

Lyubomir Lyubenov	SAT-2B.412-1-EM1
Lyubomir Vladimirov	FRI-19.206-1-EC
Lyuboslav Lyubenov	SAT-2B.313-1-L
M. A. El-dosuky	FRI-2G.302-1-CCT2
Manon van Leeuwen	FRI-2.104-1-QHE
Margarita Asparuhova-Kandilarova	FRI-2K.201-1-HP
Maria Radeva	SAT-2B.313-1-L
Maria Tomova-Mikhneva	FRI-229-2-P(S)
Maria Zheleva	FRI-2B.313-1-L
Marian Ileana	FRI-2G.303-1-CCT1
Mariana Ilieva	FRI-1.317-1-MEMBT
Mariela Minova	FRI-LCR-P-1-CT(R)
Marin Marinov	FRI-LCR-P-1-CT(R)
Marin Nikolov	FRI-2G.510-1-ESIS2
Marko Timchev	FRI-2B.412-1-EM1; SAT-2G.307-1-ERI
Martin Dejanov	FRI-10.326-1-EEEA; FRI-216-1-TS(S)
Martin Ivanov	FRI-1.322-1-SW
Martina Georgieva	FRI-20.21-1-SITSTL
Metodiy Steliyanov	FRI-20.21-1-SITSTL
Mihail Malchev	SAT-2B.313-1-L
Mihail Milchev	FRI-20.21-1-SITSTL
Mihail Milchev	FRI-20.21-1-SITSTL
Milen Ivanov	FRI-2B.312-1-NS
Milen Loukantchevsky	FRI-2G.303-1-CCT1
Milen Minchev	FRI-2G.204-1-ID
Milen Sapundzhiev	FRI-216-1-TS(S)
Milena Savova-Mratsenkova	FRI-20.21-1-SITSTL
Mimi Kornazheva	FRI-2G.510-1-ESIS1
Miroslav Mihaylov	FRI-2.104-1-QHE
Miroslava Boneva	FRI-2B.412-1-EM1
Miroslava Valchanova	FRI-LCR-P-1-CT(R)
Mitko Nikolov	FRI-1.202-1-MR
Mladen Kulev	FRI-20.21-1-SITSTL
Mohammed Alrahmawy	FRI-2G.302-1-CCT2
Monika Koleva	FRI-2G.307-1-ERI
Mustafa Mustafov	FRI-1.414-1-MIP
Mustafa Yaramkashev	SAT-2B.313-1-L
N. Glombotcka	FRI-229-1-P(S)
Nadia Petrova	FRI-LCR-P-1-CT(R)
Nadya Magunska	FRI-2G.104-1-HC
Natalia Mincheva	FRI-229-2-P(S)
Nataliya Venelinova	FRI-2G.404-1-EM2; FRI-1.322-1-SW
Nedelcho Kovachev	FRI-9.2-1-THPE
Nedialka Valcheva	FRI-LCR-P-1-CT(R)
Neli Babekova	FRI-2B.412-1-EM1
Nevena Ruseva	FRI-2B.312-1-NS
Nevena Stoyanova	FRI-229-1-P(S)

Neyko Neykov	FRI-2G.303-1-CCT1
Nicola Mihailov	FRI-10.326-1-EEEE
Nicolay Mihailov	FRI-2.104-1-QHE
Nidal Sawalha	FRI-20.21-1-SITSTL
Nikolay Angelov	FRI-2K.201-1-HP
Nikolay Ferdinandov	FRI-1.317-1-MEMBT
Nikolay Kostadinov	FRI-2G.303-1-CCT1
Nikolay Kovachev	FRI-19.206-1-EC
Nikolay Mihailov	FRI-2.104-1-QHE
Nikolay Rusev	FRI-2G.404-1-EM2
Nikolay Stankov	FRI-1.317-1-MEMBT
Nikolay Valov	FRI-216-1-TS(S); FRI-10.326-1-EEEE
Nikolina Angelova-Barbolova	FRI-2G.309-1-MCDA
Nikolina Voynova	FRI-2G.104-1-HC
Niya Peneva	FRI-2G.309-1-LL
Nora Stoyanova	FRI-2G.404-1-EM2
Nuno Pombo	FRI-2.104-1-QHE
O. Filipova	FRI-229-1-P(S)
Ognyan Kostadinov	FRI-20.21-1-SITSTL; FRI-2G.309-1-MCDA
Olena Khomenko	FRI-LCR-P-1-CT(R)
Olga Vatkova	FRI-2G.309-1-LL
Ömer Delialioğlu	FRI-1.414-1-MIP
Orlin Kisyov	FRI-2G.510-1-ESIS2
Orlin Petrov	FRI-2.104-1-QHE
Özge Andıç Çakır	FRI-2.104-1-QHE
Pavel Petrov	FRI-1.317-1-MEMBT
Pavel Stefanov	FRI-12.23-1-AS
Pavel Stoyanov	FRI-20.21-1-SITSTL
Pavel Vitliemov	FRI-2B.412-1-EM1; SAT-2B.412-1-EM1
Pencho Zlatev	FRI-9.2-1-THPE
Petar Bonchovski	SAT-2B.313-1-L
Petar Dosev	FRI-8.303b-1-AMT&ASVM
Petar Pavlov	FRI-KC.H2-1-TMS
Petar Penchev	FRI-2G.404-1-EM2
Peter Kazakov	FRI-KC.H2-1-TMS
Petko Mashkov	FRI-KC.H2-1-TMS
Petya Marinova	FRI-216-1-TS(S)
Petya Mincheva	FRI-2K.201-1-HP
Petya Parashkevova	FRI-2K.201-1-HP
Petya Stefanova	FRI-12.23-1-AS
Plamen Daskalov	FRI-10.326-1-EEEE
Plamen Kangalov	FRI-1.202-1-MR
Plamen Manev	FRI-19.206-1-EC
Plamen Mushakov	FRI-9.2-1-THPE
Plamen Parvanov	FRI-2B.312-1-NS
Plamen Shahanov	FRI-1.202-1-MR
Plamen Zahariev	FRI-2G.302-1-CCT2

Radoslav Pashov	FRI-2G.510-1-ESIS2
Radoslava Deleva	FRI-2K.201-1-HP
Radoslava Nikolova	FRI-LCR-1-CT(R)
Radostin Kolev	FRI-2G.302-1-CCT2
Ralitsa Demirkova	FRI-2G.309-1-LL
Ralitsa Vasileva-Ivanova	FRI-2G.307-1-ERI
Rayka Vladova	FRI-LCR-P-1-CT(R)
Reneta Dimitrova	FRI-20.21-1-SITSTL
Revshenova Izbasarovna	FRI-2G.303-1-CCT1
Rosen Ivanov	FRI-KC.H2-1-TMS
Rositsa Krasteva	FRI-2G.309-1-MCDA
Rositsa Nedeva	FRI-2K.201-1-HP
Rositsa Nikolova	FRI-LCR-KS(R)
Rositsa Titorenkova	FRI-LCR-1-CT(R); FRI-LCR-P-1-CT(R)
Rossen Radev	FRI-1.317-1-MEMBT
Rostislav Kandilarov	SAT-KC.H2-1-TMS
Roumyana Petrova	SAT-2B.412-1-EM1
Roussi Minev	FRI-1.317-1-MEMBT
Ruja Andreeva	SAT-2B.313-1-L
Rumen Rusev	FRI-2B.412-1-EM1; SAT-2B.412-1-EM1
Rumiana Lebedova	FRI-229-2-P(S)
S. Lennik	FRI-229-1-P(S)
Sadetin Basri	FRI-8.303b-1-AMT&ASVM
Salih Redjeb	FRI-1.414-1-MIP
Samir ElMougy	FRI-2G.302-1-CCT2
Sedat Mahmud	SAT-2G.307-1-ERI
Seher Kadirova	FRI-2.104-1-QHE
Sergey Kalinkov	SAT-2B.313-1-L
Serkan Sadulov	FRI-1.414-1-MIP
Silvia Angelova	FRI-229-2-P(S)
Silvia Krushkova	FRI-2B.312-1-NS
Silvia Tcheparova	FRI-2G.204-1-ID
Silvia Toneva	FRI-2G.404-1-EM2
Silviya Beloeva	FRI-1.322-1-SW
Silviya Beloeva	FRI-2.104-1-QHE
Simeon Andreev	FRI-2G.204-1-ID
Simeon Iliev	FRI-KC.H2-1-TMS; SAT-KC.H2-1-TMS
Similiyan Stefanov	SAT-2B.313-1-L
Siyka Chavdarova – Kostova	FRI-229-1-KS(S)
Slavena Atanasova	FRI-KC.H2-1-TMS
Snezhana Popovska	FRI-1.322-1-SW
Snezhana Popovska	FRI-2G.104-1-HC
Snezhanka Gencheva	FRI-229-1-P(S)
Stanaila Neykova-Karagaeva	FRI-1.414-1-MIP
Stanislav Bayryamov	FRI-LCR-P-1-CT(R)
Stanislav Penchev	FRI-2.104-1-QHE
Stanislava Bogomilova	FRI-2K.201-1-HP

Stanka Damyanova	FRI-LCR-1-BFT(R)
Stanka Damyanova	FRI-LCR-P-1-CT(R)
Stefan Kr. Stefanov	FRI-2G.305-1-PP
Stefania Mocali	FRI-2K.201-1-HP
Stefano Danev	FRI-LCR-P-1-CT(R)
Stefka Mindova	FRI-2K.201-1-HP
Stela Boneva	FRI-2G.104-1-HC
Stela Daskalova	FRI-2B.312-1-NS
Steliana Marinova	FRI-1.414-1-MIP
Stoyan Nyagolov	FRI-216-1-TS(S)
Suzana Sampaio	FRI-2.104-1-QHE
Svetla Marinova	FRI-2B.313-1-L
Svetlana Dimitrakieva	FRI-20.21-1-SITSTL
Svetlana Stefanova	FRI-2G.303-1-CCT1
Svetlin Antonov	SAT-2B.313-1-L
Svetlozar Grigorov	FRI-216-1-TS(S); FRI-10.326-1-EEEE
Svetlozar Obreshkov	FRI-2G.307-1-ERI
Svetlozar Tsankov	FRI-1.414-1-MIP
Svetoslav Atanasov	FRI-10.326-1-EEEE
Svetoslav Babanov	FRI-20.21-1-SITSTL
Svilen Dosev	FRI-2G.309-1-MCDA
Svilen Gardev	FRI-1.317-1-MEMBT
Svilen Kunev	FRI-2G.404-1-EM2
Svilen Stoyanov	FRI-216-1-TS(S)
Svilena Ruskova	FRI-2G.404-1-EM2
Tanya Grozeva	FRI-2.104-1-QHE
Tanya Pechlivanova-Gotcheva	FRI-10.326-1-EEEE
Tatyana Atanasova	FRI-2G.309-1-MCDA
Tatyana Strokovska	FRI-229-1-P(S)
Temenuzhka Haralanova	FRI-LCR-P-1-CT(R)
Teodor Kyuchukov	FRI-2.104-1-QHE
Teodora Markova	FRI-2G.307-1-ERI
Teodora Nedeva	FRI-2G.309-1-MCDA
Teodora Yovcheva	FRI-2B.313-1-L
Teodora Zhorova	FRI-2G.302-1-CCT2
Tiziano Pacini	FRI-2K.201-1-HP
Todor Delikostov	FRI-1.202-1-MR
Todorka Georgieva	FRI-229-2-P(S)
Toncho Balbuzanov	FRI-20.21-1-SITSTL
Toni Tonchev	FRI-2G.302-1-CCT2
Toni Uzunov	FRI-1.202-1-MR
Tsveta Hristova	FRI-2G.104-1-HC
Tsvetalina Stoyanova	FRI-2K.201-1-HP
Tsvetan Davidkov	FRI-229-1-KS(S)
Tsvetan Dimitrov	FRI-LCR-1-CT(R); FRI-LCR-P-1-CT(R)
Tsvetanka Dutsova	FRI-2B.412-1-EM1
Tsvetelina Georgieva	FRI-2.104-1-QHE

Tsvetelina Radeva	FRI-2G.307-1-ERI
Tsvetelina Tsvetkova	FRI-12.23-1-AS
Turashova Prmakhanbetova	FRI-2G.303-1-CCT1
Tzanko Golemanov	FRI-2G.303-1-CCT1
Tzvetelin Georgiev	FRI-2.104-1-QHE
Tzvetelin Gueorguiev	SAT-2B.412-1-EM1
Valentin Manev	FRI-216-1-TS(S)
Valentin Sabkov	FRI-229-2-P(S)
Valentin Velikov	FRI-1.414-1-MIP
Valentina Vasileva	FRI-2G.305-1-PP
Valentina Voinohovska	FRI-1.414-1-MIP
Valeri Geoergiev	FRI-20.21-1-SITSTL; FRI-20.21-2 SITSTL
Valeri Radanov	FRI-2B.313-1-L
Vanya Naydenova	FRI-2.104-1-QHE
Vanya Panteleeva	FRI-2B.313-1-L
Vasil Kopchev	FRI-LCR-P-1-CT(R)
Vasil Tanev	FRI-2B.412-1-EM1; SAT-2B.412-1-EM1
Vasko Dobrev	FRI-KC.H2-1-TMS
Velina Georgieva	FRI-2K.201-1-HP
Velizara Pencheva	FRI-20.21-1-SITSTL
Velizara Pencheva	FRI-20.21-1-SITSTL
Ventsislav Dimitrov	FRI-10.326-1-EEEA
Ventsislav Dobrinov	FRI-19.206-1-EC
Ventsislav Keseev	FRI-2G.302-1-CCT2
Ventzislava Stankova	FRI-2G.309-1-LL
Veselin Hristov	FRI-1.317-1-MEMBT
Veselka Mihaylova	FRI-2G.104-1-HC
Veska Kirilova	FRI-229-1-P(S)
Viktor Kirilov	FRI-2G.510-1-ESIS2
Viktoria Gladkova	FRI-20.21-1-SITSTL
Vladimir Chukov	FRI-2G.510-1-ESIS1
Vladimir Perchemliev	SAT-2B.313-1-L
Vladislav Ivanov	SAT-2B.313-1-L
Vyara Ruseva	FRI-10.326-1-EEEA
Vyarka Ronkova	FRI-20.21-1-SITSTL
Yana Tzvetanova	FRI-LCR-1-CT(R)
Yavor Ivanov	FRI-LCR-1-BFT(R)
Yoana Krumova	FRI-2B.412-1-EM1
Yoana Lukanova	FRI-2G.104-1-HC
Yordan Andonov	FRI-2K.201-1-HP
Yordan Doychinov	FRI-2G.204-1-ID
Yordan Kalmukov	FRI-2G.303-1-CCT1
Yordan Yordanov	SAT-KC.H2-1-TMS
Yordanka Dimitrova	FRI-KC.H2-1-TMS
Yordanka Nikolova	FRI-2G.307-1-ERI
Yuliyen Dimitrov	FRI-KC.H2-1-TMS
Yuliyana Georgieva	FRI-2G.104-1-HC

Yuliyana Pashkunova	FRI-2K.201-1-HP
Yunzile Dzhelil	FRI-LCR-P-1-CT(R)
Zahariy Dechev	FRI-110-1-PPM(S)
Zarya Ivanova Salova	SAT-2B.313-1-L
Zhabayev Huryshovich	FRI-2G.303-1-CCT1
Zhivka Ilieva	FRI-2G.305-1-PP
Zilya Mustafa	FRI-LCR-1-CT(R)
Zornitsa Yordanova	FRI-2B.313-1-L