

ABSTRACTS

MAY RESEARCH CONFERENCE IN SILISTRA

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**CROSS-CULTURAL KNOWLEDGE IN THE CHINESE
'CULTURAL BACKPACK'**

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Abstract: *The article contributes to the set of cross-cultural and linguistic knowledge by presenting some pragmatic failures in intercultural communication with Chinese, when Lingua franca is used. Communicators using a foreign language often unconsciously 'transfer' the forms and rules from their native language and culture into the target language. The generated message, although linguistically correct, might be interpreted wrongly by the receivers, based on their different cultural values and thus might lead to a cultural misunderstanding. Such cases raise the question of how to achieve a better competence in intercultural discourse.*

The presented communication situations were collected by the author of the article as a result of the implementation of an Erasmus + mobility project at the Hubei Technological University in Wuhan, China. The discussion on the cases follows the model of intercultural competence, described in a previous article "Integrated Process Model on Intercultural Competence" by the same author. The mentioned structure suggests what competencies are needed in interpersonal communication so that the culturally specific behavior of the participants is "decoded" and understood against a comparison with their own cultural values.

Furthermore, the article tries to analyse the situations against the assumptions of Chinese communication as highlighted by Shi-xu. It also searches for explanations of the possible causes for the communication difficulties in the characteristics of Chinese Facework, presented in the works of Ting-Toomey. Another concept used in this article is that of Hofstede introducing the 6D model of cultural measures: power distance, avoidance of insecurity, masculinity / femininity, individualism / collectivism, long / short term orientation, restraint / indulgence.

The speech examples and related reasoning can help ESL teachers improve their intercultural competence as well as all anybody who relies on English as a Lingua franca. Such an approach also reflects the idea of 'the cultural backpack', in which the holder can optionally 'store' acquired cross-cultural knowledge and use it when needed.

Keywords: *intercultural competence, cross-cultural, Chinese culture.*

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FRI-239-1-LTLH(S)-02

CREATING A MODEL OF THE AREAS OF THE CONCEPT OF BEAUTY BASED ON THE 21 CENTURY ENGLISH LITERATURE

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Abstract: *The complex approach to modeling the BEAUTY concept allows for a more complete description of the structure-content expression of the concept under consideration. In building up this model we are guided by the fact that the concept of BEAUTY is a mental representation with a clear structure consisting of macro and micro areas. To present this model and prove the relevance of the claim that the concept is a complex structured entity with closely linked components, which are induced and activated together, we will analyze the structure of the concept by creating its respective fields which implies an analysis of the linguistic realization of a concept. It is accomplished using a clearly defined spectrum of verbalisers - words and word combinations that represent an object as beautiful as a result of an evaluation (assessment) process. Evaluation is a thought-based operation aimed at determining the characteristics of objects, actions, phenomena, etc. by comparing them with conventional ideals or norms. In the most general sense, evaluation takes place at two levels: emotional and rational. In the first case, it has an unconscious character, manifested in the form of satisfaction or dissatisfaction, and in the second, it is realized, as the significance, usefulness, importance or futility of the objects, the actions and the events that are considered. Emotional evaluation, in its turn, is seen by researchers as sensual and aesthetic. The difference between the two types of assessment is that an aesthetic assessment, unlike the sensual one, implies the synthesis of the sensory and intellectual/psychological characteristics expressed by the subject in the assessment. Aesthetic assessment is not purely sensory, because it is also thought-based. It is related to the satisfaction of being beautiful and as such requires a certain inner readiness in the subject to embrace beauty. However, this division is considered conditional, as both the emotional and rational evaluation take place in interaction. On the other hand, each evaluation is able to categorize different objects. For example, physical beauty is based on emotional evaluation, while moral qualities meet moral ethical criteria. Aesthetic appreciation is given to works of art, and quality assessment is mainly associated with artifacts. It is important to note that the boundaries between the different types of assessments are quite contingent, so they are interrelated. The article examines beauty as one of the key concepts of culture possessing an existential significance for the individual and the linguistic community as a whole. A model of the Beauty concept has been built up and the macro and micro areas of its structure presented. As a result of the undergone analysis the idea of the concept of Beauty in the English consciousness has been created.*

Keywords: concept, areas of the concept, beauty, evaluation

JEL Code: I29

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A STRUCTURAL MODEL OF THE CORE AND PERIPHERAL BEAUTY CONCEPT CHARACTERISTICS

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Abstract: As a dynamic, constantly changing mental representation, the concept does not have a well-defined structure. Under the specific discourse (the specific speech situation), the concept is activated in its various fields, intersecting with other concepts. The systematization and the semantic description of the verbal means of its expression makes it possible to separate the core and peripheral features of the concept, which are structural components of its model. Each concept is a "unit of thought activity of the linguistic personality", and as such has a multi-component and multi-structured organization that can be identified by analyzing the linguistic means of representing the concept. Obviously, studying the semantics of language units, conceptualizing the concept, is the only means of accessing the content of the individual's mental space or, rather, its verbalised part.

Some concepts do not have linguistic expression which indicates that the language picture of the world is only part of the overall, much richer and more complex picture of the world of the speakers of a given language. The presence or absence of verbalisation of a concept (or its domain) does not affect the fact of its existence as a mental entity in the human consciousness. In other words, linguistic means of expression are needed not for the existence of a concept but for its the description, i.e. systematic and semantic description of language expressions makes it possible to separate the basic and additional features of the concept that are structural components of its model. Most researchers accept that concepts are internally organized on a "field principle" (core, periphery) and include a conceptual component (containing the semantic sign of a concept) and an image.

The study of the conceptual component of the lexical concept BEAUTY includes the identification of its linguistic designation, its descriptive structure and definition, the comparative characteristics of the concept in relation to other concepts and, above all, the place of the concept of beauty in the English language and the specification of the related lexemes for the relevant language community. Attempts to reveal the content of a concept (at least in part) can be accomplished by analyzing the semantics of the verbalisers of the concept at issue, as well as their discursive realization. To elucidate the lexical representation of the beauty concept in English, it is advisable to analyze the semantic field of the lexical units that are basic to the concept. In English, such basic lexical units are the noun "beauty" and the adjective "beautiful". The article focuses on the lexico-semantic analysis of the meanings of these basic lexemes, as well as on their discursive realization.

Keywords: concept, structural model, lexicographic analysis, verbal means of expression, discourse

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EMOTION ANALYSIS OF THE CONCEPT 'OF BEAUTY' BASED ON THE ENGLISH LITERATURE OF THE 21 CENTURY

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Abstract: As a dynamic, constantly changing mental representation, the concept does not have a well-defined structure. Under the specific discourse (the specific speech situation), the concept is activated in its various fields, intersecting with other concepts. The systematization and the semantic description of the verbal means of its expression makes it possible to separate the core and peripheral features of the concept, which are structural components of its model. Each concept is a "unit of thought activity of the linguistic personality", and as such has a multi-component and multi-structured organization that can be identified by analyzing the linguistic means of representing the concept. Obviously, studying the semantics of language units, conceptualizing the concept, is the only means of accessing the content of the individual's mental space or, rather, its verbalised part.

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The study of the conceptual component of the lexical concept BEAUTY includes the identification of its linguistic designation, its descriptive structure and definition, the comparative characteristics of the concept in relation to other concepts and, above all, the place of the concept of beauty in the English language and the specification of the related lexemes for the relevant language community. Attempts to reveal the content of a concept (at least in part) can be accomplished by analyzing the semantics of the verbalisers of the concept at issue, as well as their discursive realization. To elucidate the lexical representation of the beauty concept in English, it is advisable to analyze the semantic field of the lexical units that are basic to the concept. In English, such basic lexical units are the noun "beauty" and the adjective "beautiful". The article focuses on the lexico-semantic analysis of the meanings of these basic lexemes, as well as on their discursive realization.

Keywords: concept, structural model, lexicographic analysis, verbal means of expression, discourse

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**PROBLEM-POSING EDUCATION AS A DIDACTIC CONCEPT
AND A METHODOLOGICAL DIRECTION**

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Abstract: *This article presents historical review of different concepts associated with the characteristic specifics and aspects regarding practical application of problem-posing didactic technology. The didactic problems are presented as an inseparable part of educational objectives within the educational process. Problem-posing is an essential tool for building cognitive independence and creative ability in the students, while forming skills for acquiring new knowledge from different sources and, also, its application in extraordinary circumstances.*

There is an increasing tendency for the problem-posing education to be implemented in such a way as to put nurses' and midwives' education on a broad practical fundament. The problem-posing educational methods model situations, close to reality and activate cognitive activity and creativity within the students, giving them the opportunity to implement their current theoretical knowledge and build practical skills. In the educational process, the problem-posing situations and heuristic decisions students take aiming to solve them, help build personal relationships, that facilitate reaching the necessary level of socialization, positive and ethical communication, responsibility and self-responsibility. The good clinical assessment is also an essential competence, which is key for training experts. This requires flexible and diverse ability to recognize the specific aspects of the clinical situations, to adequately interpret them and to respond quickly enough. All these are encouraged through problem-posing educational methods, which again focuses on the advantages and importance of this methodology.

Figures are presented to showcase a pattern for active learning through problem solving, basic categories in problem-posing education, stages of analysis in a problematic situation, most used problem-posing educational methods.

The article describes a fundamental format for posing the problematic situations - problem-posing question, problem-posing task, problem-posing assignment. The necessary conditions for cognitive activity and independence of students while acquiring new knowledge, skills and competence are looked at, as these are the professional characteristics, associated with the future successful realization of the experts, taught within the framework of academic institution.

Conclusions are drawn, pointing to problem-posing education as a necessary part of the overall modern educational system complying with the diversity of objectives, contents and methods, adapted to the taught material, age and individuality of students. The mounting evidence for the advantages and educational importance of problem-posing methodology are described.

The cognitive independence degree is defined by the students' successful forming of skills to recognize a problematic situation, to formulate the problem itself, to raise a hypothesis and justify it and then to confirm or reject it, so that they can practically apply the selected method for solving it. All these abilities, essential for midwives and nurses, are a key part of the modern educational process, that is required, so that future successful realization is possible.

Problem solving is foremost a process of coming out of the cognitive difficulty, caused by the problematic situation in which the students are placed. Simultaneously, solving the problem is also a process of acquiring new knowledge, forming skills, patterns and competence. Assessment of the solution has the greatest educational importance. Thus, it is defined which of the suggested hypothesis is actually correct.

Keywords: *Problem-posing education, problem posing, historical validity, problem approaches, quality professional realization.*

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PEOPLE OF THE THIRD AGE AS SUBJECTS OF LIFELONG LEARNING

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Abstract: *The education of people of the third age is most accurately defined by the term "Gerontology" (by Greek Geron - old man). By using this term, this particular category of learners can be considered in three directions: what does education mean for the lives of people at that age, what is the importance of lifelong learning, and what is the meaning of learning about the person.*

The functions that educate people from the third age are the following:

- Preventive function - it provides risk mitigation or adverse circumstances in the preparation for old age;
- Oriented - Provides acquisition of knowledge by the individual through self-activity and problem solving;
- Protective - Old people learn on the basis of their own experience or the experience of their peers how to include safeguards against external and internal adverse factors;
- Compensator - Provides natural aging;
- Rehabilitation - helps people adapt to physical, mental and social changes that occur after termination of work;
- Adaptation - the training is aimed at rationalizing the new opportunities for continuing active activity in the third age;
- Self-development - old people, driven by their interests and needs, engage in activities and communicate with others, thus remaining active longer;
- Integration - are expressed in the transition from isolation to creative, labor and motor activity;
- Intergenerational - Provides interaction with other generations, tolerance and dialogue.

The economic and social changes that are taking place in the world and in Europe require a new approach to the education of older people. Through it, they will preserve their ability for social adaptation and integration.

The main criterion in the education of the elderly people is personal development in order to change their quality of life, preserve the active life position and increase the level of information literacy. By retiring, people in the age group experienced difficulty adapting to the changes in their quality of life. They close themselves, feel anxious, lower their communication. Educational institutions can play an important role in supporting successful aging. The cognitive interest of the elderly is the strongest motivation to learn. Secondly, there are new opportunities for inclusion and social inclusion.

The aging process can be crucial for everyone Individual because it involves work changes (retirement), family, society, health problems requiring adjustments to perceptions and structuring our own lives. These are psychological, physical and social Challenges that can lead to a decline in the quality of life if the individual does not deal with them in the right way. The post-retirement period offers a chance for a person to take advantage of new learning opportunities, interest activities, sports.

The motivation of people of the third age for education is their desire to Learn to know more about a topic or subject they are showing Curiosity; To know more about modern society and its History; To understand modern society and to keep up with the changes, To avoid isolation, and remain active.

Keywords: Education, People of the third age, lifelong learning

JEL Code: I 29

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FRI-231-1-DPP(S)-03

THE PEDAGOGICAL PORTFOLIO – A TOOL FOR SELF-ASSESSMENT AND SELF-REFLECTION

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Abstract: The paper presents the idea of the pedagogical portfolio as a means of self-assessment and self-reflection during the initial and the final teacher training phases of the students. The portfolio is described in terms of structure, content and didactic resourcefulness for critical analyses of the teaching practice. Keeping a portfolio during the pedagogical practice aims to monitor and describe the pedagogical achievements of prospective teachers, to highlight the psycholinguistic and cognitive needs, to correct methodological errors. In order to describe in more detail what the portfolio is, we will say what it is. The portfolio is neither a folder in which any kind of evidence is collected, nor a diary that is filled in daily. Thus, the portfolio can be viewed as a concept rather than simply as a folder of documentation. Portfolio has the potential to measure the quality of pedagogical work as an equivalent to the value of the effort involved and its usefulness. The activity of creating and maintaining the internship portfolio leads to a permanent assessment and re-evaluation of the academic work and to timely changes in the direction of improving the quality and efficiency of the student's pedagogical work during his / her training practice. The goal of the portfolio is to record on the one hand the individual pedagogical achievements, the "peaks" during the pedagogical practice of the individual student, and on the other - to reveal his/her professional development and behaviour. In terms of content, the portfolio is an effective means of achieving strategic learning objectives, reflecting from a different perspective the dialogue that takes place in the student-student, student-teacher, teacher – students communication format. The rich informative portfolio is a guarantee for professionalism. It can positively affect the self-esteem and confidence of each intern. By preparing his / her portfolio, he/she is expected to consider critically the entire teaching process in the subject he/she teaches, reassess the curriculum and the way it is implemented (methodology, resources and formats of communication), and constantly assess the results of the pedagogical interventions and to add well-selected information and evidence of their effectiveness.

Keywords: Pedagogical Portfolio, Self-assessment, Self-reflection, Teaching Practice

JEL Code: I21

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FRI-231-1-DPP(S)-04

ERGONOMIC LECTURER OF THE 21ST CENTURY

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Abstract: *The strategic management of intellectual capital consists in the skillful unification of the efforts of a group of people with the purpose of obtaining a superadditive effect. With the overdrive effect, each team member's contribution is greater than one. They win all participants in the synergy process (of course, if their efforts are aimed at achieving one goal). Overdosing is one of the key performance indicators of a well-sensed work team.*

The crisis of the modern education system is part of the global crisis, from the orientation to a distinct differentiation of the humanities from the natural science disciplines - an approach without horizontal connections leading not only to a fragmentary picture of the world that surrounds us but also to the distorted perception of this picture, ignorance of the whole.

For a good teacher, the positive adjustment to yourself and to those with whom it will work is extremely important. In the learning process the meaning of communication is in the reaction it causes. When you are proud of yourself and your work, you are able to help your students, your family, yourself. Successful interaction at all levels strengthens the sense of human dignity, encourages students to strive for higher achievements.

Keywords: *teacher, ergonomic*

JEL Code: *I21*

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FRI-216-1-NSMTS(S)

FRI-216-1-NSMTS(S)-01

**THE MERGING OF REAL AND VIRTUAL WORLD
THROUGH INDUSTRY 4.0**

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Abstract: *The report proposes the definition of Industry 4.0 and addresses the challenges of the so-called Industrial revolution designed in the merging of the real world and the virtual world. The development of Platform 4.0 is being followed. From its launch to the present day. The survey, conducted among sectoral employers in 43 countries, was published at the World Economic Forum (DAF) in Davos. There are the professions for which there is a risk of people being displaced by computers and a concept for preparing for change. Conclusions have been drawn regarding the creation of an educational and scientific environment for the acquisition of quality education and for easier adaptation to life in the information society.*

Keywords: *Industry 4.0, Industrial Revolution, Jobs, Occupations, Labor Market, Cognitive Skills, Learning Environment, Digital Skills*

JEL Code: *I25*

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

THE CLOUD COMPUTING – APPLICATION IN E-LEARNING

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Abstract: Cloud computing is the next stage in the web service evolution, providing computing power, applications, business processes etc., delivered as a service on demand. This paper focuses on the cloud model, which consists of three service models, four deployment models and five essential characteristics. Google Apps products are discussed as an example for cloud technology application in the e-learning.

Keywords: Cloud computing, e-learning.

JEL Code: I29

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

MATHEMATICAL MODEL OF NON-STATIONARY HEAT TRANSFER DURING THE PROCESS OF PYROLYSIS FOR END-OF-LIFE AUTOMOBILE TIRES

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Abstract: Mathematical model of non-stationary heat transfer during the process of pyrolysis of end-of-life automobile tires is developed. Numerical procedure based on MATLAB for solving model equations is used. Some modeling results for the temperature are presented and commented in the paper

Keywords: Mathematical model, Pyrolysis, End-of-life Tires.

JEL Code: I29

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

AUTOMATIC CONTROL SYSTEMS FOR PYROLYSIS INSTALLATION FOR THE TREATMENT OF END-OF-LIFE TIRES

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Abstract: A system for automated temperature control of a three cameras pyrolysis station for processing of End-of-life tires was developed.

A demonstration system with temperature sensors is developed, designed to conduct research as well as to train students and staff involved in the design, installation and operation of programmable logic controllers (PLCs), as well as of pyrolysis stations.

Keywords: Automatic control systems, Pyrolysis, End-of-life Tires.

JEL Code: I29

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Zheleva, Iv., Iv. Georgiev, J. Menseidov, M. Filipova. (2017). Matematičeski model na nestacionarniya toploobmen pri piroliza na izlezli ot upotreba avtomobilni gumi. – V: Nauchni trudove na Rusenskiya universitet “Angel Kanchev” (pod pechet). (**Оригинално заглавие:** *Ив. Желева, Ив. Георгиев, Дж. Менсеидов, М. Филипова. Математически модел на нестационарния топлообмен при пиролиза на излезли от употреба автомобилни гуми. – В: Научни трудове на Русенския университет. 2017 (под печат).*

FRI-239-2-LTLH(S)

FRI-239-2-LTLH(S)-01

**THE FATE OF THE NOVEL "FACE" - THE "FACE"
OF THE AUTHOR AND OF THE TIME**

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Abstract: *The ambiguous relationship between literature and history is presented in the text. Literature draws facts, images, and themes from history and creates narratives about it, on the other hand, it has the power to model a certain type of historical consciousness, to form values and behavioral patterns, as it creates and manipulates ideologies.*

The literary narrative about History is most often in the regime of ideological speech and is in direct connection with the literary canon. The ideology of socialist society controls and channelises the energy of the multitude, "twinning" on a class principle, but in a transition situation the network of ideologues which coordinate thinking, determine identification mechanisms and axiological parameters.. In transient periods, books with dramatic fate are born. Such is the fate of the novel "Face" by Blaga Dimitrova - emblematic for the 1980s - a period in which it is obvious and visible that the foundations of socialist realism are cracked. The novel is a kind of documentary of the time and refers to a change in the value interpretation of socialist life. The history of its creation, the assertion of its right to existence, the trials it experiences, its dual existence (literary and social) are an expression of the character of its author and her contemporaries as well as of the face of time.

The text follows the creative history and the critical reception of the novel "Face" by Blaga Dimitrova, which was forbidden by the totalitarian power after its publication in 1981. Its fate turns into a test of the human dignity of the author and reveals the peculiarities of the time, in which the literary canon imposed by socialist realism dominates.

The attacks against Blaga Dimitrova's personality and work fail to get her into the field of unification, nor to "reprogram" her. Unrelated to dogmatism, hypocrisy, imitation, social mimicry Blaga Dimitrova remains in the minds of her contemporaries as one of the faces of the intellectual conscience of Bulgaria.

Keywords: *literary canon, creative history, socialist realism, censorship, dignity*

JEL Code: I29

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FRI-239 -2-LTLH-(S)-02

ABOUT *THE OTHER*, IN PARALLEL MIRRORS

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Abstract: *Our proceeding has the purpose of reflecting the concept of identity as it is built in two Romanian texts, a film and a story, in a certain time in history, from 1913 to 1940 when the Bulgarian region of Cadrilater belonged to Romania. The story is actually a chapter in Petru Dumitriu's novel, Family Chronicle, by the name of The Salad and it was written and published in 1957. The film is the screening of the story, directed by the Romanian director, Lucian Pintilie, in 1994, under the name of An unforgettable summer, starring the famous to be British actress, Kristin Scott Thomas.*

The events described in both the story and the film are dramatic as Romanian captain, Dumitriu, is forced by a spoken order, to kill some Bulgarian paysants as a revenge for some comitagiens (an ethnic group in Bulgaria) having killed some Romanian solders. The captain refuses to follow the order and he is encouraged to do so by his lovely wife who proves to have high morals and a very sharp spirit of justice and human compation. Both of them are appalled by the brutality they face in society, from the Romanian lieutenant Turtureanu exerted over his solders and from the Romanian solders over the Bulgarian paysants who are, unfortunately, caught in the role of escaping goats for the comitagiens.

Regardless of the fact that the events presented date from a couple of decades ago, we have to acknowledge the contemporary issues of our enlarged society as we deal with silimar ethnic discriminations. Understanding and reflecting over these two works of art can only help us better define such concepts as –identity, tolerance, human rights, ethnicity, power, territory, belonging. It is not only a question of Romanians looking down to Bulgarians as they had been under the power of the Romanian government for a while or the other way round, it is a question of perceiving the other, the stranger, the person that might „threaten” your status, your identity, the eternal Jew that is “to blame” for everything evil that has happened since the beginning of times. This is what we are aiming at with the comparison of these two texts: a higher understanding of our true being in a constant relationship with the other, no matter his identity, ethnicity, religion, origin.

Keywords: *identity, ethnicity, religion, origin.*

JEL Code: I29

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FRI-239-2-LTLH(S)-03

THE PROJECTION OF THE ZLATOSTRUY'S SOCIAL IDEAL IN THE OLD BULGARIAN COLLECTION *ZLATOSTRUY*

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Abstract: *Zlatostruy contains teaching words, which guide the newly-baptized Bulgarians towards respecting the Christian norms, moral purity and spiritual elevation. Because of these peculiarities, the collection is referred to as a “medieval anthology of creed”. From the believing Christian is required measure and self-control of the feelings and desires, of the spiritual motives and behavior. The message that John Chrisostom sends to his contemporaries and to the future generations reveals his social ideal: God’s kingdom is feasible on earth. Every man – both rich and poor – can become the master of his destiny.*

Parallel to the disclosure of his idea of an ideal earthly kingdom, in which like in the kingdom of God all are equal, John Chrisostom draws the actual social model of the society on which he lives. There is the eternal class model based on inequality: on one side are the rich and on the other – the poor. Even though he realizes its abnormality John Chrisostom accepts it as God-given and does not deny slavery and seek its abolishment. He sees a shorter and quicker way to overcome the social differences by transforming the people through the defeating power of the spirit and in the fulfillment of the basic commandment of God: “to love our neighbor as your selves”.

Keywords: *anthology, creed, Zlatostruy, homily, social ideal, social model*

JEL Code: *I29*

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TOWARDS SOME PROBLEMS REGARDING THE TEACHING OF MARITIME ENGLISH LANGUAGE

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Abstract: *The paper deals with some problems connected with teaching Maritime English with a special focus on teaching terminological collocations in Maritime Admiralty Publications, namely Pilot Books. English for Specialized Purposes is described and defined as well as Pilot Books. Some terminological collocations are dealt with as an example of the group of collocations that present problems for both learning and teaching.*

Keywords: *English for Specialized Purposes (ESP), Maritime English, Pilot Book, terminological collocation.*

JEL Code: I29

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FRI-216-2-NSMTS(S)-01

**ACCOMPLISHMENT OF INTER-SUBJECT RELATIONS TO INCREASE
THE EFFECTIVENESS OF THE LEARNING PROCESS OF "BIOLOGY
AND HEALTH EDUCATION" IN THE 9TH GRADE**

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Abstract: *The aim of this article is based on analysis of literary sources and the practical experience of teaching to identify and present the possibilities of the curriculum of "Biology and Health Education" in the 9th grade, obligatory preparation, accomplishment of inter-subject relations in regards to improve the learning process. Possibilities are presented for establishing of interdisciplinary relations in the study of "Carbohydrates".*

Keywords: *interrelationships, improvement of the learning process, Biology and Health Education*

JEL Code: *I29*

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DETERMINATION OF THE CHARACTERISTICS OF A POLAR-DEPENDENT AND POLAR-INDEPENDENT COGNITIVE STYLE OF PUPILS

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Abstract: The cognitive styles of students are studied in order to achieve higher results in the development of interactive educational resources included in the multimedia learning environments. Cognitive style is seen as an element of the learning style associated with the "form" of cognitive activity and reflects the differences between people according to the nature of perception and processing of information. Ramirez - Castenada's model of "polar-dependent and polar-independent" students are used in order to establish the typical cognitive styles. In order to determine the predominant manifestation of the polar-dependent and polar-independent style in the training of students in Information Technologies with a multimedia environment, two research methods are used - a questionnaire filled by the students and a survey carried out by the teachers on a total of 20 indicators. The indicators for which the questionnaire and survey are constructed are the same and reflect the elements of the levels of knowledge: 1) the perception; 2) thinking; 3) memory; 4) practice. The research results are used to create learning objects for a multimedia-adaptive learning environment for IT training.

Keywords: Cognitive styles, Adaptive Multimedia Learning Environment for Information Technologies

JEL Codes: I20, I21

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FRI-216-2-NSMTS(S)-03

THE INTEGRATED APPROACH IN THE TRAINING TO INCREASE THE EFFECTIVENESS OF THE LEARNING PROCESS

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Abstract: *The article presents the necessity and the possibilities for applying the integrated approach in the training to increase the effectiveness of the learning process. The methodological foundations of the integrated approach has been observed as well as its specificity to the biological phenomena.*

Keywords: *integration, integrated approach, effectiveness of the learning process*

JEL Code: I29

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FRI-216-2-NSMTS(S)-04

BIOLOGICAL EDUCATION UNDER CONDITIONS OF TRANSITION OF THE SCHOOL OF EDUCATION FOR FEDERAL STANDARDS OF NEW GENERATION

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Abstract: The article deals with the problems of school biological education in the Russian school at the present stage of development, during the transition of general educational institutions to FSES.

Keywords: biological education, FSES, biology lesson, universal learning activities, study biology.

UDC 372

JEL Code: I 25

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OCTOBER RESEARCH CONFERENCE IN RUSE

FRI-1.405.2-1-NODDEA

FRI-1.405.2-1-NODDEA-01

REFLECTION AND PHI-LAPLACIAN EQUATIONS

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***Abstract:** In a recent paper it has been proved the equivalence of a first-order problem with reflection arguments and a given second-order φ -laplacian differential equation.*

To this end, we study in this work, the existence and oscillation of the solutions of φ -Laplacian differential equations, paying special attention to the explicit calculation of the period. The obtained results allow us to obtain sufficient conditions that guarantee the existence of periodic solution of the problem with reflection

***Keywords:** equations with involutions; equations with reflection; φ -Laplacian; periodic solutions*

***MSC Codes:** 34K05, 34K13*

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FRI-1.405.2-1-NODDEA-02

FIXED POINTS IN NON-VECTORIAL SPACES AND MATHEMATICAL MODELS OF UNCERTAINTY

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Abstract: Fuzzy differential equations are an adequate tool to handle mathematically the uncertainty present in a wide range of real processes. For the study of the properties of the solutions to these models, several notions for derivatives of fuzzy functions have been introduced, in addition to other independent approaches. Due to the particularities of the spaces of fuzzy sets, the analysis of the existence of solutions to some integral related problems can be accomplished with the use of fixed point results adapted to the specific structure of the base spaces for this type of equations. The application of some fixed point theorems in semilinear spaces has been used to deduce some existence results, for instance, for uncertain differential equations of fractional order. Some other fixed point results in complete metric spaces with an appropriate structure can also be applied to study the existence of solutions to ordinary or partial differential equations with uncertainty.

Keywords: Fuzzy differential equations, Fuzzy derivatives, Fixed Point theory

MSC 2010: 34A07, 26E50, 34G20, 34A12, 34A34, 35A01

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FRI-1.405.2-1-NODDEA-03

MINIMIZATION PROBLEMS FOR INHOMOGENEOUS RAYLEIGH QUOTIENTS

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Abstract: *The minimization problem*

$$\Lambda_1(p) := \inf_{u \in X_{0\{0\}}} \frac{\int_{\Omega} [\exp(|\nabla u|^p) - 1] dx}{\int_{\Omega} [\exp(|u|^p) - 1] dx},$$

where $X_0 A = W^{1,\infty}(\Omega) \cap \left(\cap_{q>1} W_0^{1,q}(\Omega) \right)$, is studied when $\Omega \subset \mathbb{R}^D$ ($D \geq 1$) is an open, bounded, convex domain with smooth boundary and $p \in (1, \infty)$. We show that $\Lambda_1(p)$ is either zero, when the maximum of the distance function to the boundary of Ω is greater than 1, or it is a positive real number, when the maximum of the distance function to the boundary of Ω belongs to the interval $(0, 1]$. In the latter case we provide estimates for $\Lambda_1(p)$ and we show that for $p \in (1, \infty)$ sufficiently large $\Lambda_1(p)$ coincides with the principal frequency of the p -Laplacian in Ω . Some particular cases and related problems are also discussed. This talk is based on some recent results obtained in collaboration with Marian Bocea.

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FRI-1.405.2-2-NODDEA-01

GENERALIZED FRACTIONAL DERIVATIVES OF RIEMANN-LIOUVILLE AND CAPUTO TYPE AND CAUCHY PROBLEMS

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Abstract: In Fractional Calculus (FC), as in the (classical) Calculus, the notions of derivatives and integrals (of first, second, etc. or arbitrary, incl. non-integer order) are co-related. One of the most frequent approaches in FC is to define first the Riemann-Liouville (R-L) integral of fractional order, and then by application of a suitable integer-order differentiation operation over it (or under its sign) a fractional derivative is defined - in the R-L sense (or in Caputo sense). The first mentioned (R-L type) is closer to the theoretical studies in analysis, but has some shortages - from the point of view of interpretation of the initial conditions for Cauchy problems (stated also by means of fractional order derivatives/integrals), and also for the analysts' confusion that such a derivative of a constant is not zero in general. The Caputo (C-) derivative, arising in geophysical studies, helps to overcome these problems and to describe models of applied problems with physically consistent (classical) initial conditions. Meanwhile, recently some authors dispute the advantages of both C- and R-L derivatives, with examples from control theory. There are also hybrid operations interpolating between them.

In this paper we survey the genesis of the definitions of the generalized integrals and derivatives of arbitrary (fractional) multi-order ($\delta_1 \geq 0, \dots, \delta_m \geq 0$). First we introduce such fractional derivatives of R-L type, and then also of the Caputo type, and analyze their properties and cases of coincidence of the two definitions. This happens for example for the hyper-Bessel differential operators of high integer order $m = \text{multi-order}(1, \dots, 1)$, and for the so-called Gelfond-Leontiev generalized differentiation operators.

We consider some particular examples of the derivatives of both types and of Cauchy problems for fractional order differential equations with R-L or C-derivatives with initial value conditions of the corresponding type. The solutions of such problems are expressed in terms of the Mittag-Leffler function or its multi-index analogues and extensions, called special functions of fractional calculus.

Keywords: Fractional calculus, Differential equations of fractional order, Special functions, Cauchy problems.

AMS Math. Subj. Class.: 26A33, 34A08, 33C60

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FRI-1.405.2-2-NODDEA-02

CRITICAL POINT THEOREMS IN CONVEX SETS AND LOCALIZATION OF NASH-TYPE EQUILIBRIA

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Abstract: The localization of a critical point of minimum type of a smooth functional is obtained in a bounded convex conical set defined by a norm and a concave upper semicontinuous functional. The technique is used for the localization and multiplicity of Nash-type positive equilibria of nonvariational systems. An application to a periodic problem is given.

Keywords: Critical point; Nash-type equilibrium; Ekeland's principle; Variational system; Periodic problem; Positive solution; Multiple solutions

MSC Codes: 47J30, 34B18, 58E05

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FRI-1.405.2-2-NODDEA-03

EXISTENCE OF SOLUTIONS FOR A NONLINEAR PERIODIC BOUNDARY VALUE PROBLEM INVOLVING P-LAPLACIAN

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Abstract: *This is a joint work with professor Tersian.*

There are proved some existence and multiplicity results for a periodic nonlinear boundary value problem involving the p -Laplacian functional. The results are proved by using the minimization argument and an extended Clark's theorem. Here we present some properties which ensure that the weak solutions are, indeed, classical solutions.

Keywords: *periodic nonlinear boundary value problems, p -Laplacian, Clark's theorem*

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FRI-1.405.2-2-NODDEA-04

THE CONVERGENCE OF NONNEGATIVE SOLUTIONS FOR THE FAMILY OF PROBLEMS $-\Delta_p u = \lambda e^u$ as $p \rightarrow \infty$

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Abstract: *Let $\Omega \subset \mathbb{R}^N$ ($N \geq 2$) be a bounded domain with smooth boundary. We show the existence of positive real number λ^* such that for each $\lambda \in (0, \lambda^*)$ and each real number $p > N$ the equation $-\Delta_p u = \lambda e^u$ in Ω subject to the homogeneous Dirichlet boundary condition possesses a nonnegative solution u_p . Next, we analyze the asymptotic behaviour of u_p as $p \rightarrow \infty$ and we show that it converges uniformly to the distance function to the boundary of the domain. This talk is based on a joint work with M. Mihăilescu and C. Varga.*

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FRI-1.405.2-2-NODDEA-05

ON A FAMILY OF TORSIONAL CREEP PROBLEMS INVOLVING RAPIDLY GROWING OPERATORS IN DIVERGENCE FORM

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Abstract: Let $\Omega \subset \mathbb{R}^N$ ($N \geq 2$) be a bounded domain with smooth boundary and $\{p_n\}$ be a sequence of real numbers converging to $+\infty$ as $n \rightarrow \infty$. For each integer $n > 1$ we define the function $\phi_n(t) = p_n|t|^{p_n-2}te^{|t|^{p_n}}$, for all $t \in \mathbb{R}$, and we prove the existence of a unique nonnegative variational solution for the problem $-\operatorname{div}\left(\frac{\phi_n(|\nabla u(x)|)}{|\nabla u(x)|}\nabla u(x)\right) = \phi_n(1)$, when $x \in \Omega$, subject to the homogeneous Dirichlet boundary condition. Next, we establish the uniform convergence in Ω of the sequence of solutions for the above family of equations to the distance function to the boundary of Ω . This talk is based on some results obtained in collaboration with Mihai Mihăilescu.

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FRI-1.405.2-2-NODDEA-06

ONE GENERALIZATION OF A PROBLEM FROM IMC 2017

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Abstract: In the present paper we consider a problem from International Mathematics Competition for University students – IMC, held in Blagoevgrad, Bulgaria, August 2017. We generalize the problem and extend the results to a more general setting.

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FRI-1.405.2-2-NODDEA-07

MATHEMATICAL MODELLING OF NERVE SIGNAL PROPAGATION

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Abstract: Signal processing in living organisms is a challenging interdisciplinary scientific area that roots through physiology and brings together efforts of biologists, chemists, physicists, mathematicians, engineers and computer scientists. Successful treatment of mental disorders and artificial intelligence are amongst the broad range of possible applications. In this article, different mathematical models for nerve signal propagation are reviewed including the famous electrical model of Hodgkin and Huxley, and the more recent thermodynamic model of Heimburg and Jackson. It turned out that the molecular structure and organization of the neuronal membrane play a significant role in understanding biological signal processing. In this article, a new approach is suggested to describe processes in neuronal membrane based on the theory of liquid crystals.

Keywords: neuronal membrane, ion channel, action potential, Hodgkin–Huxley model, lipids, melting transition, thermodynamics, liquid crystals.

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FRI-1.405.2-2-NODDEA-08

EXISTENCE OF SOLUTIONS TO A MODEL FOR OPTION VALUATION IN A MARKET WITH SWITCHING LIQUIDITY

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Abstract: *We consider a model for European option valuation in a market switching between liquid and illiquid state. It extends previous work of Ludkovski and Shen as soon as it includes multiple assets. We study the existence of solutions of the corresponding system of partial/ordinary differential equations.*

Keywords: *option valuation, switching liquidity, indifference pricing, exponential utility*

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FRI-1.405.2-2-NODDEA-09

EXISTENCE OF SOLUTIONS OF N-TH ORDER HOMOCLINIC DIFFERENCE EQUATIONS WITH SIGN-CHANGING GREEN'S FUNCTION

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Abstract: We consider n -th order nonlinear difference equation with parameter dependence. An exhaustive study of the related Green's function is done. The exact expression of such function is given. The range of the parameter for which it has a constant sign or it changes sign is obtained. Some existence results for the nonlinear problem are deduced by using the classical Krasnosel'skii's fixed point theorem in cones and fixed point index theory. This talk is based on a joint work with A. Cabada.

Keywords: difference equation, Green's function, parameter dependence

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FRI-8.121-1-AMT&ASVM

FRI-8.121-1-AMT&ASVM-01

**TESTING OF ULTRASONIC SENSOR FOR MEASUREMENT
OF WASTE VEGETATION MASS**

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Abstract: The object of the study is an ultrasonic sensor type UT2F/E7-OEUL that measures the presence of a body in the range of 350 to 6000 mm. The sensor was mounted in a suitable place in the combine harvester. Experiments were conducted on three types of waste vegetation mass (WVM): wheat, beans and alfalfa in field and laboratory conditions. A database of sensor measurements was obtained. A single-factor dispersion analysis task was formulated. The results obtained using relevant specialized software showed that the sensor is operational regardless of the type of WVM.

Keywords: ANOVA, vegetation mass, experiment, dispersion analyze, ultrasonic sensor

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FRI-8.121-1-AMT&ASVM-02

CRITICAL ANALYSIS OF THE OPERATION OF A TILLER

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Abstract: The following work focuses on a tiller with maximum power of 6.5hp and aggregated machines. The processes of soil milling, plowing, cultivation and subsoiling were studied. Force and power characteristics were measured. The results show good functionality of the tiller and significant disadvantages of the aggregate. Changes in the construction are required.

Keywords: Tiller, agricultural aggregate, plowing, plowing forces.

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FRI-8.121-1-AMT&ASVM-03

DYNAMIC COMPUTER MODELING OF ARABLE WALKING TRACTOR WITH PLOW

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Abstract: The subject of the study is a motocultivator whose construction is designed for soil cultivation on small-scale private farms. Magnitudes - variables and constants that characterize the statics and dynamics of the motocultivator are identified. The motion equations are derived based on the corresponding body simplifications that move in the vertical-longitudinal plane with two degrees of freedom. The computerized simulation model of the dynamic system was developed using the Vemsim software. The numerical solution has been obtained. After analysis the relevant conclusions are made to improve the sustainability of the motocultivator movement within the required controllability.

Keywords: dynamics, model, motocultivator, sustainability, controllability

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FRI-8.121-1-AMT&ASVM-04

OPTIMIZATION OF LINKED PROCESSES ON EXAMPLE OF WHEAT AND MAIZE HARVEST

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Abstract: The subject of the paper are linked processes in agriculture. Sophisticated relations between operational and transportation farm practises in time, place, and mass balance need compound simulation based on computer software. Important prerequisites for a good solution is a well-founded land management project. The last one have to include at least proper crop rotation plan and corresponding road net. The different combinations of crop yield, bulk density, distant of transportation for distinct plants require many concrete solutions. Furthermore, transportation can be realized with or without intermediate capacity like buffers, bins, overloader trailers, exchangeable trailers, etc. For fastets harvest, computation are made with maximum number of selfpropeler harvesters or enough to end of crop gather in acceptable periods. In the example, a joint work of Claas Lexion 600 and tractor with 9, 12 and/or 21 tons carrying capacity of trailer are discussed. For easy choice of every concrete solution, additiobnal information can be used like linked processes performans and graphic illustration. The proposed optimal procedure garatees enough data for reasonable solution based on real combinations of technology, machinery, vehicles, intermediate and final capacities.

Keywords: linked processes, computer simulation, graphic illustration, harvest and transportation.

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ANALYSIS THE PHENOMENON OF QUEEZING SOIL IN PROCESS WORKING OF CHAIN TRENCHERE

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Abstract: Analysis the process conveyance cutting soil from digging trench of chain trencher has been developed. The performance of a chain trencher is expressed by its production (excavation) rate. The production rate, i.e, the volume of soil excavated per hour, affects the time necessary to excavate a trench. Several factors affect operation efficiency of chain trencher. One of these factors is phenomenon of squeezing soil in process conveyance cutting soil of chain trencher.

This paper deals with theoretical study of phenomenon of squeezing soil in process working of chain trenching machine, relationship between volume accumulated soil cuttings and volume available for one complete interval between tracking teeth and use it to lay out the cutting teeth on cutting assembly of Russian digging machine PZM-2 so that to avoid the phenomenon of squeezing soil.

Keywords: chain trenching machine, performance, phenomenon of squeezing soil

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STUDY ON SOIL PROTECTION EFFICIENCY OF CERTAIN MINIMUM AND MULCH CULTIVATION OF THE SOIL WITH THE USE OF MANURE IN THE CULTIVATION OF WHEAT ON SLOPE LANDS

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Abstract: *The application of some minimum and mulching (surface and inside soil) soil treatments with the application of manure as a mulching material included in the newly developed advanced soil protection technologies are extremely effective for the agriculture of the Republic of Bulgaria by the erosion and soil protection of these technologies, when growing wheat on slopes, proving their high efficiency.*

Keywords: *water erosion, loss of soil organic matter, wheat, minimum soil tillage, mulching, advanced soil protection technologies, manure.*

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INVESTIGATION OF SYSTEMS FOR MINIMUM AND UNCONVENTIONAL SOIL TILLAGE WITH THE APPLICATION OF MANURE IN THE CULTIVATION OF MAIZE ON SLOPE AGRICULTURAL

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Abstract: *The positive influence on the limitation of the degradation processes water erosion and loss of soil organic matter, in our agricultural production, have proved advanced soil protection systems for soil tillage, which include some minimum and unconventional soil (surface and vertical mulching) treatments with the use of manure. The present work explores the results of the three-year study period of these systems in the cultivation of grain maize on sloping agricultural lands under specific soil and climatic conditions.*

Keywords: *water erosion, loss of soil organic matter, wheat, minimum soil tillage, mulching, advanced soil protection technologies, manure.*

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CHANGES OF MICROBIOLOGICAL ACTIVITY OF THE SOIL IN THE APPLICATION OF EROSION CONTROL TILLAGE FOR GROWING WHEAT ON INCLINED ARABLE LANDS.

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Abstract: Soil degradation processes, water erosion and loss of organic matter causes a disruption of soil physical, chemical and biological properties. To combat these processes a number of measures, methods and technologies have been developed. The activity and composition of soil microflora are a sensitive indicator of soil processes. The present study focuses on changes in soil microbiological activity under the influence of conventionally applied and erosion control technologies for growing wheat on slope arable lands.

Keywords: water erosion, loss of soil organic matter, wheat, minimum soil tillage, mulching, advanced soil protection technologies, manure.

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A METHODOLOGICAL APPROACH TO THE STUDY OF THE PLANT AND LIVESTOCK RESIDUES COMPOSTING PROCESS

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Abstract: A methodology of the study of the process of composting plant and livestock breeding residues has been proposed. Wheat straw and poultry manure are used to study the composting process. The main factors that are most relevant to the composting process are the following: compost humidity, the carbon-nitrogen ratio and the straw-cutting size. A chemical analysis of the straw and poultry manure was determined before and after the experiments.

Keywords: Composting Process, Plant and Livestock Residues, Wheat Straw, Poultry Manure, Waste Biomass from Agriculture, Utilization.

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MONITORING OF WEEDS IN CROPS OF LEGUMES AND CEREALS GROWN UNDER CONDITIONS OF ORGANIC FARMING

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Abstract: During the period 2011 - 2013 a field experiment was conducted at the experimental field of IASS “Obraztsov chiflik” – Ruse, with ecologically grounded crop rotation, including the cultivation of two legumes /field beans, peas/ and two cereals /wheat, malting barley/ on an area after conversion. The experiment started after the eightfold scheme of Georges Ville in 3 replications, situated after Ryumker, the size of the harvesting plot being 52,5m². Pesticides were not applied on the crops, also and synthetic fertilizers and improvers of soil, prohibited for the organic production.

The objective of the study was to observe and describe the biological regulation of weeds in legumes and cereals, grown under conditions of organic farming.

In the organic field, the diversity of weed species was influenced by climatic conditions, soil tillage and crops. There were differences in weed infestation of crops only in terms of quantity of weeds per m². In that case the differences in weed infestation were in direct relationship with certain biological characteristics of the crops. The species *Matricaria chamomilla* (L.), *Anthemis arvensis* (L.), *Capsella bursa-pastoris* (L.), *Setaria viridis* (L.), *Echinochloa crusgalli* (L.), *Digitaria sanguinalis* (L.), *Lamium purpureum* (L.), *Convolvulus arvensis* (L.) u *Cirsium arvense*(L.) were reported over the whole three-year period.

Keywords: organic farming, monitoring, weeds, field beans, peas, wheat, malting barley

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TECHNOLOGIES FOR THE COLLECTION OF RESIDUES OF OIL-ROSE

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Abstract: *Three technologies for harvesting residual plant biomass from damask rose after harvesting oil flowers are separated. Depending on the location and the size of the planted areas, it is appropriate to use one or the other technology. In order to avoid rotting processes of the crushed residual plant biomass from damask rose in the form of energy spikes, it is necessary to reach an air-dry condition prior to crushing operation. In order to limit and reduce the damage caused by Agrilus on the plantations of damask rose, it is necessary to remove the cut biomass as quickly as possible from the field.*

Keywords: *damask rose, technology, energy*

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FRI-8.121-1-AMT&ASVM-12

POSSIBILITIES OF USING HHO GENERATOR AS RENEWABLE ENERGY FOR BUILDINGS HEATING

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Abstract: The heating of residential and industrial buildings is necessary for their normal functioning in the winter period of the year (these are the months from October to April). During this period, the costs of households and companies are increasing. Under the Regulation 2015/1185 and some directives of EU seeks to reduce this share and stimulate the population to the use of energy from different types of renewable energy sources.

Environmental pollution is a major environmental problems and causes of many diseases. The effects of pollution are felt most strongly in two main areas: in urban areas, where people are experiencing significant health problems and ecosystems where it harms the growth of vegetation and leads to a loss of biodiversity. To meet its energy needs in many countries are planning a more rational use of energy and the development of renewed energy sources (RES) to replace part of the fossil fuels.

In this sense, the use of cheap and environmentally friendly source of energy as the HHO generator for heating is quite acceptable proposal. The generator is extremely clean energy of the hydrogen molecule. The generator is known for the high temperature of the combustion. It is used in welding equipment as well as in the automotive industry where it helps to lower fuel costs. The use of the generator in heating installations is very limited.

Keywords: Renewable energy, HHO generator, heating, hydrogen.

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PREREQUISITES FOR THE DESIGN OF AUTOMATIC DOSER MACHINE OF CONCENTRATED FEEDS OF SMALL RUMINANTS

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Abstract: *The paper considers the need for designing a dispenser for automated delivery of concentrated feed of small ruminants. Provides an analysis of the criteria for choosing optimal of auger conveyor parameters to ensure the required dosing accuracy for the specific purpose.*

Keywords: *E-Learning, Model, Efficiency, Effectiveness, GPS, Protection.*

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**PARETO OPTIMIZATION OF THE GANTRY CRANES
LEVEL-LUFFING JIB SYSTEMS**

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Abstract: An optimization mathematical model of the gantry crane level luffing jib system with an upper swing of balancing device was built. The parameters, optimization criteria and their limitations are defined according to Pareto's optimization algorithm in MATLAB. All the components, details and assemblies of the level luffing jib system with an upper swing of balancing device have optimized practically. The results have compared with those of the optimization of the system with a lower swing of balancing device.

Keywords: Gantry cranes, Level-luffing jib system, Optimization mathematical model, Pareto optimization procedure, MATLAB.

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FRI-1.202-1-MR-02

A STUDY OF GANTRY CRANES LEVEL-LUFFING JIB SYSTEM USING SOLIDWORKS

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Abstract: Solid models of the gantry cranes level luffing jib system elements are built in SolidWorks. The metal structure has been designed as a thick-walled, box-shaped as a modern technological solution. The workloads applied to the details during the gantry crane operation are used according to previous experiments. The results of the calculations of the gantry crane level luffing jib system details are presented as info-graphics.

Keywords: Gantry cranes, Level-luffing gib system, Metal structure, Info-graphics, Stiffness, Strenght, Jib, Jib-arm, Guy, SolidWorks.

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FRI-1.202-1-MR-03

STUDY OF THE CHANGE OF THE MOMENTS OF FRICTION FOR ELECTROLYTIC RECOVERY IRON COATINGS

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Abstract: *One of the main tribotechnical characteristics, which changes significantly in the process of combustion and in the modification of the external influences, are the moments of friction at curing and established wearing out. In the present study, a comparative study was carried out on the change of the friction moments and the processing of electrolytic iron restoration coatings and reference steel 45, operating in sliding friction in liquid medium from SAE 30 oil. It was found that friction decreased, with the process of finishing being completed within the first two hours. One of the tribological characteristics, who changes essentially running in wear out and the change of outside actions are the moment of running in wear and normal wear.*

Keywords: *Tribology, Running in wear, Moment of friction, Electrolytic Coating, Iron Coating, Repair Coating, Remanufacturing.*

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FRI-1.202-1-MR-04

AGRICULTURAL MACHINES USED ENGINE OIL ANALYSIS WITH FOURIER TRANSFORM INFRARED SPECTROSCOPY TESTER

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Abstract: *Used engine oil has gained wide acceptance as a cost cutting strategy and improve maintenance in modern industry. Condition monitoring by lubricant analysis is one of the basic tools of a predictive maintenance program along with vibration monitoring, performance monitoring and thermography. In many cases, it enables identification of a potential problem before a major repair is necessary and downtime during critical operations can be avoided.*

In this paper we analyzed the used engine oil and its remaining resource in agricultural machines using FTIR Spectroscopy

Keywords: *oil analysis, failure, TBN, maintenance, agricultural machinery, FTIR spectroscopy*

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FRI-1.202-1-MR-05

ANALYSIS OF MAINTENANCE SPARE PARTS MANAGEMENT FOR AGRICULTURAL AND TRANSPORT MACHINERY

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Abstract: Spare parts are required to maintain durable goods, agricultural and transport equipment, industrial machinery and equipment, often requiring high investment and significantly influencing production systems. Spare parts management is compounded by the large number of different items and low demand. This article presents a literary review of spare parts management and control in one place that covers both management techniques and control solutions at the various stages of the product lifecycle. Overall, the literature review identifies the following options for managing spare parts management: criteria for deciding whether to store or not the item, how much to order for a determined period of time, integrating forecasting patterns for demand, and controlling spare parts and conclusions of the literature review.

Keywords: spare parts, management spare parts, maintenance, spare parts demand forecasting

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FRI-1.202-1-MR-06

RESEARCH ON THE INFLUENCE OF THE MOMENT OF FUEL DELIVERY ON COMPONENTS OF EXHAUST GAS OF ICE

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Abstract: Experimental determined consumption fuel and components of exhaust gas depending on moment of delivering diesel fuel to internal combustion engine (ICE). Graphically are presented dependence of CO, CO₂, HC, O₂, NO_x, λ , and fuel consumption with changing load of ICE and moment of the fuel delivery. The Analysis of the balance of the fuel economy and composition of the exhaust gas, depending on moment of the fuel delivery.

Keywords: Fuel Consumption, Compositions Exhaust Gases

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FRI-1.202-1-MR-07

DETERMINATION OF THE DEGREE OF INFLUENCE OF BASIC STRUCTURAL PARAMETERS ON THE CHANGE OF THE IEC TECHNICAL AND ECONOMIC CHARACTERISTICS

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Abstract: *The evaluation of the hourly and specific fuel consumption and the main components of the exhaust gas composition in case of internal combustion engine failures are examined. A structural investigation scheme was developed to determine the impact of the structural parameters of the main subsystems on the change of the main components of the exhaust gases.*

Keywords: *Diagnostic, Fuel Consumption, Compositions Exhaust Gases, Internal Combustion Engine*

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FRI-1.202-1-MR-08

ALGORITHM FOR THE DIAGNOSIS OF ICE BASED ON THE COMPOSITION OF EXHAUST GASES

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Abstract: *On the basis of the results obtained for the influence of a major engine failure on the exhaust gas composition, criteria have been set as a basis for the development of a rational algorithm related to the order of execution of the elementary checks. For this purpose and a coefficient of structural information, the degree of influence on fuel consumption and the ratio of the major components in the exhaust gases for one or more faults or their respective combination are determined.*

Keywords: *Diagnostic, Fuel Consumption, Compositions Exhaust Gases, Internal Combustion Engine*

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**COMBUSTION TESTS FOR BIOGAS OBTAINED FROM
ANAEROBIC DIGESTION OF ANIMAL PROTEINS**

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Abstract: *The paper reviews the benefits that biogas obtained through anaerobic fermentation can bring to the renewable energy which is strongly demanded in the past years to be used on many application, even in industrial scale. In this context, the leather industry has an advantage due to the high content of protein that wastes contains and makes them feasible to support an anaerobic digestion with a good quality of the biogas. On the other hand, the combustion of biogas is also a direction that needs to be well studied in order to have an efficient process synchronised with energetic characteristics and the different burners and devices needed to reach the good configuration of parameters. There were carried out tests in kinetic and diffusive regime and the experimental results proved to be relevant and admitted the usage for the wastes with a high concentration of protein, such as the ones coming from tanneries.*

Keywords: *Anaerobic digestion, Biogas, Combustion, Methane.*

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FRI-9.2-1-THPE-02

TEST BENCH EQUIPMENT FOR ANALYSIS OF COOLANT FEED IN AND ORIENTATION OF THE HEAT TRANSFER SURFACE IN CAPILLARY-POROUS SYSTEMS

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Abstract: *The numerical modeling of the ongoing processes that takes place in capillary-porous coatings allows for the mechanisms of heat transfer and vapor generation to be revealed/studied. Thus, to identify the most endangered areas where fatigue cavities may form and spread. The fatigue cavities mainly appear at the vapor-forming activation centers. The coatings are manufactured from minerals with poor thermal conductivity properties (quartz, granite, scaffold) with relatively low porosity (3-30%). The heat is led through a jet type burner and electrical*

current. The stability of the heat transfer process is ensured by abundant amount of coolant and the joint/simultaneous action of capillary and mass forces. By solving the process of the thermal flexibility, the connection between the thermal flows, the destructive thermal tensions and the destructive energy has been determined. The connection between the aforementioned thermal properties is established as a function of time from the initial heating and the size of the eroding particles.

Keywords: Capillary-porous systems; Heat and mass transfer processes, Cooling systems.

JEL Codes: Q3, Q55, Q01, O13, O33, L43, L51

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FRI-9.2-1-THPE-03

INVESTIGATIONS OF THE DEVELOPMENT OF A DECENTRALIZED HEATING SYSTEM WITH WATER-WATER HEAT PUMP SYSTEM

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Abstract: *The article presents the investigation and analysis of the development of a decentralized heating system with water-water heat pump system. It includes the estimated energy production and the CO₂ emission reduction.*

An energy efficiency audit of an industrial system has been carried out, as a result of which the energy loads of the holding have been determined. This project proposes construction of a shrimp farm consisting of a one-storey building with the following distribution of the building: production pools; storage room; preparation; domestic and refrigeration rooms. The maintenance of the microclimate in the building involves the development of a decentralized heating system, divided into two separate systems - the one providing the needs of the pool halls and the second one for the storage and household premises. For this purpose, it is envisaged the introduction of a water-water heat pump system. The water supply to the heat pump is from a borehole and a reinforcement borehole.

Keywords: *Heating system, Water-water heat pump, Financial analyses, CO₂ emission reduction.*

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FRI-9.2-1-THPE-04

IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS THROUGH THE USE OF A HIGHLY EFFICIENT, HUMIDITY SENSITIVE VENTILATION SYSTEM

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Abstract: Improving energy efficiency of buildings by using a highly efficient airflow-controlled humidity sensitive ventilation system: The airflow-controlled humidity sensitive ventilation is an efficient technological solution to ensure the normative requirements for fresh air in buildings. This innovation serves in the best way energy saving and the indoor air quality. The air quality is recognised as a determining component of wellness in dwellings and offices, because the limitation of energy consumption has become today a major concern in the building sector. The use of the system ensures a significant reduction of the required ventilation energy

Keywords: Airflow and demand controlled humidity sensitive ventilation, Energy efficiency in buildings, Humidity-controlled air terminal, Indoor air quality, Sick building syndrome.

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FRI-9.2-1-THPE-05

NON-STATIONARY HEAT LOADING AT DOUBLE INSULATING GLASS UNITS

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Abstract: Temperature fields at insulating glass units (IGU) with different thermal performances are obtained by mathematical modeling and numerical simulation of the heat transfer, taking into account the daily variation of the external temperature and solar radiation. Positive and negative gauge pressure in the hermetized gas space in the IGU is established in the winter and summer period correspondently. The climatic loads, caused by the gas temperature change are estimated. Higher internal loads at the IGU with the lower thermal performance due to coating influence on heat transfer are expected.

Keywords: Heat transfer, Modeling, CFD, Insulating glass units, Climatic loads.

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THERMAL LOADING AT TRIMMING STRUCTURES IN THE WALL OF TROMB

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Abstract: *This paper presents thermal load analysis of insulating glass units (IGU) integrated in Trombe walls. The analysis is based on modelling and numerical simulation of the heat transfer processes in the construction. The boundary conditions of the models are determined on the base of experimental data, obtained from an existing Trombe wall test module, situated at the Technical University of Sofia. The investigations are performed for different systems of IGU fixing in the Trombe wall. The temperature fields and subsequent climatic loads in the IGU at winter conditions are computed. The possibilities for glass failure due to the internal pressure loads are analysed.*

Keywords: *Heat transfer, Insulating glass units, Trombe wall, Mathematical modelling, CFD*

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FRI-9.2-1-THPE-07

3D MODELING OF THIN THERMAL INSULATING COATINGS

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Abstract: *The study presents a 3D thermal model of thin insulating coatings, which is developed by using the finite element modeling (FEM). The 3D model is able to achieve temperature distribution with varying combinations of process parameters. The computed temperature field and equivalent thermal conductivity are compared to experimental measurements. The FEM based simulation presents excellent correlation with the experimental results. This study validates the proposed model for thin insulating coatings on the basis of syntactic foam with ceramic microspheres.*

Keywords: *Finite element modeling, Thermal conductivity, Thin insulating coatings.*

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FRI-9.2-1-THPE-08

DEVELOPMENT OF HEAT CONDUCTIVITY MEASURING APPARATUS

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Abstract: *In this paper presents the development of heat conductivity measuring apparatus. Contemporary construction is based on different type, composition and thickness of heat-insulating coatings. Not always the thickness of the thermal insulation layer is equivalent to its efficiency. This leads to the need to monitor the parameters describing these materials or more precisely the thermal conductivity coefficient. The determination of the coefficient of thermal conductivity of different materials and products is done by means of special measuring devices.*

Keywords: *Thermal conductivity, Measuring devices, Heat insulation materials.*

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FRI-9.2-1-THPE-09

THERMAL CALCULATIONS OF THE WATER HEATER WITH A FINNED TWO-PHASE THERMOSYPHONES

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Abstract: *The paper presents a methodology for thermal calculations of heat exchanger with finned thermosyphons. The methodology is based on the co-decision of 6 non-linear equations. They describes the heat exchange processes:*

- *heat exchange between gaseous coolant in the heating part and liquid in the cooling part and the liquid in the cooling part;*
- *heat exchange during boiling and condensation in the thermosyphons with the intermediate heat transfer medium,*
- *heat conduction through the finned wall of the thermosyphon in the heating part of the thermosyphon and through a smooth wall in the cooling part.*

The in-line array and staggered array of the pipes is considered. In determining the average heat transfer coefficient, previous authorial studies have been used.

Particular attention is paid to heat exchange in the thermosyphon. Two modes are considered in the evaporator: free convection and bubble boiling mode. A condensation mode of condensation is contemplated in the condenser.

The presented methodology can be used for thermal calculations of heat exchangers with finned thermosyphons.

Keywords: *Finned thermosyphons, Heat conduction, Heat exchanger, Heat exchange, Thermal calculations.*

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EXPERIMENTAL STUDY OF TURBINE WITH OSCILLATING BLADE

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Abstract: *Current work deals with experimental investigation of water turbine with oscilating blades designed for wave energy utilization. The main goal of the experiment is to test the functionality of the turbine. The relations between the turbine shaft rpm and both the amplitude and the frequency of the waves are presented and discussed.*

Keywords: *experimental investigation, turbine with oscilating blades, wave energy utilization*

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ANALYSIS OF NATURAL HAZARDS IN BULGARIA

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Abstract: *The paper presents an overview of the main natural and man-made hazards in Bulgaria. A descriptive analysis of the major disasters in Bulgaria for the time period 2010 – 2015 is made. The survey is based on the existing administrative regions in Bulgaria as well as their corresponding districts. The total number of the hazards for the mentioned period is extracted and the economic impact is given.*

Keywords: *natural hazards, descriptive analysis, disasters in Bulgaria*

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- Venelin Makakov, Rositsa Velichkova, Iskra Simova, Detelin Markov, *FLOODS RISK ASSESSMENT IN BULGARIA*, CBU International Conference indexed in Web of Science / Thomson Reuters, submitted for publishing
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ON THE UTILIZATION OF THE WIND WAVES ENERGY ON THE BULGARIAN BLACK SEA COAST

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Abstract: This paper investigates the possibilities for utilisation of the wind wave energy potential in the territorial waters of Bulgaria in Black sea by water turbines with oscilating blades. Information about the wave climate in Bulgarian territorial sea is obtained from published results about offshore wave energy based on long-term hindcast and studies on wave exposure of Bulgarian Black sea coast.

Keywords: Water turbine with oscilating blades, Wave energy, Energy conversion.

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NUMERICAL MODELING THE INTERACTION OF TURBULENT JET WITH SUCTION OPENING WITH ECCENTRICITY BETWEEN SECTIONS

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Abstract: This paper is about using computational fluid dynamics for obtaining a solution concerning interaction of a turbulent jet with suction opening with eccentricity between sections. The accuracy of modern calculation methods give reason to be used in the design of local exhaust ventilation. This option with the presence of eccentricity is interesting for modeling because most of the technological processes in different industries are related to the separation of heated vapor and fine particles whose capture requires the use of eccentricity between the injection jet and the suction opening.

Keywords: turbulent jet, CFD modeling, suction opening, pollutants

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NUMERICAL MODELING THE INTERACTION OF TURBULENT JET WITH SUCTION OPENING WITH PRESENCE OF AN ANGLE BETWEEN SECTIONS

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Keywords: *turbulent jet, CFD modeling, suction opening, pollutants*

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NUMERICAL INVESTIGATION OF THE SPRING CONSTANT IMPACT ON THE WORK OF A STIRLING-RINGBOM ENGINE WITH AN ELASTIC ELEMENT

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Abstract: Current work deals with numerical simulation of the behaviour of a Stirling-Ringbom engine with an elastic element that assists the displacer piston movement from its top dead centre toward its bottom dead centre. The variation of the atmospheric pressure and the temperature of the hot source influence engine operation. Therefore, the goal of this material is to identify the character and the extent of this influence. This paper shows that by variation of the spring constant it is possible to achieve stable operation of the engine concerned under variation of the environment parameters within certain intervals.

Keywords: Stirling-Ringbom engine, Elastic element, Spring constant, Engine behaviour.

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PRACTICAL EXAMPLE OF A QUADGENERATION SYSTEM

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Abstract: This paper presents a practical example for application of a quadgeneration system for supporting the greenhouse production of vegetables. A quadgeneration system is supplied with fuel and generates four useful products-electricity, heat, cold, and CO₂. In this way, is achieved efficient use of the fuel and the pollution load to the environment from a combustion installation is decreased, since the CO₂ is used for increasing the growth rate of the plantations in the greenhouse. A simplified technical, economic and ecological analysis of the studied system is presented. The energy efficiency and the pollution load to the environment of the greenhouse production based on the proposed quadgeneration system are compared with the corresponding characteristics of the greenhouse production based on the current practice.

Keywords: Quadgeneration, Greenhouse, Environment, Energy efficiency.

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A REVIEW OF THE TECHNOLOGIES FOR HYDROGEN SULFIDE REMOVAL AND UTILIZATION FROM BIOGAS INSTALLATIONS

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Abstract: Current material presents an overview of the existing hydrogen sulfide (H_2S) removal and utilization technologies and provides discussions about its application to biogas installations. A new 2-steps technology is proposed for separation of H_2S gas to Sulfur and H_2 on the first step and for H_2 gas utilization on the second step.

Keywords: biogas installation, hydrogen sulphide, H_2S utilization, H_2S removal

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PARAMETRIC OPTIMIZATION OF ELECTROHYDRAULIC TRANSMISSION SYSTEM WITH ROTARY ACTUATOR

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Abstract: *The article studies a mathematical model of electrophhydraulic transmission system with with rotary actuator. The adjustment of the electronic PID controller is optimal and in the admissible alteration range of the adjustment parameters. The processes, which occur in the electrohydraulic transmission system with optimal adjustment of the controller, are being simulated. The results of the simulation of transients are presented in graphical form.*

Keywords: *Electrohydraulic System, Pressure Pipeline, Optimal System, Mathematical Model, PID Controller, Rotary Actuator.*

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FRI-9.3-1-THPE-10

NUMERICAL STUDY OF THE FLOW PASSING THROUGH THE ROTOR OF A VERTICAL AXIS WIND TURBINE

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Abstract: A Savonius type wind turbine is the object of the current study. The Savonius wind turbine has a relatively simple design, omnidirectional wind acceptance, excellent self-starting capabilities and stable operation under turbulent wind. The operation of the Savonius wind turbine is characterized by pronounced unsteadiness, due to the continuous change of the relative velocity acting on the blades. In order to gain deeper understanding over the ongoing processes during the turbine operation a numerical modelling of the flow passing through its rotor was carried out. Due to computational hardware and time limitations a 2D URANS approach was adopted. The $k-\omega$ SST turbulence model was chosen the calculation of the vortex structures generation, dissipation and interactions. The $k-\omega$ SST combines the advantage of the $k-\epsilon$ model of excellent main flow modelling and the advantage of the $k-\omega$ model of excellent near-wall (blades) flow modelling. The obtained numerical data is postprocessed and the flow passing through the rotor is visualized at different angular positions. The operational theoretical characteristics of the Savonius wind turbine are obtained.

Keywords: Numerical modelling, ANSYS Fluent, VAWT, Vortex structures.

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CHARACTERISTICS OF A MODELING HYDROKINETIC TURBINE

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Abstract: In the work were obtained the analytical characteristics of the hydrokinetic axial turbine by using the Sabinin method, which commonly was used for calculation of axial winds, but here it was adapted to the operating conditions of hydrokinetic turbine.

Keywords: hydrokinetic power, axial rotor.

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**ANALYSIS OF ENERGY EFFICIENCY OF HEAT INTEGRATION
FRAMEWORK OF ATAD WASTEWATER TREATMENT
PLANT UNDER UNCERTAINTIES**

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Abstract: *The aim of the study is to develop an approach for analysis of energy efficiency of heat integrated Autothermal Thermophilic Aerobic Digestion system for wastewater treatment operating under uncertainties. The approach involves formulation of an optimization model of heat integration of the processes with one heat storage tank. The model is solved at all possible combinations of lower and upper boundaries of the stochastic parameters of ATAD system to determine the maximal temperature achieved at the end of the integration process. Based on the analysis conducted, the efficiency boundaries of the proposed heat integration framework are determined.*

Keywords: *Energy efficiency analysis, Heat integration, ATAD system, Optimization, Uncertainties*

ACKNOWLEDGEMENT:

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MATHEMATICAL MODEL OF ENERGY INTEGRATION OF THE PROCESSES IN ATAD SYSTEM OPERATING UNDER UNCERTAINTIES

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Abstract: *This study proposes an approach for energy integration of processes in Autothermal Thermophilic Aerobic Digestion (ATAD) system for wastewater treatment for the purpose of their energy efficiency and sustainability improvement.*

The idea for that came from the fact that the ATAD systems have a sufficient energy potential which can be used for reducing the depth of the thermal shock that occurs in first bioreactors stages due to uncertainties regarding to the quantities, composition and temperatures of the incoming into the system raw sludge.

To reduce the impact of the stochastic parameters and to ensure efficient using of the waste heat for the sustainable operation of the ATAD system, a mathematical model of energy integration scheme with two heat storage tanks is proposed which will be suitable to be involved in a stochastic optimization framework.

Keywords: *Modeling, Eenergy integration, Two heat storage tanks, ATAD WWTP, Uncertainties*

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FEATURES OF CLIMATE CHANGE AND THE IMPACT ON THE FUNCTIONING OF THE AGRO-INDUSTRIAL COMPLEX SOUTH-EAST OF KAZAKHSTAN

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Abstract: *This article describes the features of climate change and the impact on productivity of leading agricultural crops in the conditions of Southeast Kazakhstan. Fluctuations of climate and its natural variability has always had a significant impact on the development of life on Earth, and on the development of civilization. Throughout the 20th century in Kazakhstan as well as world agriculture largely depends on climatic conditions and their variations. It was in the second half of the XX century it became obvious that due to human impact: the General climatic situation changes much faster than in former times.*

Especially quickly the process went from 1980-ies, which led to a large frequency of occurrence of warm years. In recent years it has become warmer by almost 0.8°C From 1901 to 2000, the average annual global surface air temperature increased by $0.6 \pm 0.2^\circ\text{C}$, but in time this process proceeded unevenly. The most intensive warming began in 1976. The warmest was the 1990s years, and 1998 - the most warmest year of the past century. In the twenty-first century, according to calculations, the territory of Kazakhstan is warming, with the greatest increase in average temperature on the territory of Kazakhstan is observed in winter and summer seasons (from 0.8 to 2.4 degrees), increasing the likelihood of drought and advancing desert lands to the North.

Most grain-producing regions of the country historically is in the zone of risky agriculture, and the risk of losing a large part of the harvest in overly wet or overly dry year local farmers had to be considered always so that the impact of global climate change have exacerbated the already difficult situation. Already there has been a significant decrease in the yield of the leading crops. The necessity of introduction of advanced technologies that will significantly increase the sustainability of the agricultural sector to the impacts of climate change and performance cultures, today is not put in question, both at the level of the decisions of the competent authorities, and international projects.

Keywords: *climate change, global warming, environmental factors, anthropogenic impacts, and biotic factors, yield*

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SOIL CONTAMINATION BY HEAVY METALS IN THE APPLICATION MINERAL FERTILIZERS IN THE IRRIGATED ZONES OF KAZAKHSTAN

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Abstract: The main source of contamination of soil chemical elements, along with industry, transport, energy is agriculture. In this regard, applied technologies to increase crop yields cause a substantial resource and technological changes that sharply degrade the environment, increasing the level of anthropogenic impact on the

environment. In dealing with such environmental problems we have studied the effect of prolonged administration of high doses of mineral fertilizers ($N_{60}P_{180}K_{90}$) and the innovative technology of soybean cultivation, as the resource-saving technology with the use of optimal doses of fertilizers.

It is established that the solution to the problem of environmental impacts of application of mineral fertilizers is possible only on the basis of a system approach that takes into account both positive and negative effects of this method of enhancing soil fertility.

Development of resource saving technologies of cultivation of soybeans and comparative assessment with conventional technology have been identified environmental effects of the use of mineral fertilizers and ways of rational use of soil resources. By results of researches the content of heavy metals (HM) in 0-20 cm soil layer was studied at different options. The content of heavy metals in the variants without fertilization the soil is characterized by low contents of almost all kinds of heavy metals.

With prolonged use of high doses of mineral fertilizers $N_{60}P_{180}K_{90}$ found that the amount of heavy metals in root layer of soil is significantly increased. With the introduction of mineral fertilizers in the dose of $N_{60}P_{180}K_{90}$ – the quantity of cadmium in the soil amounted to 9.1 mg / kg, chromium of 5.66 g/kg, lead – 4.79 g/kg, zinc of 12.77 g/kg and copper – 3.9 g/kg. The identified soil contamination by copper (Cu), the content of which is increased from 0.51 to 3.9 mg/kg soil, which is higher than the threshold limit, the MPC is only 3.0 mg/kg of soil and the level of contamination of soil with copper relates to the high threat classes.

And, if saving technologies the results of applying $P_{60}K_{30}$ and a complete set of mineral fertilizers in the dose - $N_{30}P_{60}K_{30}$ show that the content in soil of mobile forms of heavy metals dynamic in time and does not cause danger of soil pollution TM only when applied against the background of resource-saving technologies .

Thus, when resource-saving technologies environmental soil conditions for soybean cultivation are optimized, the content of heavy metals is much lower MPC. Resource-saving technology in the application of mineral fertilizers in the dose of $P_{60}K_{30}$ and $N_{30}P_{60}K_{30}$ provides environmentally safe surroundings for soybean cultivation. Proven, evidence-based and optimal doses of mineral fertilizers at cultivation of soybean is $P_{60}K_{30}$ and $N_{30}P_{60}K_{30}$ that do not accumulate heavy metals in arable layer of soil, with subsequent improvement of the nutrient status of soil and productivity of crops.

Keywords: fertilizers, heavy metals, yield, cultivation, soya, resource-saving technology

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ANALYSIS OF ENVIRONMENTAL CRITICALITY

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Abstract: The present paper is given up to the analysis of situational criticality's formalization. The idea is to reveal the factors and parameters of the criticalities. The main purposes to solve are expansion of the concepts and specifics of modelling, creation of a structure from procedures for criticalities definitions, formulating the principles, purposes and the essence of the analytical procedures. Based on our research, we believe that the structure of the analysis through which situational criticality can be established is appropriate to include 14 procedures

The truth about situational criticality can be determined by five indicators: 1. Characterize objectivity when the essence of knowledge responds to the objective world and reproduces it; 2. It is related to the practical needs or to reflect the world around us in the aggregate of the needs of the people; 3. Relatively incomplete and unattainable in its overall completeness, constantly refining and developing analytical and research; 4. Truth is a systemic dimension, which is why it is always perceived and can be constructed through paradigms, concepts, theories, etc.; 5. It is basically verifiable, and its own ability to verify is the basis for establishing the true.

Keywords: criticality, analysis, procedure.

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THE RISK OF CROSS-BORDER SMUGGLING OF RADIOACTIVE MATERIALS

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Abstract: *The recent cases of illegal trade, losing and / or extinction of nuclear and radioactive materials lead to a high degree of public danger. In the context of the current geopolitical situation and the possibility of using this type of material for terrorist acts, cross-border smuggling is a direct threat to the ecological and national security of entire regions.*

This work outlines the guidelines for timely mitigation and management of any terrorist activity risk in its embryo. Potential sources are covered - uranium mines, medical and educational centers, processing plants, repositories for hazardous radioactive materials and others and the way to establish strict control over them by setting up a single system for radiation control at the external borders.

Keywords: *nuclear and radioactive materials, ecological and national security.*

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THE MODULAR UNDERWATER – BOTTOM INSTALLATION FOR SEMI-EXTENSIVE GROWING OF BIVALVES

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Abstract: The modular underwater – bottom installation is designed for innovative and environmentally friendly semi-extensive growing of bivalves (different types of white sand mussels and oysters) in a controlled way that is as close to the natural as possible.

It is based on the idea of providing an environment which has the optimal conditions (salinity, temperature, gases dissolved in the water, access to nutrient substrate, lack of intra-species competition, controlled number of the population, consideration of the development stage, etc.) with regard to the bivalve grown.

Keywords: Modular underwater – bottom installation, Growing of bivalves.

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MOTIVATION OF THE STUDENTS-ECOLOGISTS IN TRAINING FOR THEIR SPECIALTY

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Abstract: *The problem with the motivation is central to pedagogical psychology. In general, motivation is a purposeful activity or activity of the person. In this case, the activity related to learning - with the conscious desire for cognitive activity - acquiring knowledge and skills for the future specialty and realization. Stimulating student's motivation is a good organization of the learning process and the adequate up-to-date content of the different learning disciplines. To realize these conditions and to increase their influence on student's motivation for learning it is necessary to study their preliminary motives for training for the respective specialty. According to one of the classifications, the motives are divided into internal and external. In the training, convincing stimulation of the inner motives, it can be achieved and they will ultimately prevail over the external motives.*

Keywords: *motivation, types of motives, training, teaching subjects, cognitive activity*

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STUDY OF THE NOISE, GENERATED FROM DIFFERENT CAR'S TYRES

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Abstract: The article addresses the environmental noise issue generated by car transport, in particular the impact of type, size and quality of the tires, on the noise generated inside the vehicle and the environment. The spectral distribution of sound pressure levels, as well as the A-weighted sound pressure level, are considered, depending on the different types of tires fitted to the car's wheel. Consider the factors that affect this noise and how to reduce and increase the noise safety of the vehicle. On the basis of scrutinizing analyzes, an experimental noise study was carried out and the results were presented with the relevant conclusions and recommendations.

Keywords: automobile tyres, noise, environmental safety, noise factors, noise reduction

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**GEOMETRIC HEURISTICS
IN ART AND DESIGN**

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Abstract: The paper describes the collaboration between heuristic and geometry as a method for creativity and stimulation of Design Thinking. It shows the basic elements of the geometry heuristics and different geometric webs, in which could be grouped mentioned elements. The paper also gives the examples of the implementation of the webs in art. It describes some of the exercises with students of Technical University of Sofia in course Heuristic methods in design, based on the geometric heuristics. There are described and are given pictures of the design products, made by the author, based on the webs of this method.

Keywords: Heuristic, Geometry, Heuristic methods, Creativity, Art, Design, Design education

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BECOMING THE MOST SUCCESSFUL WORLD FASHION BLOG: ANALYSIS, PROBLEMS, TECHNOLOGY AND SOLUTIONS

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Abstract: *This article is exploring the concept and the possibilities of building a successful fashion blog by using latest trends and online-based platforms, as well as to create distinctive plug-ins with boutique functionalities that create a rich set of ready-made solutions. Also deep analyses are made to the user experience and the way of creating email and contact database, that can be used for advertising and marketing purposes. The study examines the relationship and influence of technology and marketing including the good strategy used when building user interface for the purposes of fashion blogging as a business brand.*

Keywords: *Fashion Blogs, Wordpress, Design, Front end, Technology.*

JEL Codes: *C80, C89, L86*

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MATERIALS FOR MODEL AND MOCK-UP ACTIVITY

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Abstract: The process of design is a serious complex and multi-factor creative process. Part of this process and the presentation of the final result of the design is the creation of a three-dimensional (3D) material image - a model or mock-up. The materialisation itself takes place in four stages. For their successful implementation, the designer needs to have competence in the field of material science. Understanding the types of materials and their application in design practice begins in the process of learning as part of the acquisition of an adequate technical culture. The emphasis in the article is on the systematization and classification of the building materials and their practical application in the model-modeling activity, which implies the facilitation of the designers and all those who are involved in the elaboration of the three-dimensional material images in the orientation and selection of the dummy materials among the existing variety today. This is a easy to understand and applicable classification that is adapted to the needs of design, covering materials performing substitute functions and which can solve tasks that meet the designer's creative design.

Keywords: design process, three-dimensional (3D) material image, material science, model and mock-up materials, substitute functions, classification.

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A THREE-DIMENSIONAL REPRESENTATION OF SEMANTIC CIRCLE

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Abstract: *The semantic circle of visual forms (images, pictures, compositions, objects, works, etc.) is a stimulating creative and innovative thinking novelty in education and practice, introducing new concepts, approaches, methods and techniques in the analysis and synthesis of visualizations, communications and presentations.*

This study sets the task to investigate, analyze and illustrate respectively new aspects of the semantic circle. Particular emphasis is placed on building 3D models of the semantic circle and opportunities for multimedia visualization.

The study of the so-defined aim and tasks is designed for building a specialized layer of the Serious game for creative and innovative training created at Ruse University, Bulgaria, on the platform of the NORLO system developed and put into the training and practice by Professor N. Orloev.

Keywords: *Semantic information; Semantic circle; 3D models; 3D models of the Semantic circle; High Dynamic Range Image.*

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DESIGN DEVELOPMENTS OF VIBRATION-DRIVEN MOBILE ROBOTS

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Abstract: *In this paper three new design ideas and the corresponding prototypes built recently are reported and discussed. The prototype robots are capable of achieving forward and backward motion by still using one-way bearings. In these designs the one-way bearings are installed out of the wheel's hubs and are activated either electro-magnetically or electro-mechanically to accomplish forward or backward motion. For comparison reasons, regarding the robot's performance, all prototypes employ the same propulsion mechanism as that in the first and the second designs discussed in articles [Loukanov, I.A. 2014b] and [Loukanov, I.A. 2015] respectively.*

Keywords: *Resonance vibrations, Inertia propulsion, One-way bearing, Spring system, Linear damping.*

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DETERMINATION OF JOINT ANGLES OF BIPEDAL ROBOT USING FORWARD AND INVERSE KINEMATICS AND ZERO MOMENT POINT MODELS

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Abstract: In recent years, robotics studies have gained great momentum in industry, medicine, education, agriculture, and in all areas of life along with rapid developments in electronics, computers, and control technologies. With the increase in robotic studies, the walking of biped robots has increasingly become similar to that of humans. Compared to other living creatures in nature, walking on two legs is one of the most important features of man. For this reason, this study aims to calculate joint angles of a bipedal robot using forward and inverse kinematics to imitate human-like walking. In this study, 12 state-of-the-art intelligent servo motors are used to make a bipedal robot.

Keywords: Bipedal Robot, Servo Control, Forward and Inverse Kinematics, Zero Moment Point.

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INVESTIGATION OF WEAR PROPERTIES AND STRENGTH OF POLYMERIC MATERIALS USED IN TENSION PULLEYS WHICH IS REINFORCED WITH GLASSFIBER AND GLASS BEAD

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Abstract: *In this study, materials which are used in plastic pulleys of the tension rollers is investigated. The materials for tension pulleys have produced by using various polymers (POM, PE, and PA6.6) and material reinforcements (glass fiber and glass bead). Special abrasion test machines have assayed those produced tension pulleys. In these test machines, pulleys abrasion values have obtained on a stable temperature at varied loads. Mechanical and physical tests are also applied to the produced composite materials. In the light of obtained data, high wear resistance and durability are aimed.*

Keywords: *Tension Roller, Composite Materials, Pulley abrasion.*

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INVESTIGATION OF PROPERTIES OF THERMOPLASTIC COMPOSITE LAYERS SUPPORTED BY ORGANIC AND INORGANIC MATERIALS

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Abstract: In this study, laboratory type composite production device unit has been designed and manufactured. One of the purposes of this project is design and manufacturing of a composite plate mold and bringing this device in laboratory. Positioning of the heaters and mold cooling system has great importance in forming plates. As a result of the tests, the mold works smooth. The mold that is produced is a specific mold that is convenient for using in a

laboratory conditions. Acrylonitrile butadiene styrene (ABS) that is used often in packaging sector is used as matrix material in the project. Additive materials are glass bead, peapod and chops. Specimens are taken from the plates which are produced with and without additives. Tensile and hardness tests are performed on these specimens. As a result, influence of the additives which are mixed with same ratio in matrix material, on mechanical, thermal and physical properties of the plates are examined.

Keywords: *Thermoform process, mold, composite, tensile test, organic additive.*

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DETERMINATION OF THICKNESS VARIATION IN ABS THERMOFORMED PRODUCTS

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Abstract: The aim of this study is to create a prediction for thickness distribution in hemispherical, cylindrical and conical ABS thermoformed products. Initially, Acrylonitril Butadien Styrene (STYROLUTION Terluran HI-10 ABS) sheets cut and prepared in desired dimensions by machining. Then sheets with a thickness of 5 mm and a surface area of 150 x 150 mm² were thermoformed by a lab-scale thermoforming unit. Process variations such as temperature distribution obtained by a thermal imaging cam. A digital caliper obtained thickness distribution on predetermined paths in ABS products by experimental method. Additionally Geometric Element Analysis (GEA) predicted thickness on the same predetermined paths in ABS products. Obtained and predicted thickness distributions compared to each other. As a result, GEA has produced incorrect and irrelevant thickness distributions according to experimental method at several points. GEA could predict thicknesses correctly in only some points.

Keywords: Thermoforming, Thickness, Geometric Element Analysis, ABS, Mould, Prediction.

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MODELLING OF THE BOUNDARY CONDITION FOR MICRO CHANNELS WITH USING LATTICE BOLTZMANN METHOD (LBM)

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Abstract: *Modelling of the boundary condition for micro channels with using Lattice Boltzmann Method (LBM) are investigated numerically in this work. Poiseuille flow in the continuum, slip and transition regimes is examined by using bounce-back, reflection factor and accommodation coefficient boundary conditions on solid walls with different mesh numbers. Numerical results from Lattice Boltzmann Method (LBM) are compared with analytical results.*

Keywords: *Lattice Boltzmann Method, Micro Channel, Boundary Conditions.*

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INVESTIGATION OF MECHANICAL BEHAVIOURS OF PLA PARTS MANUFACTURED BY FUSED DEPOSITION MODELING

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Abstract: Experiments were conducted to characterize the mechanical properties of specimens which are manufactured with fused deposition modelling. Polylactic Acid (PLA) is used as material. One of the tests was tensile test to get informations about the strength value of the material. The other conducted test was cycling loading to learn about material's deformation mechanism.

Keywords: Additive Manufacturing, 3D Printing, Fused Deposition Modeling, Effectiveness, Mechanical Behaviour.

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**ENERGY CHARACTERISTICS OF ENERGY-SAVING LIGHT SOURCES
USED IN RESIDENTIAL BUILDINGS**

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Abstract: The paper presents the results of research on the energy characteristics of energy saving light sources - Compact Fluorescent Lamps (CFL) and LED lamps with a power up to 25 W, which are widely used in residential buildings. The investigated light sources are selected according to two basic criteria - offering in shopping centers and shops (incl. Internet Shops) and unit price. The purpose of the research is to determine the actual energy parameters (active power, reactive power and power factor) lamps primarily intended for residential premises. Measurements are performed in laboratory conditions using a high-precision network analyzer. Special attention is paid to the quality of the electrical consumption of the tested lamps and, in particular, to the harmonics of the currents, which are compared to their limit values, specified in the standard for electromagnetic compatibility (EMC) BDS EN 61000-3-2: 2006. The results of the study are presented in tabular and graphical form. Based on the obtained results, relevant conclusions are drawn.

Keywords: Energy efficiency, Energy-saving light sources, Energy characteristics.

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TOWNSEND AVALANCHES MODEL BASED CURRENT-VOLTAGE CHARACTERIZATION OF DIELECTRIC BARRIER DISCHARGE

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Abstract: This paper presents an analytical method for Current –Voltage characterization (I-V) of partial discharges in corona electrode systems. In this method, a versatile analytic expression based on Townsend avalanche density of electrodes surface is derived to obtain I-V characteristics of corona electrode systems. The method is applied to plate electrode system and experimentally verified for various pressures and electrode gap distances.

Keywords: Partial discharges, Townsend avalanche, Current –Voltage characterization.

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AN AUTOMATION MODEL FOR PRECISE AND FAST WEIGHING OF BIG BAGS

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Abstract: In production, weigh scales are used extensively to measure the quantity of goods produced. Storage of produced or supplied raw materials, products or semi-finished products is achieved by weighing the products and filling them with 200-1500 kg of straw. This process is done with big bag weighing machine. The precision of the weighing is important to control the weight of the products. Two important parameters need to be controlled in this automation process. One of these is the filling speed, the other is the closeness of the bag weight to the desired value after filling. For this process, as hardware; servo pneumatic valve, pneumatic piston, programmable logical controller (PLC), human machine interface (HMI) will be used. The weight will be weighed with load cell and transferred to the PLC via a transmitter. According to the weight information, filling path will be controlled by means of servo pneumatic valve. Maximum product entry will be provided when the weighing plate is empty. The weighing scales will close if the desired weight is reached. For fast and precise weighing, weighing will be controlled by the PID control algorithm. In this way weighing process will be done both fast and accurate.

Keywords: Big Bag Scale, PLC, PI Control, Automation.

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THYRISTOR AUTOMATIC VOTAGE REGULATOR STRÖMBERG

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Abstract: Automatic voltage regulators are used to increase the accuracy of the regulation of the voltage in the compound systems. As the load of the generator changes the necessary correction compensates the magnetization of the generator, the speed of the magnetization and the temperature changes of the coils. The tests with the generators show that after loading there is an improvement of the transition period in the excitation system with automatic voltage regulator, i.e. the time of restoration of the voltage is shortened.

Keywords: AVR, synchronous generator, excitation coil of synchronous generator, възбудителна намотка на СТ; current transformer, external rheostat

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METHODS OF DEPENDING THE T-WAVES AT THE ELECTROCARDIOGRAPHIC SIGNALS

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Abstract: The aim of the development is to present methods for emanating T wave in the analysis and processing of ECG signals for the diagnosis of cardiac diseases in the construction of a preventive control system. Electronic processing and analysis of electrocardiographic (ECG) signals is one of the most advanced computer procedures in the diagnosis of heart disease. Despite the considerable variety of mathematical, statistical, and computer-based methods of electrocardiographic information processing, searching for and improving methods of analysis and diagnostics remains a priority in the development of medical science. A factor determining the high risk of sudden cardiac death is an electrical alternative to the heart in physical exercise trials or data from daily ECG monitoring, with numerical parameters characterizing the variations in the amplitude-temporal characteristics of P, Q, R, S, T elements of the ECG signal.

Keywords: electrocardiographic signal, monitoring, electronic system, cardiovascular disease.

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ELECTRONIC SYSTEM FOR HOME AUTOMATION

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Abstract: This paper introduces the provision of the necessary comfort in the living space through the introduction of high-efficiency technologies and the use of certain energy resources, taking into account the high price, mainly of electricity for household purposes and, in some cases, gas for heating. Problem solving can be achieved by using modern microprocessor circuits with appropriate sensors for microclimatic parameters and actuators. The designed Home Automation System is presented as prototype.

Keywords: Home Automation, Sensors.

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MATHEMATICAL EXPLAINING AND SCHEMATIC REALIZATION OF APPROXIMATION OF TRIANGLE TO SINE WAVE

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Abstract: *In the practical exercise with the students usually is used variety of waveform, sine is one of them. The simplicity of schematic is the main purpose, so that we can use one signal to get two, for example to transform triangle wave to sine. There are many methods to transform triangle to sine wave, one of them is piecewise approximation.*

The aim of the report is to show mathematical explanation and practical realization of that method.

Keywords: *Approximation of triangle to sine wave.*

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ENERGY EFFICIENT LIGHTING SYSTEM FOR CATEGORY 3 STADIUM

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Abstract: *The report presents the design and research of the flood lighting installation on UEFA stadium category 3. Light technic calculations and simulation of the lighting system were performed. More than 40 variants have been developed with different luminaires and light sources. An optimal option is chosen in terms of the economic and energy efficiency of the chosen solution. For the implementation of the lighting system, luminaires with metal halide lamps are used. All the parameters regulated by the national regulations and the UEFA regulations have been achieved. Various modes of operation (basic, training, ground maintenance, etc.) can be implemented with the flood lighting system. Energy and economic calculations of the lighting system were made. Relevant results and conclusions are formulated.*

Keywords: *Flood Light, Stadium lighting, Energyefficient lighting.*

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LOAD PROFILES AND SPECIFIC INDICATORS CHARACTERISING ELECTRICITY CONSUMPTION IN RESIDENTIAL AREAS WITHOUT CENTRAL HEATING

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Abstract: The daily and annual electrical load profiles of residential buildings without central heating are generated and interpreted in this paper. The minimum and maximum active and reactive electrical loads for an average day of the year, as well as the values of $\cos\varphi$, are quantified. The specific indicators characterizing the electricity consumption of residential buildings without central heating are estimated in order to make a comparison with previous time periods. The results and conclusions of the paper can be used for the planning and operation of low voltage power distribution grids which supply residential buildings of this type.

Keywords: Household electricity consumption, Daily and annual electrical load profiles

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STUDY OF THE RESIDUAL EFFECT OF THE PRE-SOWING ELECTROMAGNETIC TREATMENT ON SEEDS OF BEANS STORED IN CONDITIONS OF NATURAL AGING

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Abstract: It has been established that a rest period of several years had a suppressive effect on the viability of a reference batch (not treated electromagnetically) of seeds of beans of the variety Obraztsov Chiflik 12, produced in 2009 and 2010. Their roots and germs have reached shorter lengths in comparison to the reference seeds of 2014 within the range of values (48,07... 92,54)%.

After the pre-sowing electromagnetic treatment of seeds produced in 2009 and 2010, and taking into consideration the values of the controllable factors, it has been established that there is a positive residual effect on the length of roots and germs in comparison to the reference seeds produced in the same year. The residual effect on the dry mass of germinated seeds is either stimulating or suppressing, depending on the values of the controllable factors of the pre-sowing treatment.

Keywords: bean seeds, years of production, pre-sowing electromagnetic treatment, laboratory parameters and indicators, residual effect of the electromagnetic field.

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**MATHJAX AND MATHML APPLICATION IN ORDER TO IMPROVE
THE PERFORMANCE OF MATHEMATICAL TEXTS IN THE WEB**

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Abstract: *The quality of the presentation of mathematical texts in the Web has in many cases worse features than that of similar print editions. To improve the quality, it is recommended to use specialized technologies such as MathJax and MathML. These technologies also provide a semantic description of mathematical formulas and expressions.*

Keywords: *MathJax, MathML, JavaScript, mathematical formulas in Web, mathematical symbols*

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AN EXPERIMENTAL SOFT-CORE STACK PROCESSOR

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Abstract: *Soft-core processors have become a reasonable alternative for embedded system design due to their flexibility and the possibility to integrate with custom logic to build system-on-chip applications. While a wide variety of commercial soft-core processor implementations exists, a minority of them are suitable for teaching purposes. This paper presents the design and implementation of a simple soft-core stack processor as a part of authors' effort to contribute to the learning process in processor design and computer architecture fields. The design and implementation steps, as well as future extensions, are discussed.*

Keywords: *Soft-core processor, Processor design, Computer architecture, VHDL model, FPGA*

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SORTING DATA WITH TABLES OF INVERSIONS WITHOUT MOVES

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Abstract: The paper discusses tables of left and right inversions. These tables could be used to define ascending or descending order of data. It is proposed one algorithm for sorting which uses tables of left and right inversions without moves. This algorithm is named SortLRT. The theoretical evaluation of time complexity of SortLRT is made. This algorithm is implemented in C and an experimental evaluation of time complexity is also made. The results show that the proposed algorithm SortLRT is faster than Bubble sort and Selection sort but slower than Insertion sort and Quick sort algorithms.

Keywords: Sorting without moves, Tables of inversions (Inversion vector), Sorting algorithms.

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DIGITAL REPOSITORY OF PEDAGOGICAL PATTERNS

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Abstract: *Pedagogical patterns describe pedagogical tasks or problematic situations and possible solutions. They are a powerful tool for sharing pedagogical experience and good practices. The paper presents the work on building a shared digital repository of pedagogical patterns. Its purpose is to provide environment for storage and management of pedagogical patterns that can be used by both people and automated software systems for management of training. For this purpose, a special format for pedagogical patterns description has been developed. It complements the pedagogical model with a description of the technological aspects of the training. The main elements and functionalities of the repository being built are described. The possibilities for future development are outlined.*

Keywords: *pedagogical pattern repository, catalog of pedagogical patterns, pedagogical patterns, pedagogical pattern model.*

JEL Codes: *I20, I23*

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MODELING AND EXPLORATION OF A DIGITAL FILTER

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Abstract: This report presents modeling and study of RC filter. The purpose of the study is to examine an RC filter that is simulated with programming product and to prepare the data for its examination in a practical exercise with DSP model. The theoretical prerequisites of the filter study are described. A simulation study with MATLAB was performed. Study of the filter with DSP model in a practical exercise is prepared.

Keywords: modeling, study, Filter, DSP, Digital Filter, education.

JEL Codes: I20, C88

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ANTI THEFT AND CHILD PROTECTION SYSTEM

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Abstract: The paper reveals a system by which an important problem in the automotive industry is being solved- car abduction by theft or children. It is necessary to create a device that prevents this occurrence in order to solve this problem. Nowadays there are a number of devices with similar capabilities, because of their nature, they do not meet all the requirements. The created device completely covers the problem, and solves a number of problems before they emerge on the street. The device is designed on a microcomputer system with a set of sensors and modules, allowing users to track the position and movement of their cars. The system uses a GPS module and a GSM modem to find the location of a vehicle and offers a range of control features. This allows parents to let their children use their cars whilst being able to monitor their location. The system built from a single-chip microcomputer, GPS, GSM, temperature and gas modules allows the users to monitor their cars from anywhere in the world, and to change some of the settings from a distance such as the maximum speed, for example. The aim of this project is to remotely track a vehicle's location, remotely switch ON and OFF the vehicle's engine, remotely to lock and unlock the doors of the vehicle and to read some data from the vehicle such as temperature and alcohol evaporation. So far, the system has passed a number of tests in laboratory conditions and in a real environment that predisposes its overall construction. Part of the main functions such as: remote engine start, current location, altered position alert, over-speed alert, panic button and others passed the reliability and safety tests. With its built-in battery and its implementation into a car alarm case, it becomes hard for thieves to detect and is a reliable means of locating a stolen car. Its future and development aim is to constantly remember the movement of the mobile device to a server via GPRS connection, where it will help to create maps with the places visited, favourite destinations and others.

Keywords: GPS/GPRS/GSM technology, Child protection, Vehicle tracking, Microcontroller

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DESIGN AND REALIZATION OF WEB APPLICATION FOR ORGANIZATION AND RETRIEVAL OF IMAGES AND SUB IMAGES

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Abstract: The paper examines existing image storage and retrieval applications and presents a practical approach to finding a subtotal in the image to help solve puzzles. The aim is to explore the proposed web-based application architecture based on the proposed algorithms for color reduction and similarity. The application was tested and based on the results it became clear that it is necessary to apply image processing algorithms in order to remove the background of the pictures in order to increase the accuracy of the results.

Keywords: Image processing, Image databases, Similarity, Colors, Image retrieval.

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SIMULATION OF REED-SOLOMON CODES USING MATLAB/SIMULINK

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Abstract: This paper considers the Reed-Solomon codes, which are widely used in data storage and digital communications. An architecture of a simulation model for evaluating the corrective capabilities of the codes is proposed in the paper. The simulation is realized using MATLAB/Simulink. The demonstration of the simulation system is performed using one of the most widely used Reed-Solomon codes RS (204, 188) with $m = 8$ bit symbols, which is a shortened code of RS (255, 239) and with the possibility of correcting $t = 2$ symbol errors in the codeword. For the purpose of the simulation, a real image is used which is transmitted in two channels, one using the Reed-Solomon encoding, and the other – without the Reed-Solomon encoding. The results of the simulation are presented in graphical and analytical form.

Keywords: Reed-Solomon, simulation, encoding, decoding, error, burst-error, codeword, bit, symbol.

JEL Code: L96, L63, C88

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**MODELING OF DIGITAL FILTERS BY LABVIEW WEB APPLICATION
FOR EDUCATION IN TELECOMMUNICATIONS**

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Abstract: This paper provides an opportunity for students to perform computer modeling, research and analysis of digital IIR and FIR filters. In an environment of LabVIEW product are developed virtual applications with interactive, intuitive, accessible and understandable graphical user interface, modeling IIR Comb - Peaking and Notching filters; Optimal FIR filters implemented by Parks-McClellan and Remez algorithms; IIR (Butterworth, Chebyshev, Inverse Chebyshev and Elliptic) and FIR (Kaiser-Window, Doph-Chebyshev Window and Equi-Ripple) filters. By integrating relevant virtual instrument for analysis of IIR and FIR filters in HTML document is created WEB-based application for remote access, visualization and its management. Through the global network Internet users can explore and analyze the overall behavior of the modeled filters, and assess the impact of set parameters on filter characteristics, respectively Magnitude response, Phase response, Impulse response, Step response, Group delay and Pole-Zero plot. In this way students can learn, illustrate and compare different methods, algorithms and mathematical models for modeling digital IIR and FIR filters.

Keywords: IIR and FIR filters, computer modelling, LabVIEW virtual instruments, WEB-based applications, filter parameters and characteristics.

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IDENTIFICATION OF SIGNALS WITH SUPERPOSED NOISES BY APPLICATION OF DISCRIMINANT ANALYSIS

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Abstract: In this paper explores the possibility of using the apparatus of the discriminant analysis in identifying signals with superposed noises. For this purpose of the study, simulated sinusoidal and rectangular signals with the appearance of unwanted lateral Periodic Random and Inverse F noises. Signals are processed through Fourier Fast Transformation with the generation and processing processes being performed in LabVIEW. An analysis of Q-Q probability diagrams of data for linear types of discriminant classifiers was made on the correctness of the method's applicability. Undesirable lateral Periodic Random and Inverse F noises. Linear models were developed to identify untreated and processed signals in MATLAB environment. Procedural test steps with the technical approaches resubstitution and cross-validation were conducted to assess the quality of the models. The most appropriate discriminant classifiers for noise analysis of signals with sinusoidal and rectangular shapes are synthesized.

Keywords: signal simulation, noise identification, FFT, discriminant analysis, Q-Q plot, resubstitution, cross-validation.

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FRI-2G.302-1-CSNT-03

SOFTWARE IMPLEMENTATION OF CLASSICAL DIGRAFID CIPHER FOR ENCRYPTING AND DECRYPTING ENGLISH TEXTS IN MATLAB

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Abstract: *The paper presents one of the classical ciphers in cryptography, the digrafid cipher. Most classical ciphers can be practically computed and solved by hand. They are also usually very simple to break with modern technologies. In classical cryptography, the digrafid cipher is a cipher, which combines the bifid and trifid ciphers. It was invented in 1960 by the American Cryptogram Association (ACA). The paper presents MATLAB-based software tool implementing encryption and decryption of English texts using the “classical” digrafid cipher with 27 symbols. The tool will be used in the course “Telecommunication Security” by students of the specialty “Telecommunication Systems” for the Bachelor degree at the University of Ruse but it can be applied in other courses involving issues of cryptographic information protection.*

Keywords: *E-Learning, encryption, decryption, digrafid cipher, English texts, MATLAB.*

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SYNTHESIS AND IMPLEMENTATION OF CONVOLUTIONAL ENCODERS WITH TTL LOGIC

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Abstract: The material presented in the paper is used in the educational process in the courses “Digital Circuits” and “Pulse and Digital Devices” included in the curriculum of the specialties “Computer Systems and Technologies”, “Electronics”, “Internet and Mobile Communications”, “Computer Management and Automation”, and “Information and Communication Technologies” for the students of the Bachelor degree in the “Angel Kanchev” University of Ruse. In order to better perception and absorption of the material taught active learning methods are applied. An individual assignment is given to each student and he/she has to solve the task during the practical exercises and present it at the end of the classes to the lecturer. The student should synthesize digital communication devices, such as a convolutional encoder via TTL circuits (NAND gates and flip-flops).

Keywords: Active learning, convolutional encoders, TTL logic, digital electronics.

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OPTIMAL PLANNING OF AN URBAN WI-FI NETWORK

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Abstract: *The paper reviews methods of Wi-Fi network planning in an urban scenario. For this purpose they are three different antenna sites working in an densely built environment. A study is performed by a simulation planning using three different locations in an automated environment with the software product WinProp of the AWE-Communications company. The purpose is to make a comparative analysis of the parameters of the sites and choice the best possible location for the antennas. On the basis of the results was achieved solution for Wi-Fi network planning in a large-scale city environment.*

Keywords: *Urban scenario, Efficiency, Radio propagation, Mathematical models, Wireless communication, WinProp.*

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A COMPARATIVE ASSESSMENT BETWEEN SIMULATION AND EXPERIMENTAL RESULTS OBTAINED FROM THE STUDY OF THE SYNTHESIZED DIGITAL FREQUENCY MODULATOR- DEMOMULATOR

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Abstract: This paper presents a comparative assessment between simulation and experimental results obtained from the performed studies of the synthesized digital frequency modulator-demodulator. On the basis of a preliminary design developed, its main structural and functional blocks have been chosen and designed and its full electric circuit has been synthesized, which is briefly described. Simulation studies have been carried out via the MultiSIM module of the Circuit Design Suite software with the help of which parametric and structural optimization has been performed. A graphic image of a printed circuit board and complete technical documentation have been developed using Ultiboard, on which a laboratory model has been implemented. It is also experimentally studied. The presented simulation and experimental results from the performed studies illustrate the work and explain the principle of operation of the synthesized circuit of a digital frequency modulator-demodulator. It is established that the behavior of the circuit in both cases is analogous by preserving the type and nature of the intermediate signals at the individual nodes, despite the presence of defined differences in both the operating frequencies and the amplitudes.

Keywords: Comparative Assessment, Simulation and Experimental Studies, Results, Digital Frequency Modulator-Demodulator.

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AN ALGORITHM FOR SYNTHESIS OF BINARY NEARLY PERFECT SIGNALS

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Abstract: The phase manipulated (PM) radio signals with ideal auto – correlation function (ACF), resembling the Dirac delta – function, are very important for radars, radio-navigation and radio-synchronization systems, because they provide the maximal possible resolution of the objects. With regard to this fact, in the paper a new algorithm for synthesis of binary PM signals with nearly ideal periodic ACF is suggested. The computational effectiveness of the algorithm is demonstrated by several examples of unknown up to now binary nearly perfect signals, synthesised by the respective computer program.

Keywords: computer algorithm, digital signal processing, binary nearly perfect signals

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DIGITAL PROCESSING OF AUDIO SIGNALS IN COMMUNICATIONS

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Abstract: *This overview paper presents the digital signal processing (DSP) and their extensive application in communication technology. The main applications and objects for conducting scientific research related to DSP of audio signals are:*

- *GSM COMMUNICATIONS - the transmission of speech, audio signals and additional voice services to anywhere in the world;*
- *AUDIO SIGNALS IN PERSONAL COMPUTERS - software processing of audio file formats, depending on the modern technological requirements;*
- *DIGITAL RADIO BROADCASTING - improving the quality of the radio broadcast and supplementary to it text, images and other data.*

Based on the overview presented, the following guidelines for the future development of digital audio signal processing can be indicated: reducing speech distortions in digital processing and transmission of voice information and improving the efficiency of base stations in GSM communications; the creation of audio file formats, combining a short time for data processing, compression without lossless of information and high sound quality as well as improvement existing and applied effects; the transmission of a bigger number of radios with a more services in a narrower bandwidth.

Keywords: *GSM communications, Audio File Formats, Digital Radio Broadcasting.*

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**PRECIZE MODELING OF THE INVOLUTE GEAR FOR EXTERNAL
GEAR TEETH IN AUTOCAD ENVIRONMENT**

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***Abstract:** The report looks at tooth gearing with external teeth based on the crawling method. The aim is to obtain such an involuntary profile that is as close as possible to a profile of a gear-gearing gear. The 3D gear models thus obtained will be used in simulating toothed joints in different gear types and determining strength and dynamic load through various strength calculation systems.*

***Keywords:** Tooth gearing, Model, Involuntary profile, 3D gear model, Strength and dynamic load.*

***JEL Codes:** Q49*

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PROFESSIONAL REALIZATION OF STUDENTS – PROBLEMS AND SOLUTIONS

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Abstract: The paper presents successful initiatives of the team of the department Machine Science, Machine Elements and Engineering Graphics at the University of Ruse in the area of applying innovative educational technologies. Different options for the improvement of the communication between lecturers and students and for increasing the students' interest towards different extracurricular commitments are analyzed. Special attention is dedicated to the annual event Global Village initiated ever since 2009 by the academic staff of the department. The objectives of the educational technologies applied (information events connected with the international activities; joint scientific work with the students, organization and implementation of meetings with members of professional engineering clubs) are to increase the chances of professional development and realization of students from engineering bachelor and master degree courses through participation in international programmes and scientific and research activities. Based upon the results achieved by the academic staff of the department Machine Science, Machine Elements and Engineering, main characteristics of a new educational approach is suggested and analyzed. The main feature of this approach is the individual work and supervision concerning each student.

Keywords: Innovative educational technologies, Global Village, Professional development and realization of students.

JEL Codes: A30

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STANDARDS AND SPECIAL FEATURES OF THEORETICAL MODELS OF PLANETARY GEARS

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Abstract: *The paper reviews existing standards for planetary gear trains calculations. The authors suggest main additional issues to the contents of these standards. Different options for the improvement of the design of planetary gear trains are analyzed. Special attention is dedicated to the discussion of original theoretical models of planetary drives. The objective of the theoretical research are the advantages of different theoretical models to be investigated and improvements of the methods for the calculation and design of planetary gear trains to be suggested. Based upon the investigation carried out new main characteristics of a new theoretical model for designing planetary gear trains are summarized. This new model is to be created with the help of CAD systems. .*

Keywords: Planetary Gear Trains, International Standards, Theoretical Models, Application of CAD systems.

JEL Codes: Q49

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FRI-2.203-1-TMS-04

METHODOLOGY FOR DETERMINING THE RELATIONSHIP LINE IN ROTATION STRUCTURES WHICH ARE OVERLAPPING. PECULIARITIES. PRIVATE CASES

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Abstract: The article discusses the method for determining the spatial line (intersection) of intersection between rotating surfaces whose axes intersect. The aim was to propose a methodology for the implementation of the method and to specify the conditions for its realization. Also examined are the particular situations in the intersection of the surfaces, with particular attention paid to the peculiarities.

JEL Codes: L10, L11

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FRI-2.203-1-TMS-05

STUDY OF INDICATORS AT WORK OF DIESEL ENGINE WITH SUPERTECH DEVICE

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Abstract: In the last years there is a high attention in vehicle pollution. There are many ways to reduce it, some are connected with decreasing the fuel consumption. One possible way to reduce the pollution and improve fuel economy is SUPERTECH. The producer says that it can reduce fuel consumption up to 12% and pollution up to 75%. The device must be put in the fuel tank with diesel fuel. Thanks to vehicle vibration and fuel motion the device makes molecules connections (Van der Waals force) weaker with electromagnetic radiation, says the producer. The experiment was made on static diesel engine, where are provided all conditions of properly working of the SUPERTECH device. The results show difference between with using the device and without.

Keywords: fuel economy, pollution, device, molecules, diesel fuel.

JEL Codes: Q42, Q35

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<http://www.supertech.it/en/home>

FRI-2.203-1-TMS-06

OPPORTUNITIES FOR USING BIOGAS AS A FUEL FOR INTERNAL COMBUSTION ENGINES

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Abstract: The article describes the possibilities of using biogas as a fuel for internal combustion engines. The use of biomethane as a fuel for internal combustion engines has great potential with important socio-economic benefits, as biomethane is an alternative energy source. Its use can significantly reduce exhaust emissions from vehicles in the air. The possibilities of using biogas and upgraded biogas are analyzed. The main areas of application of biogas like a fuel are shown.

Keywords: biogas, upgraded biogas, ICE, environmental.

JEL Codes: Q42, Q35

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FRI-2.203-1-TMS-07

EVALUATION OF CYCLE BY CYCLE VARIATION OF SI ENGINES USING BIOGAS AS A FUEL

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Abstract: In the article is researched the cycle by cycle variation of engine working with biogas. Upgraded biogas was used in the research. On investigation is made analysis what is the effect of the fuel on the value of the maximum pressure into the cylinder from cycle to cycle under different engine operating modes when changing the air - fuel ratio and the angle of supply of the electric spark. From the collected experimental data on the graphs is shown variance of the cycle by cycle variation depending from the air - fuel ratio at three different angles of electric spark delivery.

Keywords: biogas, upgraded biogas, ICE, cycle by cycle variation.

JEL Codes: Q42, Q35

REFERENCES

Dimitrov R. (2015); Investigation the influence of upgraded biogas on combustion processes in engine with external mixture formation. Thesis for acquiring PhD degree. Varna. 2015. Bulgaria

FRI-2.203-1-TMS-08

CAPABILITY OF THE FINITE ELEMENT METHOD IN SOLID WORKS ENVOIRMENT FOR DETERMINING THE ACTUAL THERMAL AND DEFORMATION STATE OF A DIESEL ENGINE PISTON

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Abstract: The combustion load of the internal combustion engines is usually estimated by the thermal state of the combustion chamber components. It is easy to prove that the three main elements (piston, head and cylinder) are the most powerful of the piston's thermal resistance. In order to determine the temperature stresses it is necessary to know the temperature gradients and the level of the temperatures in the whole volume of the workpiece. This is possible by knowing its temperature field.

Purpose of work: to study the heat transfer performance of a piston of a fast-moving internal combustion diesel engine.

Using the Finite Element Method, in the SolidWorks environment, determine the temperature field and the stresses from the heat and mechanical loads. Criteria for the adequacy of the yields are the temperatures at specific piston points obtained experimentally.

We present:

The sub-task of the work that we present with the publication is to determine how to set boundary conditions and to assess the adequacy of the results obtained..

Keywords: Finite Element Method, SolidWorks, piston.

JEL Codes:

REFERENCES

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FRI-2.203-1-TMS-09

EXHAUST GAS RECIRCULATION PARAMETERS IN A DIESEL ENGINE

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Abstract: *The limit conditions for the influence of exhaust gas recirculation parameters on various limiting components and environmental characteristics of a diesel engine are studied. The possibilities for reducing the amount of NO_x and the impact on the other toxic components and particulate matter in exhaust gases were determined. The behavior of the carbon emissions from the engine is studied when changing the air charge parameters.*

Keywords: *diesel engine, exhaust gas recirculation, NO_x, O₂, oxygen concentration, harmful emissions.*

JEL Codes:

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FRI-2.203-1-TMS-10

ANALYSIS OF THE NEW WORLD CYCLE WLTC FOR THE ASSESSMENT ECONOMICAL AND ENVIROMENTAL PERFORMANCE OF LIGHT VEHICLES ¹

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Abstract: *The paper reviews the most distinctive features of the Worldwide harmonized light vehicles test cycle (WLTC) for the assessment of passenger cars in terms of environmental and economic performance according to the requirements of environmental standards in different regions of the world. It is shown the new test procedure, which includes a series of cycles for vehicles up to 3500 kg, is outlined. A comparative analysis has been made with respect to the severity of the regimes used in the present and the new test cycles. Data are presented on the four classes of vehicles to be tested for this test cycle, including the test phases and the phase parameters in each class. Some attention has been paid to certain features stemming from the transition from the old European to the new world test cycle - the promising norms already outlined, forthcoming constructive changes and new testing conditions.*

Keywords: *light vehicles test procedures, fuel consumption, environmental performance, CO₂ emissions.*

JEL Codes:

REFERENCES

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FRI-2.203-1-TMS-11

COMPARATIVE ANALYSIS OF AIR POLLUTIONS OF ECO-VEHICLES USING FLEXIBLE FUEL

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Abstract: The paper presents an analysis of the possibilities for environmental protection using eco-vehicles. The age of vehicle park in Bulgaria is analysed. A classification of the “eco” vehicles is made. A comparison of fuel consumption and carbon dioxide emissions generated from conventional fuels and flexible fuels has been made. Examples based on the real cars are described. The conclusions comment air pollution component reduction thanks to use of flexible fuel.

Keywords: Fuel consumption, Flexible fuel vehicles, Environmental protection

JEL Codes: Q210, R49

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FRI-2.203-1-TMS-12

LED MODULE WITH ALTERNATING LIGHT REGIMES FOR INDUSTRIAL APPLICATIONS

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Abstract: Growing plants in greenhouses during the cold half-year requires additional artificial lighting. Nowadays, for that LEDs are used due to their unbeatable good qualities - especially energy efficiency and long operational life. The chemical reactions involved in photosynthesis take place over a specific period of time during which the cells do not practically absorb the additional amount of photons. Thus regardless the abundance of light there is a saturation level which limits the efficiency of the process.

In this paper a full spectrum LED module for greenhouse lighting is developed. It is driven with constant current sources (for 3 separate spectrum channels) and controlled by popular microcontroller. The system allows the operator to run it in various pulse regimes alternating on/off lamp state. The designed lamp is tested and with proper passive heat sinks its thermal stability is ensured.

Keywords: LED application, LED lamp, Greenhouse lightening,

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FRI-2.203-1-TMS-13

THERMAL LOADING INVESTIGATIONS OF LEDS FOR AUTOMOBILE HEADLAMPS USING HEAT PIPES FOR COOLING

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Abstract: *The objectives of this study are related to comparative investigations of LEDs' thermal load in automobile headlamps using different passive cooling systems. LEDs' temperature regimes of operation in bulbs for automobile headlamps available on the market as well as prototypes of lamps with different designs were studied and compared. Special LED modules for use in car headlights for prototype LED light bulbs are used and thermal loads are tested under different operating modes and different operating conditions. Non-traditional designs of heat pipes with different liquids have been realized and the possibilities for their application for cooling the LEDs in automobile headlamps have been studied.*

Keywords: LED auto lamps, automotive LED headlights, heat pipes.

JEL Codes: L10, L11

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FRI-2.203-1-TMS-14

INVESTIGATION OF THE INFLUENCE OF THE TEMPERATURE OF FUEL ON THE VOLUME OF FUEL ENTERING THE CYLINDER

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Abstract: *The ability to determine the reliable operation of the fuel system depends largely on the fuel supply parameters. Changing fuel parameters in the diesel engine operation process is directly dependent on the technical state of the precision components operating in the system. The wear of the precision elements influences the change in the reliability of the system. It leads to a change in the basic geometric dimensions of the precision elements and increased gaps between them.*

Keywords: *fuel system, diesel, precision elements, fuel supply parameters.*

JEL Codes: L91

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FRI-2.203-2-TMS

FRI-2.203-2-TMS-01

**FACTORS, INFLUENCING ON THE SAFETY AND SUSTAINABILITY
OF TRANSPORTATION IN THE BULGARIAN SECTION
OF THE DANUBE RIVER**

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Abstract: The problems, affecting of the shipments, related to the low levels of the Danube River in the critical sections are examined. The risks and the reasons for their occurrence, related to the inland waterway transport in the Bulgarian section are identified.

Keywords: transport safety, Danube River, water transport, sustainability

JEL Codes: L91

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FRI-2.203-2-TMS-02

ANALYSIS OF THE 3PL OPERATORS' WORK IN BULGARIA

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Abstract: *In this report the 3PL operators' work in Bulgaria is analyzed. The work done and the development trend are determined.*

Keywords: *3PL operator, logistics, transport, cargo*

JEL Codes: *L91*

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FRI-2.203-2-TMS-03

METHODOLOGY FOR SELECTING A SCHEME FOR THE CARRIAGE OF TRANSIT GOODS BY CAR IN MULTIMODAL TRANSPORT

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Abstract: *The report reviews the freight transport schemes used in large quantities by road transport for multimodal transport. A methodology for selecting a scheme for effective and efficient carriage of transit goods by cars from a port terminal is proposed.*

Keywords: *freight transport, multimodal transport, methodology, road transport*

JEL Codes: *L91*

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ASSESSMENT OF THE VOLUME OF TRANSPORT WORK WITH BUS TRANSPORT IN THE REPUBLIC OF BULGARIA

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Abstract: Based on analysis and evaluation of statistical data, the work of bus transport in the country is being researched. The trends for its development in Bulgaria are analyzed and evaluated, based on information about the number of passengers carried via bus and the transportation done in passenger kilometers.

Keywords: bus transport, public transport, passenger, transport work

JEL Codes: L91

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FRI-2.203-2-TMS-05

ROAD TRAFFIC SAFETY ANALYSIS IN RUSE REGION FOR THE PERIOD 2012 – 2016 PART 1

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Keywords: *Crashes, Road Traffic Safety.*

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Keywords: *Crashes, Road Traffic Safety.*

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ANALYSIS OF ROUTES IN TAXI SERVICE OF PASSENGERS

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Abstract: *In the modern society the transport mobility of the population is constantly increasing. This, as well as the constant increase in the rigor of the passenger, requires the development and improvement of the quality of the transport service as a whole and, in particular, of the taxi service. The main quality criteria is the time for a separate travel. The optimization of the routes in the city of Rousse and the reduction of the travel time will undoubtedly increase the quality of the taxi service.*

Keywords: *methodology, taxi automobiles, categorization, consumer requirements.*

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SURVEY OF ORGANIZATION OF THE OPERATION OF TAXI CARS WORKING WITH "HAPPY" COMPANY IN RUSE

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Studyd is the efficient operation of the taxi system: Shown is the link between the different items of taxi transport. This article explores the taxi transport market in Rouse. It consists of analysis of the work with the introduced mobile application by the carriers in a taxi company working in the conditions of Rouse. As a result, a time analysis of the technological operations was carried out during different years of research.

Keywords: mobile application, taxi cars, efficiency, custom requirements

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STUDY ON THE ENGINE OIL'S WEAR BASED ON THE FLASH POINT

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Abstract: *Increasing energy performance of internal combustion engines is largely influenced by frictional forces that arise between moving parts. Thus, in this respect, the nature and quality of the engine oil used is an important factor. Equally important is the effect of various engine injection strategies upon the oil quality. In other words, it's of utmost importance to maintain the quality of engine oil during engine's operation. Oil dilution is one of the most common causes that lead to its wear, creating lubrication problems. Moreover, at low temperatures operating conditions, the oil dilution with diesel fuel produces wax. When starting the engine, this may lead to lubrication deficiencies and even oil starvation with negative consequences on the engine mechanism parts wear (piston, rings and cylinders) but also crankcase bearings wear. Engine oil dilution with diesel fuel have several causes: wear of rings and/or injectors, late post-injection strategy for the sake of particulate filter regeneration, etc. For measuring the flash point it is used Eraflash device, manufactured by Eralytics, Austria.*

Keywords: Engine oil, Oil quality, Lubrication, Oil dilution.

JEL Codes: Q16, R30

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FRI-2.203-2-TMS-10

AUTOMOBILE OILS PARAMETERS PREDICTION BY SPECTRAL CHARACTERISTICS

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Abstract: Determination the parameters of motor oils in the laboratory requires specialized equipment, multiple operations in carrying out the analysis and experience of the technologist who performs it. Modern research in the field of rapid and non-destructive determination of automotive oil indicators is mainly related to the use of spectral characteristics in the near-infrared (NIR) passage using a cuvette. The disadvantage of this method is that it requires preliminary procedures for the preparation of the measurement samples. The use of spectral characteristics in the NIR area requires the use of detectors and light sources that can measure in fewer steps than the more common and accessible devices operating in the visible field of the spectrum. The report examines the possibility of predicting

the physico-chemical parameters viscosity and density of automotive oils using their spectral characteristics in the visible area of the spectrum. The results show that the oil density can be predicted with an accuracy of 74% and the viscosity at an accuracy of 85% with low error rates of 2-9% in the range 520-660nm. The results obtained can be used in the design of spectrophotometric sensor devices operating in the visible area of the spectrum for rapid and non-destructive determination of physico-chemical parameters of automotive oils.

Keywords: Automotive oils, Spectral characteristics, Partial least squares regression, Physico-chemical indicators.

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AUTOMATED SYSTEM FOR COSTS AND BENEFITS ASSESSMENT OF AN INVESTMENT IN PHOTOVOLTAIC INSTALLATION TO A GAS STATION

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Abstract: The paper presents an automated system for costs and benefits assessment of an investment in photovoltaic installations to gas stations. The system allows entering information about the investment, about prices of electrical energy, etc. The program results are divided into two categories: financial benefits and ecological benefits from the investment. The financial ones are presented as a change in the net value of money and the return on investment whereas the financial ones as saved carbon emissions.

Keywords: transport, photovoltaic sources, gas station, automated system, assessment of costs and benefits

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ANALYSIS OF TRANSPORT ORGANIZATION IN THE COMPANY "NEFTOCHIM TRANSPORT" - RUSE BASE

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Abstract: Analysis of transport organization in the company "Neftohimtransport"- Ruse base: An analysis of "Neftochimtransport" JSC, which is a licensed transport company for carrying out public transport of goods and passengers, has been made. The company is also a major provider of transport services on the territory of Lukoil Neftochim Burgas AD. The exploitation of the fleet has been considered. The operating costs of two vehicles are compared.

Keywords: transport organization, truck, efficiency, fuel, average cost.

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FRI-2.203-2-TMS-13

CHANGES IN THE HYDRAULIC CHARACTERISTICS OF PIEZOELECTRIC COMMON RAIL NOZZLES IN CONTINUOUS OPERATION

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Abstract: *This paper reviews the changes in the hydraulic characteristics of common-rail piezo injectors during their long operation. A special defect associated with the occurrence of unusual smoke mainly during engine idling is considered. A connection between the specific construction of the nozzle-needle in order to improve the dynamics of its movement, the way of managing its lift and the reasons for the occurrence of the defect mentioned is sought. A constructive solution for the elimination of the consequences of wear in the area of the sealing line is proposed.*

Keywords: *piezo injector, nozzle, sealing in the nozzle, unusual smoke*

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**DESIGN OF CONSUMER RESEARCH IN THE AVAILABILITY
OF HOSOCACTISTICITY**

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Abstract: The main purpose of this scientific report is to present the statistical approach and the need to change the design of consumer research in the presence of homocascularity. With respect to the main goal thus defined, the following scientific tasks can be differentiated:

1. Presentation of the types of design of consumer surveys using parametric and nonparametric statistical tests.
2. Definition of the concept of homosquality through the prism of parametric and nonparametric statistical tests.
3. Explain the need to change the design of consumer research in the presence of homogosity.

Keywords: consumer surveys, statistical data processing, homogosity, parametric tests, nonparametric tests

JEL Codes: C 15

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FRI-2G.404-1-EM-02

U-MULTIRANK RESULTS FOR PROFESIONAL FIELD “ADMINISTRATION AND MANAGEMENT” OF “ANGEL KANCHEV” UNIVERSITY OF RUSE, BULGARIA

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Abstract: *U-Multirank is a new approach to comparing the performance of higher education institutions in five broad dimensions of university activity. “Angel Kanchev” University of Ruse participated in this international ranking by providing data in several different fields. This particular material will present how and why U-multirank was created, what methodology it uses to process data and what is the position of the programs Business management and Public administration – BA, and Business administration – MA from the professional field “Administration and management” in the University of Ruse on national and international level in comparison with programs of the same field from other universities in Bulgaria and the EU.*

Keywords: *U-multirank, international ranking, “Angel Kanchev” University of Ruse, business studies.*

JEL Codes: *I21*

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FRI-2G.404-1-EM-03

BENEFITS OF PUBLIC-PRIVATE PARTNERSHIP IN PUBLIC PROCUREMENT

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Abstract: *Public–private partnerships have become an increasingly popular way for governments to procure for their citizens certain public services. The goal of these partnerships is to produce better-quality and products at lower cost. Tasks and risks are shared, and each party is responsible for the tasks it is best equipped to perform, as well as for the associated risks. The aim of this paper is to identify some of the benefits of the Public-Private Partnership compared to the Public Procurement.*

Keywords: *Public-Private Partnership, Traditional procurement, benefits*

JEL Codes: *M10, M21*

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FRI-2G.404-1-EM-04

UNFAIR COMMERCIAL PRACTICES IN E-COMMERCE

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Abstract: *The purpose of the report is to identify the major dangers for e-commerce users. Legal framework of unfair commercial practices. Analysis of bad ecommerce practices. Statistical data and examples of established unfair commercial practices. Recommendations to reduce the risk for users from bad ecommerce practices.*

Keywords: *E-Commerce, Consumer, Unfair commercial practices, Unfair commercials, Protection.*

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FRI-2G.404-1-EM-05

INTERSECTION OF CONSUMER AND CORPORATE INTERESTS. COLLISION BETWEEN THE ENERGY ACT, THE CONSUMER PROTECTION ACT AND OTHER LAWS

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Abstract: *The aim of the report is to propose legislative changes in the field of energy in order to achieve more favorable conditions for consumers. Analysis of the Energy Act and secondary legislation and identification of key differences with other laws and consumer interests. Whose interests are more protective of the state - consumer or corporate and what are the consequences for consumers.*

Keywords: *Consumer, Monopoly, Laws, Differences, Protection.*

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

CHALLENGES TO ENTREPRENEURS IN THE TOURIST SECTOR IN VELINGRAD MUNICIPALITY

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Abstract: *The dynamic development of tourism in Bulgaria is characterized by the penetration of small and medium-sized businesses in all areas of tourism services. Entrepreneurship in the sector is characterized by a number of features that are related both to the activity carried out by the tourist enterprise and to the specifics of the products and services offered. In the present study the characteristics of the tourism entrepreneurial activity in general and in particular in Velingrad municipality have been analyzed. The subject of consideration is the specificity of entrepreneurship in small and medium-sized tourism enterprises, as well as the specific problems that accompany the organization of the tourism activity of the entrepreneurs in the tourist area under consideration.*

Keywords: *entrepreneurship, tourism, alternative tourism.*

JEL Codes: *Q01, Q26*

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A SUCCESSFUL BUSINESS ADVERTISING STRATEGY

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Abstract: Nowadays, a product or a service should not only be from a good quality and on an affordable price, but also to have an effective advertising strategy, in order to have a good realization on the market. Online advertising services such as Google AdWords provide their customers with statistics on the performance of their ads. Based on this data, each company could optimize its ads, test new search keywords, stop advertising temporarily, and so on. To optimize the advertising strategy, various mathematical tools could be used, one of which – the decision tree. In the presented work, by solving a problem from practice, the potentials of using this tool for classification in the field of advertising are outlined. The presented algorithm could be used for other data (regardless of sphere) in a similar situation.

Keywords: Google AdWords, Advertising Strategy, Decision Tree.

JEL Codes: M21, M37

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

POLICIES AND MEASURES FOR ENCOURAGEMENT OF YOUTH EMPLOYMENT: A RESEARCH ON EMPLOYERS' OPINION

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Abstract: The paper analyses the approaches for encouragement of youth employment in Bulgaria and employers' opinion and practices to use existing policies and measures for provision of necessary workforce. The paper presents analysis of existing policies in EU and Bulgaria, dealing with problem of young unemployment and evaluates employer's point of view in capital of Bulgaria. The enquiry among 60 employers, experienced in use of measures of active labour policy focussed on young people with high education degree provides base for further research and comparison of capital and other part of the country in respect of implementation of ALPM.

Keywords: youth unemployment, European policy, active labour market policy, university graduates, employers

JEL Codes: J08, J23, E24

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FRI-2G.404-1-EM-09

SELF-ORGANIZING PRODUCTION

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Abstract: *The paper reviews existing methods of special seismic protection and shows the necessity to use them in the high-rise frame structures. Special attention was paid to the dynamic isolation systems. The purpose was to research the efficiency of rubber isolation bearings and pile foundations with an “intermediate cushion” and to demonstrate the commercial benefits of the special seismic protection. Structural analysis was carried out by a spectral method by means of program SCAD. On the basis of the results was achieved a numerical solution of the problem for a simplified model and for a real 5-storey building. The paper reviews existing methods of special seismic protection and shows the necessity to use them in the high-rise frame structures. Special attention was paid to the dynamic isolation systems. The purpose was to research the efficiency of rubber isolation bearings and pile foundations with an “intermediate cushion” and to demonstrate the commercial benefits of the special seismic protection. Structural analysis was carried out by a spectral method by means of program SCAD. On the basis of the results was achieved a numerical solution of the problem for a simplified model and for a real 5-storey building.*

Keywords: *Self-organizing production, Seismic protection, SCAD*

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**INFLUENCE OF REGULATING ON THE ENTREPRENEURIAL
ACTIVITY IN BULGARIA**

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Abstract: *The current report is based on a field research, conducted in the period Jan-June 2017 among business owners. Its main purpose is to identify their assessment on the effect of regulating in Bulgaria on their entrepreneurship activity. The necessity of such research is determined both by the multiple recommendations on part of national and supranational institutions for relieving the business from administrative burdens and the availability of papers, based on secondary data from international institutions (e.g. the World Bank, Global Entrepreneurship Monitor, etc.), but the lack in the same time of feedback from the direct subject of regulation – the business. The questionnaire is aimed at identifying the business owners' assessment on the major effects of regulating and tax policy instruments on entrepreneurial activity as a general, and not to separate specific regulations on specific economic sectors.*

The questions are inspired by other researches and papers in the field, affecting different aspects of them. The sample consists of 60 firms, different in legal form, from different regions and economic sectors. The survey may serve to the decision-makers for assessment of their achievements until the moment and the measures to be taken in future. In addition, it may serve as a basis for conducting an in-depth survey aimed at acquisition of additional details on the issues related to regulating and tax policy in Bulgaria.

The results prove that regulation is among the most important determinants for starting and doing business. Tax policy is identified as similar and similar factor to regulation in terms of direction and impact force. The assessment of these two complementary determinants appears to be mostly negative.

From the survey it becomes obvious also that there is an overlap in terms of administrative rules and requirements, expressing in control and examination of the same subjects by different authorities. The latter take place not only in the starting phase but also in the process of operating of an enterprise. Regardless of the measures for relief of the regulatory burden, the majority of the business representatives reported not observing such. This makes the regulatory environment volatile and unpredictable.

The regulating process encompasses mostly firms from the same sectors, who bear both the administrative regulation burden and the control burden, expressed in more revisions and expenses, related to the additionally introduced requirements. Such companies are mostly those subject of specific regulatory regimes.

Keywords: Regulation, Regulatory Environment, Bulgaria, business, entrepreneurship, taxation

JEL code: L51

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THE QUALITY OF LIFE AND ITS REFLECTION ON THE LUXURY HOUSING MARKET AND ITS CHARACTERISTICS

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Abstract: *The dynamics of the real estate market corresponds directly to the quality of life of a country's population. Over the last three years, the Bulgarian real estate market has undergone significant changes, which are reflected in the ever-growing demand for luxury properties. The reasons for these trends are due to a number of factors, including the increase in the quality of life of the population employed in certain emerging sectors, the fall in interest rates on housing loans and deposits. These factors influence the rise in demand for luxury housing and from an investment point of view, which attracts the attention of foreigners as well. When selling luxury homes, there are serious discrepancies in quality characteristics, which leads to confusion among buyers. To illustrate these confusion and differentiation of luxury homes, a comparison of the quality features of luxury homes is made in Sofia and London.*

Keywords: *quality, market, luxury homes, characteristics.*

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DOES SOVEREIGN RISK IMPACT INTEREST RATES LEVEL IN BULGARIA?

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Abstract: *The sovereign risk premium has risen not only in Euro area, but in non-Euro area member states of EU after world financial crisis. This paper uses new Keynesian model to research sovereign risk channel. The model is changed for non-Euro area country, because there is no common monetary policy as for Euro area. Due to this reason, the model applies separately for single country. It is tested the model considered in Corsetti, Kuester, Meier and Muller adjusted for the conditions in the non-Euro area economies. During the period 2005 -2013 it is distinguished three stages of economic activities in the observed country – first – before the world financial crisis, second – the recession period in world economy and Euro area and third – when we observe the smooth and slowly recovery in the world and Euro area economies. By the calibration for nonfinancial firms, for the first stage - the spread between credit and deposits interest rates increases very small. During the second stage the spread between credit and deposit interest rates changes in small dimension. By the third stage it is noted an increase of spread*

between credit and deposit interest rates with 58 basic points for the period from fourth quarter 2012 until third 2013. It shows the tendency of raising the risk in the economy. The higher spread between credit and deposit interest rates probably depends on the sovereign risk due to often using and selling new issues of government securities. For households in the first sub-period the spread is higher compared with such for nonfinancial firms. After it, the spread for households has risen. For the period from third quarter 2010 until fourth such 2012 – the spread changed with 27 basic points and only for the period IVQ 2012 – IIIQ 2013 raises with 32 basic points. Because slowly recovery, the households do not increase the demand for lending by the banks. The intermediated institutions dispose with liquidity resources. The equilibrium level of interest rate on this market is not changed. Due to it, an increase of spread depends on the sovereign risk. Because the low level of GDP per capita in non-Euro area states, the main purpose of economic policy for all of them is to achieve high economic growth reaching average level in near future for the Euro area. Due to it, important aim for these countries is the sovereign risk to be kept on optimal level.

Keywords: Mathematical and quantitative methods, Economic cycle, Fiscal policy, Interest Rate Determination, Post Keynesian

JEL Codes: C13, E12, E32, E43, E62

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DESK RESEARCH OF THE STRATEGIES OF THE GRAIN PRODUCTION AND THE BEEKEEPING SECTORS

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Abstract: Desk research of the strategies of the grain production and the beekeeping sectors: The aim of this research is to study the strategies of two of the most developed agricultural sectors in Bulgaria - grain production and beekeeping. The study establishes that they are not market-oriented, but are mostly focused on production. In the grain sector there is a stronger focus on the utilization of financial subsidies, and in the beekeeping sector- on the selection and protection of the genetic fund of the local Bulgarian bee. In both sectors there is a strategic drive to increase the production potential by improving the technologies, infrastructure, genetics, knowledge transfer and innovation, the legislative base, and utilization of more subsidies. It is established that the sectors studied did not have market-oriented and complex strategies, which renders their business more uncertain and less profitable.

Keywords: strategies, grain production, beekeeping.

JEL Codes: Q18, Q19

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Nacionalna strategija za ustoichivo razvitie na zemedeliето v Bulgaria v perioda 2014-2020 g. Prilojenie 2. Strategicheski nasoki za razvitie na zarnoproizvodstvoto v Bulgaria, Ministerstwo na zemedeliето i hranite, Sofia 2013. (**Оригинално заглавие:** Национална стратегия за устойчиво развитие на земеделието в България в периода 2014 – 2020 г., Приложение 2. Стратегически насоки за развитие на зърнопроизводството в България, Министерство на земеделието и храните, София 2013)

Nacionalna strategija za ustoichivo razvitie na zemedeliето v Bulgaria v perioda 2014-2020 g. Prilojenie 5.7 Strategija za razvitie na Zaicevadstvoto v Republika Bulgaria do 2020 godina; Prilojenie 5.8 Strategija za razvitie na Bubarstvoto v Republika Bulgaria do 2020 godina; Prilojenie 5.9 Strategija za razvitie na Pchelarstvoto v Republika Bulgaria do 2020 godina; Ministerstwo na zemedeliето i hranite, Sofia 2013. (**Оригинално заглавие:** Национална стратегия за устойчиво развитие на земеделието в България в периода 2014 – 2020 г., Приложение 5.7. Стратегия за развитие на Зайчевдството в Република България до 2020 година; Приложение 5.8. Стратегия за развитие на Бубарството в Република България до 2020 година; Приложение 5.9. Стратегия за развитие на Пчеларството в Република България до 2020 година; Министерство на земеделието и храните, София 2013)

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EMPLOYMENT IN THE TOURISM SECTOR OF BULGARIA - PROBLEMS AND PERSPECTIVES

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Abstract: *Tourism is a driving force in Bulgarian economy. Its indirect influence to occupation, contributes to 11.9 % of the complete labour force. The demographic collapse and low wages however result in creating a vacuum of unqualified and especially qualified workers in the tourist sector. The Bulgarian government is engaged in taking measures of attracting young people to the sector by and educating them in specific areas like SPA, golf and wellness tourism. Meanwhile, the government is loosening the procedures for hiring foreign workers from low wage countries outside the European Union in order to overcome the lack of personnel.*

Keywords: *Tourism, occupancy, wages, labour shortage*

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KEYNESIAN SHORT-RUN EFFECT OF INVESTMENT ON OUTPUT AND GROWTH IN BULGARIA

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Abstract: *This paper examines the short-run effect of investment (expenditure on acquisition of tangible fixed assets) on economic growth in Bulgaria over the period 1990–2015. Using Vector Error Correction Model (VECM), the paper finds bidirectional causality between investments and economic growth. This study suggests that expansion of investment will lead to sustainable growth of the Bulgarian economy through the multiplier-accelerator mechanism.*

Keywords: *VECM, investment, GDP, accelerator, multiplier*

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NEOCLASSICAL AND ENDOGENOUS LONG-RUN EFFECTS OF INVESTMENT ON OUTPUT AND GROWTH IN BULGARIA

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Abstract: *The study examines the neoclassical and post-neoclassical long-run effects of investment on output in Bulgaria over the period 1990–2015. The model is estimated using the single-equation and maximum-likelihood system estimators. All of the estimators indicate the cointegrating relationship between investment and output. The significant effects of investment on output and growth suggest the need to accelerate investment to foster aggregate economic activity and growth.*

Keywords: *cointegration, neoclassical, endogenous, investment, gdp*

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THE ROLE OF HUMAN RESOURCES IN THE TOURISM SECTOR AND THE IMPACT OF INTERNAL BRANDING ON EMPLOYEE ENGAGEMENT

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Abstract: The paper addresses problems associated with the human factor in tourism in the aspect of the insufficient commitment of the staff to the goals of the company. A research is carried out to find out if the lack of motivation of the staff is a consequence of the management's under-assessment of the importance of internal branding. The image of the companies in the tourism sector is worsened by staff's lack of commitment to the job. In the end, this could be a reason to make customers reluctant to repeat their visits in Bulgaria. An important step in this direction is the introduction of the basic features of the internal branding and the opportunities that its application gives to increase the quality of service. The article proposes guidelines for solving the problems, some of which indicate actions already taken by the government and the responsible institutions.

Keywords: tourism, Bulgaria, human resources, internal branding, employee engagement.

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**BIBLICAL PROVERBS AND CULTURAL MODELS
AND CONCEPTUALISATIONS**

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Abstract: *This paper examines the process of relating constituents of the content plane of proverbs to cultural models. It reports some of the results of a larger study on 425 Biblical proverbs in English in which appraisal analysis combined with culturematic analysis is applied. The analysis shows that an act of evaluation underlies more than three fourths of the studied proverbs and that its object coincides with the proverb cultureme, i.e. the entity that the proverb recommends or rejects. Using the findings from the combined analysis as well as findings from previous research, a model of the cognitive processes involved in proverb use and interpretation is offered. The salient cognitive operations in the three stages of the process being modelled include the evaluation of a social situation in terms of a cultural model, the articulation of a point of view using a proverb and the location of the proverbial propositions in the relevant cultural model. It is argued that the proverb cultureme plays the role of a semiotic arrow which points to cultural models and conceptualisations in the construal of proverb meaning. In addition, the model is interpreted within the theoretical framework of linguo-culturology linking it to a long tradition of exploring the ways of referring to well known texts in a community of shared cultural values.*

Keywords: *Biblical proverb, cultureme, cultural model.*

JEL Codes: *I20*

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FORMATION OF LINGVOCULTURAL COMPETENCE IN RELATION TO LANGUAGE ENVIRONMENT

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Abstract: *The paper considers the influence of educational and natural language environments on formation of linguistic-cultural competence.*

Keywords: *educational (artificial) language environment, natural language environment, learning a foreign language, linguacultural adaptation.*

JEL Codes: I20

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FACTORS INFLUENCING THE NICKNAMES CHOICE IN THE INTERNET

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Abstract: *The article discusses the concept of virtual reality as a "crooked mirrors kingdom" of the real world, where everything is like a joke. All of this affects communication. Fictional world, unlimited space give carnival character to virtual communication. In turn, carnival character allows interlocutors to act in different roles, put on masks make up nicknames. The article describes a pilot study to identify factors influencing the choice of nicknames among the Russian youth. On the basis of the experiment the author comes to the conclusion that the choice of nickname depends on 2 factors – gender and profession.*

Keywords: *virtual space, nickname, carnival communication, experiment, factors, gender.*

JEL Codes: *L10, L11*

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AXIOLOGICAL ASPECTS IN LANGUAGE

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Abstract: *The paper examines the axiological aspects of the evaluative component coded in each national language and represented by different means of language at a derivative and lexical level - by means of self-explanatory lexemes with implicitly put in intrinsic evaluative semantics, by means of lexemes, pertaining to one and the same synonymic row, by means of combinations of word combinations - free and phraseological ones. The mechanism of expressing assessment in language "good - bad - neutral" is presented; it is based on the axiological triad "good - evil - nature" and represents the approach of juxtaposing in the human consciousness of the properties and qualities of objects and phenomena with the generally accepted norm. The deviations from the norm are axiologically marked and identify the national-specific features presented at the linguistic level.*

Keywords: *axiology, axiological assessment, cultural code, mechanism for expressing assessment in language*

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APPROACHES TO INTERCULTURAL TRAINING IN THE DANUBE REGION

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Abstract: *The paper examines the practical experience of the author in preparing and executing an intercultural training seminar for citizens from the Danube region countries (Croatia, Germany, Romania and Serbia). The goal of the seminar was for the participants to be able to predict social norms and behaviours in the Danube region based on the information from intercultural analysis tools (guide.culture-crossing.org, <https://www.crossculture.com/latest-news/the-lewis-model-dimensions-of-behaviour/>). Results show that this type of intercultural training needs improvement but also has a lot of potential for future development. Its main advantage is the potential for applicability in various education practices.*

Keywords: *intercultural communication, Danube, the Lewis model of cultural types, linear-active culture, reactive culture, multi-active culture*

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EDUCATION FOR MULTICULTURAL PURPOSES (IN THE LIGHT OF ROMA INTEGRATION IN BULGARIA)

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Abstract: *Today's heterogeneous societies place challenging demands on the education of young people who need to be equipped with the relevant competences to function successfully in a variety of socio-cultural environments. A pertinent issue in the Bulgarian educational context in line with the implementation of education for multicultural purposes is the improvement of teachers' understanding of the cultural specifics of Roma children and the provision of relevant methods for their integration in the learning process. The current paper, therefore, aims to present a set of innovative educational resources for the training of Roma children designed by the University of Ruse under a project entitled “Integrated Approach of the Ruse Municipality for the Integration of Roma and Other Vulnerable Groups on the Territory of the Ruse District”. The chosen methodology, resource structure and content are discussed in the light of the survey results with 178 school teachers from the Ruse region. The empirical evidence reveals the applicability of the resources and their role in the creation of favourable conditions for the inclusion of Roma children in the educational system.*

Keywords: *Multicultural Groups, Roma Integration, Multicultural Education.*

JEL Codes: *I24*

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**A SOFTWARE SYSTEM FOR COLLECTING, PROCESSING AND
ANALYSING OF DATA FOR ACCURACY ASSESSMENT
IN LAYER BASED TECHNOLOGIES**

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Abstract: *The paper describes the system for automatic measurement, calculation, analysing and graphical representation of accuracy assessment of layer based technologies and associated software components. The system is implemented on different rapid prototyping technologies and results are presented and discussed. Some future directions and developments are given for further refinement and expand of the software part of the system.*

Keywords: *Rapid Prototyping, Accuracy, Layer Based Technology, Software System.*

JEL Codes: *L60, L63, L64*

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AN APPROACH FOR RENDERING 3D CONTENT FOR ONLINE SHOPPING

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Abstract: *This paper describes WebGL-Based viewer for rendering 3D content for the purposes of online shopping. The paper addresses techniques for transforming, visualizing and interacting with 3D objects. Special attention was paid to efficiency, cross-platform and cross-browser implementation of the viewer. The main purpose was to provide realistic 3D view of online shop items which will enrich the user experience and increase the sales of the e-shops. The viewer is designed to be extended with mass-spring simulations on different browsers and platforms. Viewer provides full set of light model characteristics, 3D object transformations and animations, camera animation, multi-format import and export, desktop, iOS and Android support, object space and image space collision detection techniques and 3D human body customization.*

Keywords: *E-Shop, 3D, GPU, Simulation, Mobile, Web-Based Viewer.*

JEL Codes: *L10, L11*

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THE PHYSICAL MECHANISM OF REDUCING FIELD CHARGES DEPOSITED ON DIELECTRIC

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Abstract: *In this study, the reasons leading to the weakening of the fields of charges settled on the dielectric are examined. It should be noted that the representation of the gap model using the equivalent circuit, as well as the values of U_{ig} and U_{ex} , is a rather rough approximation to reality.*

In the case of a real breakdown of an elementary segment of the gap, charges with an uneven density settle on opposite sides of the gap. Because of this, the surface of the dielectric after one of the elementary discharges cannot be considered an equipotential surface, because of which the values of U_{ig} and U_{ex} lose their meaning. The field in the gap bounded by the dielectric does not remain homogeneous after the first discharge. In addition to the constituent of the normal surface of the dielectric, there is also a tangential component of the electric field strength, caused by the non-uniform density of the charges settled on the dielectric. This component of the field leads to charge mixing over the surface of the dielectric due to the presence of surface conductivity. In addition, the charge density can decrease due to the bulk conductivity of the dielectric.

On the basis of an analysis of the two-dimensional equivalent circuit of the discharge gap using the Green's function method for two cases: (i) The centrally symmetric distribution in the form of a normal Gaussian distribution; (ii) the periodic distribution of the density of free charges, the causes of the weakening of the field of charges on the dielectric are analyzed.

Keywords: *Green's function method, Dielectric, Model, Surface charge.*

JEL Codes:

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**NEW GENERATION PEDAGOGY TRAINING RESOURCES FOR
TEACHERS WORKING WITH STUDENTS WITH COMPLEX NEEDS**

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Abstract: *The population of SEN children is increasing at a time when the EU's inclusion agenda and international legislation, require that these pupils should be educated in mainstream schools. The OECD advocates that educators integrate students with SEN in their teaching, planning and accountability frameworks, do more to involve families and become active agents of their own professional growth. Following that, this paper reviews the self-training as a trend for uptaining higher proffecional qualification of teachers working with SEN students. The purpose was to present existing web resources that would help teachers to gain new skills and knowledge in the field of context of specialist teaching, teaching strategies, teaching procedures, collaboration and leadership as an answer of the dynamics of the modern educational system. It necessitates the search for new solutions aimed at recognizing and satisfying the needs of the child, whether he/she has difficulties due to physical, sensory or intellectual disability, economic constraints or other socio-economic factors that hinder his effective inclusion to the learning environment and process.*

Keywords: *Special needs, Education, Teacher, SEN, Student, Complex needs, Child development, Special pedagogy, Training resources.*

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Online resources:

<http://complexneeds.org.uk>

<http://www.specialpedagogy.info>

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INTEGRATION OF THE INFORMATION TECHNOLOGIES IN SOLVING INDICATIVE AND LOGARITHMIC EQUATIONS

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Abstract: *The work presents a research in the capacity of MuPAD system to do computer computations in Mathematics training. Tasks, suitable for symbol computer computations, are presented. The work is suitable for extracurricular activity with students who have interest in the computer technology, as well as the organization of Computer mathematics competitions for children.*

Keywords: *Information technology, Indicative equations, Logarithmic equations, Effectiveness, MuPAD, CAS (Computer Algebra System).*

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FRI-2G.305-1-ERI-03

CREATING A LEARNING ENVIRONMENT WHICH TRIGGERS POSITIVE EMOTIONS IN THE PROCESS OF TEACHING MATHEMATICS AT SCHOOL

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Abstract: *The article supports the idea that creating a learning environment, which triggers positive emotions in the process of teaching mathematics, stimulates students to achieve better results. The discussion focuses on two ways of creating learning situations which provoke positive emotions: by using mathematical tricks and by using sophisms.*

Keywords: *emotion, teaching mathematics, mathematical tricks, sophisms.*

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FRI-2G.305-1-ERI-04

FUTUREMATH PROJECT - INNOVATIVE PEDAGOGICAL METHODS, TECHNIQUES, MATERIALS AND RESOURCES

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Abstract: Mathematics is one of the key subjects for any career in engineering, science or business. Yet, over the years, the process of teaching mathematics has faced more and more challenges and poorer performances. One reason behind these results is the significant number of changes taking place in the last two decades. The rapid development of technology is one of the changes that have profoundly influenced the teaching of mathematics at the university level. The considerable differences among the mathematical knowledge and skills of students, as well as the differences in their ability to learn mathematics, are also important factors. The approach of FutureMath project is to take into account all of these factors in order to create a framework suitable for individual and self-paced learning.

FutureMath project started from the need of high quality mathematics' education in an era of technology and computers. The goal of the project is to make mathematics learning more motivational, interesting, effective and accessible. The project aims to develop technology-based innovative pedagogical methods, techniques, materials and resources, for teaching and learning mathematics, and for assessing mathematics' learning [1]. The learning resources developed within the project had to pay attention to different learner types, effective feedback and assessment. They offer alternative modern methods for mathematics learning, individual learning solutions and flexibility. All the learning resources developed within the project will be made available for free under the idea of Open Source or Open Educational Resource (OER) at the end of the project [1]. Some of the materials developed within this project are already used in the partner universities and their influence in the process of teaching and learning mathematics is a positive one.

In this paper we will present the learning resources developed within the project and how some of the materials developed within this project are already used in the partner universities and their positive influence in the process of teaching and learning mathematics.

Keywords: Innovative Pedagogical Methods, Digitalization, Engineering Mathematics Education

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RESEARCH IN DEVELOPMENT OF GEOMETRY PROBLEM SOLVING SKILLS

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Abstract: This article presents PhD research on development of skills for solving geometry problems, particularly Stereometry (3 dimension objects), through computer heuristics. For the purposes of the study two resolved examples of heuristic tasks were applied and a short statistical analysis of the achieved results was made. The skills and the stage of development have been analyzed in the course of the study. Comparison between two statistically identical groups in the K-12 training was used. Romania and Bulgaria were covered by the research and give an advantage on expansion the conclusions. It is shown if the digitalization and the innovative pedagogical methods are started in early stages in the educational process compared to the conservative approach it results in better content understanding and development of geometry problem solving skills.

Keywords: Innovative Pedagogical Methods, Digitalization, Engineering Mathematics Education

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APPRENTICESHIP CLUSTER FOR INDUSTRY READY ENGINEERS OF TOMORROW – AN APPROACH TO WORK-BASED LEARNING AT TERTIARY LEVEL

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Abstract: *The paper considers work-based learning with a focus on apprenticeship at tertiary level. It presents the origin, further development and transfer possibilities of work-based learning in the European Union by laying an emphasis on the German model of dual study as the most successful one so far across Europe. In addition, two structural versions are given and the main benefits for students, enterprises and universities are outlined. Detailed information about the current situation in education and industry in Bulgaria and Poland are provided so as to reveal the transferability potential of dual study in those countries. An alternative solution for introducing work-based learning in Bulgaria and Poland is offered for 3rd- and 4th-year university students following a bachelor degree course in Mechatronics, where its components are described in details. Respective conclusions have been drawn.*

Keywords: *work-based learning, apprenticeship, dual study, tertiary level, apprenticeship cluster.*

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JUMP MATH – AN INNOVATIVE SYSTEM OF TEACHING MATHEMATICS

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Abstract: *This article presents an innovative system of teaching mathematics - JUMPMath, a system built upon the belief that “Every child can learn math, every teacher can teach math, and everyone can love it”. Some basic principles and methods of the system are described.*

Keywords: *Innovative methods of teaching, Teaching of mathematics*

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FEATURES OF THE PERCEPTUAL-ACTING SCHEMES AND THE DEMONSTRATIVE IDEAS IN CYBERNETIC ASPECT

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Abstract: *The article studies the sensory cognition specifics that characterize the manifestation of the thinking as part of the skill to solve mathematical tasks. The article also demonstrates how the descriptive idea works. The most important features of the perceptual-acting schemes and the demonstrative ideas in cybernetic aspect that can appear in the ability to solve tasks are presented.*

Keywords: *Cybernetics, Active model of training in Geometry*

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**RUSE - CENTER OF VOCATIONAL EDUCATION AFTER
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Abstract: *The article presented the results of research conducted in 2016, dedicated to vocational schools-centenarians in Bulgaria. The main methods were - work with bibliography, archive data, content-analysis, and interviews with directors. The purpose of this article is to disclose the results of the research conducted for Rouse where 4 of the 36 vocational schools-centenarians. These are: Professional School of Agriculture "Angel Kanchev", Professional School of Economics and Management "Elias Canetti", Professional School of Woodworking and Interior Architecture "Yosif Vondrak", Professional School of Fashion "Nedka Ivan Lazarov". How they have been created, what traditions they have preserved, how they are developing today, and how they see their future - these are the questions you will find an answer to this article. Today these schools transmitted the spirit of their founder and educating their students in love for the profession. Students from these schools kept their history and are proud of it and at the same time draw the future of the school.*

Keywords: *research, vocational education, professional school in Ruse*

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FORMATION OF SOCIAL COMPETENCIES THROUGH LEARNING CONTENT “AROUND THE WORLD” FOR FIRST GRADE

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Abstract: *In the raport is presented comparative analysis of approved by the Ministry of education and science textbooks and training kits early stage of general education- I grade, in concrete training on “Around the world”. The educational content is pointed at enrichment of sensory-cognitive experience of children, consistent with trends of the modern mastering of knowledge and skills, with an aspect of the intellectual and healthy state of children. The content-analysis is realized on the subject of the social world, mastering of integrated knowledge and skills of the student, related to the formation of key cognitive, practical and communicative skills. The trends of modern education, oriented through themes, forming social skills and competencies in small pupil, have integrative functions in the direction of their socialization. It is from a fundamental signifier for children as normal, as well as abnormalities. Because cognitive abilities and intellectual potential, communicative skills, manifestations of tolerant relationships, dealing with problems and other, are a prerequisite of a complete lifestyle. It is necessary to note, that the themes related to the nature environment and the closest nature environment are not considered, because they are not subject of thematic research. The conclusions are summarized of the relationship global theme-theme.*

Keywords: *social competencies, educational content, analisys, around the world, pupils*

JEL Codes:

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DIDACTIC EXPERIMENT ON THE USE OF A SYSTEM OF PROBLEM - COGNITIVE TASKS IN THE PROCESS OF LEARNING SOME FUNDAMENTAL IDEAS OF NATURAL SCIENCE ON THE SUBJECT “MAN AND NATURE”

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Abstract: *This article considers problematic learning as a didactic resource for learning some fundamental ideas of nature science. The indicators for designing a system of problem- cognitive tasks with ecological focus on the subject “Man and Nature” and the development of a specific system of problem-cognitive tasks, based on basic ecological concepts, with an emphasis on the fundamental ideas of preservation and causality, have been defined. The results of the didactic experiment were analysed and the corresponding conclusions were made.*

Keywords: *problematic education, problem- cognitive tasks, fundamental ideas of nature science, a fundamental idea of seizure, a fundamental idea of liveliness*

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APPLICATION OF TESTING EFFECT IN TEACHING OF THEORY AND METHODOLOGY OF PHYSICAL EDUCATION

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Abstract: The paper presents the application of testing effect in teaching of Theory and methodology of Physical education to future teachers of PE. The application of new hybrid testing system in education at NSA is described. The results of the experiment in TMFV teaching are presented and discussed. The application of testing for facilitation of learning positively influenced the academical achievements of PE students in very big extent. In conclusion, we recommend the usage of tests for facilitation of learning in teaching of social sciences and humanities.

Keywords: Theory and methodology of Physical education, teaching, testing effect, learning, web-based testing

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Zsheliaskova-Koynova, Zsh., Angelova-Igova, B. (2017). Predizvikatelstva na uchebnoto testirane v prepodavaneto na filosofia na nespetsialisti. (Challenges of testing in philosophy teaching to non-philosophy students). *In press*

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CHALLENGES OF TESTING IN PHILOSOPHY TEACHING TO NON-PHYLOSOPHY STUDENTS

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Abstract: The paper presents the application of testing effect in philosophy teaching for non-philosophy students. The problems of testing in higher education are discussed as well as the challenges of application of testing for facilitation of learning. The paper describes a new hybrid testing system applied in education at NSA, more specifically, in philosophy teaching. The results of the experiment in philosophy teaching are presented and discussed. In conclusion, we recommend the application of tests for facilitation of learning in teaching of humanities.

Keywords: philosophy, philosophy teaching, testing effect, learning, web-based testing

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CHILDREN'S RIGHT TO OPINION AS AN ELEMENT OF SUSTAINABLE COMMUNITY DEVELOPMENT

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Abstract: *The right of expression in children is defined by the UN Convention on the Rights of the Child. This right is enshrined in documents and strategies, and its purpose is to require institutions, experts and the entire world community to work on its application. There are areas where the child easily shares his / her opinion and this has a significant impact on the progress and quality development of education, the implementation of social and legal procedures and administrative proceedings. The article attempts to trace international and national normative documents, policies, organizations and institutions, and good practices where "the voice of the children is heard".*

Keywords: *United Nations Convention on the Rights of the Child, Right to Opinion, United Nations, State Agency for Child Protection*

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THE IMPORTANCE OF WELCOME PROCESS WITHIN THE CONTEXT OF SCHOOL INTEGRATION OF REFUGEE CHILDREN

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Abstract: *In the preface to the Refugee Children: Guidelines on Protection and Care, the UN refugee agency makes the following remark: "Generally, more than half of refugees are children. Refugee children are the first and foremost children, and as such, they need special attention. "*

We will allow ourselves to supplement this reminder by highlighting the important role of refugee children in the development and stability of societies and asylum nations as well as the development and stability of their country of origin whose recovery is possible only through successful reintegration of these children. Education is a key pillar in the successful realization of these children and in their preparation for equal society members. While the stable educational environment - a guarantor for the success of the educational process.

Through this paper, we would like to draw your attention on the welcome process as nvestment in the effective inclusion of therefugee children in the school. We believe that one of the possible solutions is to encourage teachers to share their experiences and to jointly identify steps for the swift integration of refugee children.

Keywords: *Refugee, School, Integration, Welcome, Process, Teachers, Inclusion, Gidelines.*

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EDUCATION AND TRAINING OF ADULTS IN THE FORMAL EDUCATION SYSTEM

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Abstract: *Lifelong learning is increasingly commonplace in defining each country's education policy. It can be seen as a lifelong learning process. In turn, it implies that people need to continue learning, to renew their learning not only through informal learning methods that everyone uses in their daily lives but also through their repeated participation in formal education. In this way, the knowledge, skills and competencies that are inherent in every person with an acquired level of education are renewed.*

Keywords: *Lifelong learning, Adult, Formal Education.*

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ABOUT THE TOPONYM VANAND

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***Abstract:** The Bulgarians are mentioned in historical sources in the vicinity of the Caucasus (region between the Black Sea and the Caspian Sea and occupied by Russia, Georgia, Azerbaijan and Armenia). The author of the article present some of the toponyms from a territory, which perhaps have a connection with the Bulgarians. On the basis of the historical sources and the toponymic matches in Modern Bulgaria are presented some parallels.*

The rightful defining of the toponymics outlines of the out numerous Bulgarian people would emerged an important historical places and regions. This will play a huge role in defining the migrations, developments and ethno-cultural contacts of the Bulgarians.

Keywords: Vanand, toponyms, Caucasus area, Bulgarians

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THE BEGINNING OF MARITIME EDUCATION IN BULGARIA

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***Abstract:** The report presents information for the founding of the Danube Fleet following the Liberation and the establishing of the Maritime School in Rousse. It follows the education process and the development of the school from 1881 until 1900.*

***Keywords:** education, navy, naval officer*

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FRI-2.207-1-HEF-03

SOCIAL ASSISTANCE OF THE POPULATION FROM NOVO SELO, KRAVENIK AND BATOSHEVO AFTER THE APRIL UPRISING IN 1876

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Abstract: *This article presents the social assistance of the population of Novo Selo, Kravenik and Batoshevo after the April uprising was suppressed. All charity events organized by the nearby towns of Troyan, Sevlievo, Gabrovo and Lovech are reflected. There is a place for the reaction of foreign diplomatic missions and their significant role for the social assistance of the injured population. It has been pointed out that, despite all these actions, social assistance has failed to stabilize the situation of the population of the affected settlements. Many people are forced to leave their settlements and seek livelihood and alms in nearby and more remote settlements.*

The article reflects the post-Liberty legal initiatives aimed at materially supporting the participants in political movements. It is pointed out that they do not achieve the desired result. The main reason for this is the new Bulgarian political reality and the growing political partisanship.

Keywords: *Social assistance, April uprising, charity*

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THE BULGARIANS AND THE ADMINISTRATIVE REFORMS IN THE OTTOMAN EMPIRE IN 50-60 YEARS AT THE XIX CENTURY

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Abstract: *The article presents the influence of administrative reforms in the Ottoman Empire during the 50-60s of the 19th century on the Bulgarian population. All legislative initiatives of the Ottoman administration have been analyzed chronologically. The new structures, elements and rules introduced in the system of state administration are introduced. The process of attracting Bulgarians to state services has been carefully considered. The hunger point of state power on this issue is presented. The main conclusion is that in theory a real opportunity is created for the participation of Christians, including Bulgarians in the administration of the Empire. But, in practice, this policy does not aim to equally place all Sultan's subjects in government. Rather, it comes to show the Great Powers that the reforms are being implemented.*

Keywords: *Administration, reform, civil service*

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FRI-2G.405-1-LL-01

EXPRESSIVE POTENTIAL OF THE PHRASEOLOGICAL UNITS WITH ANTHROPONYM COMPONENTS IN THE BULGARIAN LANGUAGE

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***Abstract:** The purpose of the present study is to analyse the stylistic characteristics and functions of the Bulgarian phraseological units with anthroponym components (both in general and in reference with the choice of the proper name they contain). The paper also attempts to determine the importance of these phraseologisms for the verbal communication as means with considerable expressive potential.*

***Keywords:** stylistic characteristic, functions, Bulgarian phraseological units, anthroponym component*

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THE LANGUAGE OF ONE LETTER OF NIKOLA MIKHAYLOVSKY TO STOYAN ROBOVSKY

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***Abstract:** The report is written in connection to the language of a document written by the Bulgarian Revival writer Nikola Mikhaylovsky. The article exposes important graphic, spelling, phonetic and morphological peculiarities of the language of this text. The review shows that Nikola Mikhaylovsky contributes to the approval of a series of phonetic and morphological norms, inherent to the contemporary Bulgarian language.*

***Keywords:** history of the contemporary Bulgarian literary language; Nikola Mikhaylovsky; graphic, spelling, phonetic and morphological peculiarities; language-spelling model; dialect; literary tradition.*

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TEACHING TOURISM IN ENGLISH THROUGH A MOBILE APPLICATION

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Abstract: *This paper deals with the implementation of the Moodle Mobile smartphone application in the teaching of students in the major of Economics of Tourism at the D. A. Tsenov Academy of Economics. Firstly, we set the theoretical framework for Mobile Learning, as we establish that the most appropriate device for realizing such learning is the smartphone. Secondly, we conduct an experiment in which we prepare special topics in English and implement them through the Moodle Mobile application in the teaching process by enabling the students to benefit from the easy access to course materials, on the one hand, and the user-friendly course structure, on the other. Finally, we conclude that it is worth investing time and effort, as well as funds, in Mobile Learning, and in particular, a smartphone application.*

Keywords: *Mobile Learning, smartphone application, Moodle Mobile, Economics of Tourism*

JEL Codes: *I23*

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"WE ARE IN A HELLISH SITUATION": FOLK SUFFERING IN THE NOVEL "UNDER THE YOKE" BY IVAN VAZOV

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Abstract: *The study analyzes the suffering of the Bulgarian people during the "yoke". This gives new dialogical chances for the work to speak in up-to-date human language in understanding the soul of the Bulgarian people. Through the stories of the grief of the Bulgarian, I try to introduce and present key psychological and anthropological problems, such as: the problems of residence and human anxiety in the historical times of the Ottoman Empire. The study emphasizes the fear that has been accompanying the being of the people since the beginning of the novel when grandmother Ivanitsa frightened the youngest son of Chorbadi Jordan to its end - the crushing of the April Uprising when Boyko Ognianov wept at the terrible sight of the Turkish outrage. It is concluded that with the first Bulgarian novel Ivan Vazov set the model that builds the idea of the tragedy of the Bulgarian and he has shown the markers through which it can be perceived and appreciated.*

Keywords: Folk suffering, novel, "Under the Yoke", Ivan Vazov

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FRI-2G.405-1-LL-05

BLESSING AND CREATION IN IVAN GROZEV'S POEM "THE SWAN OF ETERNITY"

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Abstract: *Visions and contemplations* (1919) is the only published collection of poems of the poet-symbolist and theosoph Ivan Grozev, which compiles his later works. This is poetry of the sacred orbits of being in Space, where galactic lights and fires light and rearrange the chaos. The visions roam through deep, spiritual insights and the contemplations emanate thirst for the absolute, resulting from the encounter between meditation and poetic reflection. The poem "The Swan of Eternity" is an introduction to the remaining 46 poems in the collection – ceremonial, glamorous manifesto, in which the symbols of Indian and the mystical world intertwine with the images of the author's imagination.

Keywords: symbolism, theosophy, Indian philosophy, poetry

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FRI-2G.405-1-LL-06

POETIC MARKS IN "A NOTEBOOK" BY STEFAN GECHEV

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Abstract: *Stefan Gechev's volume of poetry "A Notebook" presents modern interpretations of the everlasting topics in literature. The marks of the poetic, stream to the idea of intensive expression of the world and the human presence in it. Minimum artistic images – maximum receptive decisions, is the poetic formula of the separate texts in "A Notebook", which turns the book into one of the possible ways of bringing the literature back to the field of aesthetics.*

Keywords: *Bulgarian Contemporary Poetry, Minimum, Maximum*

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FRI-2G.405-1-LL-07

ASPECTS OF THE CONCEPT OF THE “ANGEL IN THE HOUSE” IN THE CHILDREN’S FANTASY TEXTS BY GEORGE MACDONALD

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Abstract: *The purpose of the present study is to demonstrate how the Victorian stereotype "the angel in the house" has been problematized in the children's fantasy texts by George MacDonald. The subject of discussion are the characters of wives and mothers in such fantasy children's texts as: The Princess and the Goblin, The Princess and Curdie, The Light Princess and At the Back of the North Wind. In The Princess and the Goblin, the protagonist's mother goes out of the framework of passive femininity, progressively demonstrating that she possesses features taken over the Victorian era as more inherent to men, such as: intelligence, insistence, determination, independence of thinking. In a similar way the mother figure in At the Back of the North Wind is represented. The mother of the protagonist Diamond is depicted as an equal partner to her husband, whom she respects as a personality and companion in life. The character differs in many respects from the impersonal female characters associated with the cliché "the angel of the house," as it exhibits such traits of character as courage, wits, ability to act actively and independently. In the third text under discussion, The Light Princess, mother figures of very different social background have been represented, as both of them are related to the royal power - the queen mother and the sister of the king. In many ways the text sounds surprisingly modern and feminist. The queen is represented as a wise woman, superior to the king intellectually, while he is portrayed as a pathetic caricature. The most intriguing female character of all is that of the king's evil sister, Princess Makemnoit, who can be seen as a counterpart of the queen mother. Against the backdrop of relatively passive characters, Princess Makemnoit demonstrates activity and intelligence, creativity, wits, determination to achieve her goals. While this activity is aimed at negative results, it is in fact indicative of the fact that women are in not inferior to men even in the sphere of violence and cruelty. The conclusion we could arrive at is that through all these female characters George MacDonald problematizes and successfully subverts the Victorian stereotype of "the angel of the house".*

Keywords: *"The angel of the house", Subversion, Victorian stereotype, Female activity, Creativity, Intelligence.*

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FRI-2G.405-1-LL-08

APPLICATION OF THE CONTENT OF THE BULGARIAN LANGUAGE AND THE LITERATURE CURRICULUM FOR THE PRODUCTION OF TEXT AT THE INITIAL STAGE

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Abstract: *Global tendencies in the organization of mother tongue education take as a priority the understanding and rationalization of knowledge and motivating students' creativity. In this context the educational content for the development of the communicative competencies, which is regulated by the new curricula in Bulgarian Language at an early stage, should be evaluated. A non-systematic presentation of theoretical information about the types of compositions stands out in them. We can draw the conclusion that the structuring of essays in the 1st – 4th grade period is unbalanced and there is negligible little time for writing a description essay, which is studied only in 2nd grade. It is not taken into account that in the following years of education (3rd – 12th grade) it is not present in the curricula.*

The formation of a communicative and speech ability to describe is difficult and it is impossible to achieve good results only on the basis of the training in second grade. There is a lack of balance between the types of texts that are set to work on.

Teachers should compensate for curriculum imperfections by means of a respective regular update as each teacher decides when and how to do it in order to achieve the main goal of improving students' communication skills.

Keywords: *curricula, students, early stage, text production, content.*

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FRI-2G.407-1-AS-01

GENERAL ACOUSTICS QUALITIES OF STRING INSTRUMENTS

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Abstract: *String instruments are among the oldest and most popular musical instruments in the world. They all have a similar construction and close phonic qualities. The acoustic features of string instruments are of critical importance in recording and reinforcement in order to achieve maximum sound quality. Knowledge of polar pattern, frequency and dynamic range are very important for any sound engineer. For composers and conductors is equally important to know and understand the acoustic features of strings. This article aims to help everyone whom it may concern, and to provide useful practical information for all the music professionals.*

Keywords: *acoustics, frequency, decibel, dynamic range, sound, timbre, sound propagation*

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FRI-2G.407-1-AS-02

VOICE OF THE ABYSS - THE UNKNOWN GERMAN-SPEAKING PERSONAL DIARY THE COMPOSER DIMITAR NENOV (1901 - 1953)

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***Abstract:** The paper exposes the content of the only one preserved part from the German-language personal diary of the composer Dimitar Nenov (1901 - 1953), which is stored in his personal archive. The documentary fragment is completely unknown and is commented for the first time. Its content introduces new biographical information, directly and indirectly connected with the composer's creative and personal life during the Dresden study period. The report considers the source information in a biographical, creative and psychologically research plan. The text is intended to supplement the composer's creative biography.*

***Keywords:** Personal Dairy, Bulgarian Composer, Personal Correspondence, Dimitar Nenov.*

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SUCCESSFUL PRACTICES IN NON-PROFESSIONALS MUSIC EDUCATION

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Abstract: *This report presents a variety of techniques in music education, which, based on successful realization, can be called successful practices. By their very nature, they aim to actively enhance creative thinking and contribute to the development of pure musical-hearing qualities such as a sense of timbre, rhythm, tempo, dynamics and melodic line development. Some of the practices are created by the author, others are modified for the needs of the practical musical preparation of students - future teachers.*

Keywords: *music education, development of creativity, successful music practices.*

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**CHILD BEHAVIOR CHECKLIST 1.5 – 5 PROFILE OF PRESCHOOL
CHILDREN WITH AUTISTIC SPECTRUM DISORDERS**

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Abstract: *The current study examines the behavioral profiles of children with Autistic Spectrum Disorders (ASD), compared to the profiles of children with Language Delay (LD), measured with Child Behavior Checklist for Ages 1.5-5 Years. The parent report forms of 40 preschool children with a diagnosis of ASD are compared to an age-matched group of children with LD. The results show a typical profile of most marked elevation in the Withdrawal and Pervasive Developmental Problems scales in the ASD group as compared to a scattered problem pattern in the LD group.*

Keywords: *Autism, language delay, behavioral profile, autistic spectrum disorder*

JEL Codes: *I 10, I 20*

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SENSORYNEURAL HEARING LOSS DUE TO INJURIES OF CILIO-TECTORIAL JUNCTION

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Abstract: The paper reviews some studies on the connection between tectorial membrane and stereocilia – part of acoustic receptor. Genetical defects of proteins *OTOGELIN*, *OTOFERLIN*, *PLASTIN-1*, *POLYCISTIN-1* and others are expressed with pure profound sensorineural hearing loss on experimental selected mice-mutants and isolated human families. All the investigators report that only visible morphological defects are in tectorial membrane and stereocilia bundles, not in other cochlear structures. Resting cochlear potentials manifest normal values. On the other side, ABR and DPOAE are negative – evidence for profound sensoryneural hearing loss. This constellation of results is logically related to loss of connection between tectorial membrane and stereocilia. Thus mechano-electrical transducer (MET) of hair cells can not be activated.

Keywords: Sensoryneural hearing loss, Tectorial membrane, Stereocilia.

JEL Codes: I10, I20

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SELECTION OF THE KINESITHERAPEUTICAL MEANS IN STANDARD PERIARTROPATHIES ACCORDING TO THE CLASSIFICATION AND SYMPTOMS OF THE CLINICAL REPORT

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Abstract: *The Communication addresses the need for precise selection of kinesitherapeutic agents, test positions and movements, passive, active and special exercises in the kinesitherapeutic recovery of patients with various forms of shoulder arthropathies. Kinesitherapeutic methods and exercises are different in the functional and structural forms of Arc syndrome, they have been applied to 91 patients, 36 of whom were treated with arthroscopy.*

Keywords: *shoulder arthropathies, Arc syndrome, kinesytherapy*

JEL Codes: *I 12*

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FRI-K.201-1-HP-04

KINESITHERAPY IN THE TOTAL HEALTHCARE PLAN IN PEMPHIGUS VULGARIS - CLINICAL CASE

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Abstract: *The report addresses the inclusion of kinesitherapy in the overall healing plan of pemphigus vulgaris in a 50 year old woman. Kinesitherapy was conducted in three stages: in the Anesthesiology, Resuscitation and Intensive Care Clinic, at the Department of Vascular and Plastic Surgery of the Pleven Municipal Hospital and in a home environment within 63 days. It recognizes the complex effect of the use of drug therapy and kinesitherapy on the condition.*

Keywords: *autoimmune diseases, pemphigus vulgaris, kinesitherapy*

JEL Codes: *I 12*

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KINESITHERAPY OF FRONT GLENOHUMERALNA INSTABILITY TREATED SURGICALLY

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Abstract: *Shoulder joint is much more susceptible to dislocation than any other joint because of a shallow joint socket, small congruency and bone stabilization. The main passive stabilizing structures are fibrous joint capsule and ligaments. A main dynamic stabilizer is a rotator cuff of a joint that embraces it from all sides and therefore during the rehabilitation one focuses on restoring its function.*

Keywords: *shoulder joint, dislocation, joint capsule, ligaments.*

JEL Codes: I 12

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FRI-K.201-1-HP-06

RESEARCHING FOR THE EFFECTS OF MOBILIZATION TECHNIQUES FOR IMPROVING THE MOVEMENT IN THE CERVICAL SPINE BY PATIENTS WITH ANKYLOSING SPONDYLITIS

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Abstract: Ankylosing spondylitis is a chronic inflammatory rheumatic disease that requires daily purposeful physical exercise due to the nature of its disease. This report used the possibilities of physiotherapy for long-term response to the disease. The aim was to improve the soft structures and joints in the cervical spine. Functional tests and scales have been used to determine the patient's functional condition - factual, subjective and resultant.

Keywords: phisyotherapy, ankyloinsg spondylitis

JEL Codes: I12

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FRI-K.201-1-HP-07

IMPROVING POSTURAL CONTROL OF "WALKING CHILD WITH CEREBRAL PALSY"

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Abstract: Cerebral palsy is "incurable" in the common sense of the word. Therapies, rehabilitation, trainings and interventions can give a child a chance of independence, social integration and realization in society. Two cases of children with cerebral palsy and without intellectual disability have been tracked through long-established physiotherapy. Modern medicine focuses on primary prevention, i.e. prevention of contractions and dramatic muscular imbalance. Usually, as the child gets older and grows, muscular imbalance is established and a pathological motor stereotype is created for multiple activities. It is necessary to include activities to improve postural control and balance in everyday life. In order to grow a walking child with cerebral palsy without the formation of pathokinesiologic syndromes, deformities and contractures, physiotherapy needs to become an inseparable part of everyday life.

Keywords: Child cerebral palsy, postural control, muscular imbalance.

JEL Codes: I 12

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FRI-K.201-1-HP-08

A CASE OF SEVERE FIBROMYALGIA IN FEMALE 23 YEARS OLD. PAIN THROUGHOUT THE BODY. TREATED WITH A.E.B. METHOD FOR THREE MONTHS

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Abstract: Severe fibromyalgia, pain in the temporomandibular joints, pain spread throughout the body, three months treatment started with Anthropometric Ergonomic Biomechanical (A.E.B.) Method: person with fibromyalgia, scoliosis and postural disorders in all body was treated using the Anthropometric Ergonomic Biomechanical method. The person is currently in medical treatment and it is possible to obtain advantages with the A.E.B. Method but, at the moment, the pain persists.

Keywords: Posture, Anthropometric Ergonomic Biomechanical Method, fibromyalgia, back pain, pain in the temporomandibular joints.

JEL Codes: I 10, I 20

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Pachini T., Dejulis E., Koli E. Vzaimodeistvie mejdu lumbalna lordoza i m.iliopsoas. Nauka i sport, 6, 2013 (*Пачини Т., Деюлис Е., Коли Е. Взаимодействие между лумбална лордоза и m.iliopsoas. Наука и спорт, 6, 2013*)

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Tiziano Pacini, Ferdinando Pivetta, Elisabetta de Juliis, Neck's posture: woman 54 years old suffering from Dizziness, Labyrinthitis, Headache, Neck Pain, Shoulder Pain, Carpal Tunnel Syndrome, treated with Biomechanical Anthropometric, Ruse University "Angel Kanchev", 2013

FRI-K.201-1-HP-09

A SEVERE CASE OF SCOLIOSIS SURGICALLY TREATED IN CHILDHOOD. PAIN IN THE WHOLE BODY AS AN ADULT. TREATED WITH A.E.B. METHOD

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Abstract: *Scoliosis and back pain treated with Anthropometric Ergonomic Biomechanical (A.E.B.) Method: person with scoliosis, back pain and postural disorders in the entire body was treated using the Anthropometric Ergonomic Biomechanical method. It has proven that, even in case of scoliosis treated with surgery, advantages can be obtained with the A.E.B. Method. It has shown that advantages in the work of pituitary gland changing the posture can be obtained with this method.*

Keywords: *Posture, Anthropometric Ergonomic Biomechanical Method, scoliosis, back pain, pituitary.*

JEL Codes: *I 12*

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FRI-2.114-1-SW-01

**INTEGRATED CARE THROUGH THE PERSPECTIVES
OF PROFESSIONALS IN THE SYSTEMS OF SOCIAL ASSISTANCE
AND HEALTH**

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Abstract: *An integrated approach to addressing the complex needs of populations at risk is articulated in a number of key strategic documents in the field of health and social care at national and local level. Implementation of integrated activities and programs requires shared philosophy and awareness of the integrated care concept, along with building of effective communication and coordination between systems, structures and professionals. This paper draws on results of a research project aimed to explore the challenges facing the effectiveness of the innovative social-health services, held among professionals in the systems of care for children and adults with complex needs. Qualitative methods for collection and analysis of empirical data were used. Research findings show both commonalities and discrepancies in understanding and implementing of integrated care at different levels and participants.*

Keywords: *Integrated care, Integrated service, Inter-sectoral approach*

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FRI-2.114-1-SW-02

PROFESSIONAL COMPETENCIES IN SOCIAL WORK AS A RESULT OF EFFICIENT EDUCATIONAL POLICY AND A RESPONSE TO LABOUR MARKET DYNAMICS

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Abstract: *The paper focuses on the link between university education and successful professional career in the labour market. The subject of analysis is the formation of professional competencies for work with different vulnerable persons, groups and communities in the students pursuing degrees in Social Work. The results of a research project entitled “Formation of Digital Literacy and Professional Competence of Social Work Students as a Condition for Realization in the Labour Market” and implemented under the Scientific Research Fund at the Technical University of Gabrovo are presented.*

Keywords: *key competencies, group competencies – professional, special, social, personal, vulnerable persons and groups, professional realization.*

JEL Codes: *I3, J71, J78*

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FRI-2.114-1-SW-03

AN ATTEMPT TO DEFINE THE SOFT SKILLS NECESSARY FOR THE SOCIAL WORKER

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Abstract: *This report aims to rank the soft skills necessary for the modern social worker. The focus is put on the correlation between flexible skills and professional competencies. Further research using larger samples and applying the same methodology may allow disaggregating of data by gender, age and other criteria, furthermore they may provide valuable information for the training of social workers in higher education institutions*

Keywords: *skills, competences, competency, soft skills*

JEL Codes: J2, J24

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FRI-2.114-1-SW-04

DISCRIMINATION OF PEOPLE WITH DISABILITIES ON THE LABOR MARKET AND CURRENT ASPECTS OF THE EUROPEAN UNION'S ANTI-DISCRIMINATION POLICY

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Abstract: *The article is considered one of the priority directions for the development of anti-discrimination policy of the European Union in the field of disability in the new social and political realities of the twenty-first century, which is associated with providing more employment opportunities for people with disabilities and protect them from discrimination on the labor market. The critical review of the anti-discrimination policy on disability on European and national level brings the need for: viewing people with disabilities as active participants in economic and social life; taking more effective action in the political and normative aspects to provide more adapted jobs for people with disabilities and to promote diversity in the working environment; monitoring the employment of disability and development of diversity in the workplace, respect for the rights of people with disabilities and their protection against discrimination, including in areas other than employment. The inclusion of people with disabilities in the labor market contributes to the realization of the Europe 2020 Strategy's goal of increasing employment and overcoming poverty in people with disabilities.*

Keywords: *anti-discrimination policy of the European Union, discrimination of people with disabilities in the labor market, employment of people with disabilities, workplace diversity*

JEL Codes: J71, J78, J83

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FRI-2.114-1-SW-05

SCIENTIFIC APPROACHES AND PERSPECTIVES FOR DEFINING THE EFFECTIVENESS OF SOCIAL SERVICES

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Abstract: Contemporary socio-economic and globalization conditions are accompanied by changing attitudes and understanding of social services and assessing their effectiveness. These practices have evolved from the established model of provision of social services in institutions to the integration of users of these services and their delivery in an environment close to the family. The new social requirements and expectations of how social services are provided also predetermine the prospects for transforming established standards into quality care and delivering effective results.

Keywords: Social services, quality, efficiency, approaches.

JEL Codes: L10, L11

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FRI-2.114-1-SW-06

THE ACCESSION OF YOUNG PEOPLE FROM VULNERABLE GROUPS TO EDUCATION AND TRAINING

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Abstract: *The article analyses the increasingly recent issue of access to education for young people from vulnerable groups and the growing number of inappropriate minors. Emphasis is placed on the recommendations of international and community law to solve this problem and the possibilities for their implementation in the Republic of Bulgaria. The aim is to analyze the legal measures taken to access education for disadvantaged young people as a reflection of international and community law, in particular Recommendation MS / Rec (2015) 3 of the Council of Ministers on Access to Social Rights of Disadvantaged Persons In the search for harmonious legal consistency and socially applicable continuity.*

Keywords: *vulnerable groups, education, law, minorities, drop out.*

JEL Codes: *Z18, Z19*

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FRI-2.114-1-SW-07

PSYCHOSOCIAL WORK IN PATIENTS / CLIENTS WITH ONCOLOGICAL DISEASES

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Abstract: *Oncological social work in Bulgaria is a poorly developed activity mainly in the big regional cancer centers and private clinics. Good practices in this area have countries like the United States, Great Britain, the Netherlands and Germany. In oncology clients, the social worker participates in organizing and conducting physical, spiritual, psychosocial and practical interventions. Social oncology is based on psychosocial aspects, personal and family goals, culture, and religious beliefs of the client. The social worker carries out open communication between the client, his or her relatives and the health team in relation to the psychological aspects of the disease and counseling on specific problems for the client. The clinical social worker conducts pre-therapy therapy for expected grief to help relatives and / or caregivers accept the loss. In families, carers and medical professionals after oncology death, the social worker conducts interventions aimed at psychological training, problem solving and cognitive restructuring. Clinical social worker in oncology also works with the medical team by constantly evaluating symptoms of burnout / burnout / by working in Balint groups, supervisors and interviews.*

Keywords: *clinical social work, oncological diseases, psychosocial work*

JEL Codes: *I12, I18*

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INFLUENCE OF THE ONCOLOGICAL DIAGNOSIS ON THE MENTAL HEALTH OF THE SICK PERSON

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Abstract: *Learning the diagnosis and treatment of cancer is a major life stress of patients / clients with this disease and their families. Early care usually provides biomedical treatment but does not address the psychosocial problems associated with the disease. Patients need help to deal with a number of emotions such as confusion, stress, anxiety and depression, which can lead to tensions in interpersonal relationships, financial difficulties and stress from the physical pain itself and the unclear course of the disease. As clients of psychosocial help, it is important that they receive the appropriate information and skills needed to control the disease. Providing quality psychosocial care to clients with oncological diseases can affect the course of the disease.*

Keywords: *clinical social work, oncological diseases, psychosocial work*

JEL Codes: *I12, I18*

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THE DEINSTITUTIONALIZATION OF CHILDREN

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Abstract: Only in the last decade in our country started reforms in the social sphere aimed at launching the provision of social services in the community and deinstitutionalization. This is a unique process that provides a combination of factors to implement and achieve the maximum result: political will, cross-financing from other EU operational programs, investments of the World Bank, donors, national budget. To ensure communication and coordination of all projects and activities deinstitutionalization has formed an interagency working group of the Council of Ministers, comprising representatives of all involved in this institutions at the deputy minister and chaired by the Minister of European funds.

Keywords: Deinstitutionalization, children, institution, family environment

JEL Codes: I19

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Natsionalna strategiya "Viziya za deinstitutionaliztziyata na detsata v Republica Bulgariya". Plan za deystvie za izpalnenie na Natsionalnata strategiya " Viziya za deinstitutionaliztziyata na detsata v Republica Bulgariya"/Prieto t Ministerski savet 21.11.2010g./

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**SUPERVISION IN NURSING - A PROMISE
FOR THE QUALITY OF HEALTH CARE**

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Abstract: *Supervision in Bulgaria is not associated with nursing practice because it is not regulated by law as such. The autonomous nursing practice is not acknowledged either. The skills for implementing clinical supervision are upgraded and based on the existing communication skills. These skills can be developed by gaining experience and by reflexion on practice. The academic preparation of nursing students in Bulgaria guarantees that they have the ability:*

- ✓ *To identify real and/or potential problems of somatic, psychological and social character of the individual, family, community*
- ✓ *To plan and participate in carrying out promotive, preventive and medico-social activities.*
- ✓ *To know and put into practice new techniques and technologies in the field of health care.*
- ✓ *To give quality health care in accordance with the contemporary scientific **achievements, normative acts and ethical principles.***

In countries such as Great Britain, Australia, the USA and others, where clinical supervision is applied in nursing and the autonomous practice of nurses is acknowledged, they play a key role in ensuring the quality of health care.

To what degree clinical supervision should develop is essential for acknowledging autonomous nursing practice in the framework of acquired professional competence. The survey points out the opinion of nursing officers from different cities in the country (39) with Master's Degree in Healthcare Management about the need for preparation of supervisors and the implementation of clinical supervision in nursing practice. Based on the international experience, A Model of Nursing Clinical Supervision has been suggested, a model which can be employed in Bulgaria.

Keywords: *nurse, clinical supervision, nursing practice, health care*

JEL Codes: *I 1, I 18*

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THE ROLE OF SOCIAL SUPPORT IN THE PREVENTION OF PROFESSIONAL STRESS AND BURNOUT OF MEDICAL PROFESSIONALS

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Abstract: Professional burnout is one of the serious problems of modern professional activity. Social support, it is a physical and emotional comfort that people receive from their family, friends, colleagues and others. Social support is needed to create and maintain both physical and mental health regardless of the presence or absence of working stressors. If medical professional is experiencing problems in your family, then the risk of professional burnout increases.

Keywords: professional burnout, medical professionals, professional stress, social support

JEL Codes: I19, J13

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BURNOUT SYNDROME AMONG PHYSICIANS

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Abstract: *In the course of their profession, physicians are exposed to high levels of stress and are particularly susceptible to experiencing burnout. These physicians are at higher risk of making poor decisions, display hostile attitude toward patients, make more medical errors and have difficult relationships with co-workers. This paper looks at the symptoms, causes and interventions for handling burnout among physicians.*

Keywords: *burnout, physicians, workplace stress.*

JEL Codes: *J00, J01*

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APPLICATION OF DIRECT ORAL ANTICOAGULANTS IN BULGARIA – LITERATURE REVIEW

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Abstract: Direct oral anticoagulants (DOACs) are an effective and safe alternative for vitamin K antagonists (VKAs) in patients with non-valvular atrial fibrillation to prevent ischemic stroke. Further more they are suitable for prophylaxis and treatment of venous thromboembolism (VTE). However VKAs remain the first-line anticoagulant for patients with mechanical heart valves or rheumatic heart disease and for those with severe renal insufficiency.

Keywords: DOACs; VKAs; Non-Valvular Atrial Fibrillation, VTE.

JEL Codes: I10, I12

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HOW TO MANAGE SLEEP- WAKE DISTURBANCES IN CANCER PATIENTS

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Abstract: Cancer patients and survivors suffer often from sleep disturbances, sleep - related breathing disorders and insomnia. The etiology of this phenomenon, screening and assessment vary a lot. There exist plenty of nonpharmacological and pharmacological interventions to manage these disturbances. The usage of each of them depends on the health care professional knowledge. But it is critical that clinicians adopt routine screening and affordable interventions to reduce chronic insomnia and improve the quality of life either in cancer patients or survivors. Great importance has the strengthening of partnership between patients, their relatives and clinicians in the management of sleep – wake disorders and the related symptoms.

Keywords: cancer patients, clinicians, interventions, management, sleep- wake disturbances, survivors,

JEL Codes: I10, I12

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KIDNEY STONE DISEASE IN CHILDREN – VARIABLE SYMPTOMS, A SINGLE DIAGNOSIS

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Abstract: *Kidney stone disease is a statement caused by an ureteral stone that disturbs urine flow and increases the pressure in kidneys. Clinical symptoms in children are much different from adults. The main complaint is an abdominal pain, combined with haematuria. Often gastro-intestinal disorders are observed such as nausea, vomiting, constipation. Clinical outcome of the disease differs in young and elder children. In babies and young children irritability is a mask of pain. Sometimes congenital renal diseases and urinary tract infections are associated with nephrolithiasis.*

Keywords: *kidney stone disease, clinical symptoms, children, abdominal pain, haematuria. .*

JEL Codes: *I10*

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LAPAROSCOPIC MYOMECTOMY DURING PREGNANCY

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Abstract:

Objective: The purpose of this study is to monitor the development of uterine myoma during pregnancy, concomitant symptoms, possible effects on pregnancy and treatment during pregnancy.

Method: We followed 4 patients with myoma during pregnancy. Operative treatment includes laparoscopic myomectomy with or without sutures with Safil.

Results: The results after the surgical treatment show pregnancies in full term and birth of a viable child.

Conclusion: Every patient with myoma during pregnancy is subject to strictly individual approach to the decision for surgery, the gestational age for childbirth, complications are monitored.

Keywords: myoma, pregnancy, laparoscopic myomectomy.

JEL Codes: I12, I19

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ARTIFICIAL SPHINCTER – THE ONLY DEVICE THAT EFFECTIVELY TREATS FEMALE SEVERE URINARY INCONTINENCE

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Aim: The present publication aims to share the experience of using an artificial sphincter in women with severe stress incontinence. It also aims to compare its efficiency with the other types of slings – TVT – O, TVT – R, TVT – Ophira as well as to compare the intraoperative, the early and late postoperative complications.

Method: An artificial sphincter was implanted for the first time in the country in 2014 in a woman suffering from severe stress incontinence. She was diagnosed by anamnesis, ultrasound, cystoscopy and cystotonometric methods.

Results: The results after the surgery showed that the use of an artificial sphincter was as efficient as in the other European countries - 98-100%. The intraoperative, the early and late postoperative complications were similar to the other types of slings.

Conclusion: According to the result shown after implanting the artificial sphincter we may conclude that the artificial sphincter is the only device that is used to treat severe stress incontinence even when the other types of slings are inefficient. There is no other device which may increase the mesh pressure over the years and 'de novo' incontinence can be copied.

Keywords: stress incontinence, artificial sphincter, TVT-O, TVT-R, TVT-Ophira, polypropylene mesh.

JEL Codes: I12, I19

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ANALYSIS OF TVT OPERATIONS FOR TREATMENT OF STRESS INCONTINENCE IN WOMEN - OWN RESULTS

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Abstract:

Objective: The purpose of this publication is to share the experience of the use of synthetic suburethral sling surgery in the treatment of women with stress incontinence and to assess the success of the different sling types - TVT-O, TVT-R, TVT-Ophira, while evaluating the intraoperative, early and late post-operative complications of these types of sling.

Method: The three methods of implantation of synthetic polypropylene midurethral slings were applied to 436 patients with stress incontinence. The operations were carried out at the University Hospital "Rousse" and "Virgin Mary" Hospital - Bourgas for the period 2005 - 2015. TVT-O-334 operations, TVT-R - 78 operations and TVT-Ophira-24 were performed.

Results: For TVT-O and TVT-R the average operating time was 20 ± 4 minutes and an average blood loss of 50 ± 20 ml. The average operating time for TVT-Ophira was 15 ± 4 minutes and an average blood loss of 20 ± 10 ml. In all cases antibiotic prophylaxis was administered in the early postoperative period. Patients were followed on the 1st, 12th and 36th months.

Conclusion: TVT-O, TVT-R and TVT-Ophira for the treatment of stress incontinence in women are innovative methods on the basis of the support and irritation of the middle urethra and the formation of connective tissue beneath it, which in case of sneezing and coughing counteracts the abrupt increase of the intravesical pressure.

Keywords: stress incontinence, TVT-O, TVT-R, TVT-Ophira (Promedon), polypropylene midurethral slings.

JEL Codes: I12, I19

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TVT-OPHIRA IN TREATMENT OF STRESS INCONTINENCE IN WOMEN

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Abstract:

Objective: To evaluate the results of the treatment of patients suffering from stress incontinence using Ophira Suburethral Mini Sling.

Method: TVT-Ophira was administered to 25 patients in UMHAT-Rousse and UMHAT "Deva Maria" - Bourgas from 2010 to 2017. To all patients was performed Cough stress test. In the presence of complaints of urinary urgency, nicturia, and episodes of urge incontinence, a combined urodynamic examination is performed.

Results: After the application of the modified method - Ophira (Promedon), there is decline of the groin area pain indications on the first day after surgery. The average operating time is 15 ± 4 minutes and an average blood loss of 20 ± 10 ml. In all cases antibiotic prophylaxis was administered in the early postoperative period.

Conclusion: The use of TVT-Ophira (Promedon) is an effective minimally invasive procedure for the treatment of stress incontinence that can be performed in outpatient settings. Possible complications are considerably less than standard sling techniques.

Keywords: stress incontinence, TVT-Ophira (Promedon), mini-invasive subcutaneous sling.

JEL Codes: I12, I19

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**THE MOTIVATION FOR CHOOSING A PROFESSION "NURSE"
AND "MIDWIFE"**

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Abstract: Motivation is a complex socio-psychological phenomenon with its own individual character. It is an internal process that activates, guides and maintains the behavior (Andonova, 2013). Every individual is unique and has a different combination of values, motives, personality and social skills (Borisov, 2009). The motivation to choose a profession of nurse and midwife is related to inner conviction and the desire to help others, which is related to quality of care (Vassileva, 2014). The motivation for work and professional satisfaction directly affect the quality and efficiency of hospital activity (Atanassov, 2014). Veleva determines motivation as a driver of human behavior, which determines its direction, strength and duration (Veleva N. et al., 2009). The purpose of this study is to analyze the motivation of the students in the "Nursing" and "Midwife" specialties for choosing the future profession. An anonymous study was conducted among 40 students- first and second year of study. 42.5% of the respondents defined the profession as a personal choice and willingness to help, job security - 15%, the possibility of practicing the profession abroad- 5%. About 67 percent of the organization's training gives them confidence about good professional training and development. 52.5% of the students have already established **REFERENCES** for future workplace. A significant proportion of respondents are convinced that they have made the right career choice. Nearly all students are aware of the responsibility and nature of the chosen profession. Almost half of the students are willing to continue their education in the higher education degree.

Keywords: motivation, choice, profession, perspectives

JEL Codes: I 1, I 18

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PATIENTS' ASSESMENT OF NURSE STUDENTS ACTIVITIES FROM THE DEPARTMENT OF HEALTH CARE AT THE SOUTH-WEST UNIVERSITY "NEOFIT RILSKI" - BLAGOEVGRAD

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Abstract: *The issue of quality of care being made by health care professionals is becoming more and more popular. A number of studies in Bulgarian hospitals analyze the attitude of patients towards health care efforts. Some of them prove that the quality of nursing is related to patient satisfaction. The relationship between nurses and patients are based on the patient's needs, support and practical advice. The aim of this study is to investigate the attitude of patients in hospitals to students of Nursing specialty. The study was conducted among 30 patients during practical training in the hospitals - clinical bases. The patients generally show a positive attitude towards students who are willing to become nurses. Most of them believe that they have an effective and sufficient communication and as well as building a relationship of trust and respect, they also appreciate the quality of health care efforts. Respondents have a positive assessment the student's desire to acquire new knowledge, skills and competencies that could build them like professionals.*

Keywords: *students, nurses, patients, attitude, health care*

JEL Codes: *I 1, I 12*

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ANALYSIS OF HEALTH CARE DURING CLINICAL LABORATORY TESTS

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Abstract: *Clinical Laboratory is an independent medical specialty and a scientific discipline, which provides the necessary information for early diagnostics, control of the dynamics of the pathological process, the effects of the treatment, prevention and evaluating the degree of recovery of health and ability to work through quantitative and qualitative methods of examination.*

The specifics of the midwifery profession, connected to a direct work with the patient demands the development and perfecting of specific professional competences in the students. Their defining is subordinated to the aims and tasks of the education, the unified government requirements for the midwife specialty, the education plans and programmes of the university and to the Ordinance of professional activities that can be performed independently or by assignment.

The midwife and nurse professions require knowledge, skills and competences regarding the preparation and retrieving the material for clinical laboratory test, transferring the material and interpretation of the results and building medical teamwork in the process of prevention and treatment within healthcare.

Laboratory information gives healthcare specialists the opportunity to build an adequate algorithm of healthcare. Reading of the results and providing of accurate, reliable and timely information from the laboratory test are strongly connected to the opportunity to change the management of patient's healthcare.

Clinical laboratory services directly influence the many aspects of healthcare, including the economical and sustainable factors during a hospital stay and funds assimilation.

Nurse and midwife students acquire and solidify their skills during training hours, Clinical practice and the internship. These higher medical school specific organizational forms of education are conducted in real environment, within the structures of healthcare and provide for a unique opportunity for the students to directly witness and also participate in the treatment process. Under professors and certified midwives' guidance students master skills to the degree of automatization, which is highly necessary in the context of emergencies in future professional activities.

An original research is conducted by professors, leading Clinical practice in the Faculty of Public Health and Health Care, Department of Health Care, professional specialty Midwife, Ruse University "Angel Kanchev". The research is conducted within a group of 4th year students, specializing midwifery as a bachelor degree during their internship in the school year 2016 – 2017. A targeted observation has been carried out by the professors on the clinical bases of Ruse University Hospital, Obstetrics – Gynaecology ward /Pathological pregnancy and Labour departments/, monitoring the students' knowledge, skills and competences retrieving material for a clinical laboratory tests, reading the results and organizing midwife medical care. Analysis by three criteria has been performed: communicational skills, working by the necessary clinical algorithm for preparation and retrieving material for clinical laboratory test and clinical thinking towards aspects of the professional midwife's activity.

A conclusion has been drawn pointing that the internship helps student midwives develop their knowledge regarding clinical laboratory activities and build the necessary qualities for a future professional realization.

The authors share the consensus that diagnostic reliability of the results from clinical laboratory tests depends to a great extent on the preliminary preparation for tests (for both patient and midwife), on the correct algorithm for retrieving the specific tested material, on the quality of education in higher medical schools, building the essential knowledge, skills and competences in students.

Keywords: clinical laboratory tests, healthcare, student midwife, competence, skills, knowledge

JEL Codes: I 23

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NURSE LIKE A PART OF MULTIFUNCTIONAL TEAM TAKING CARE OF PATIENTS WITH MULTIPLE SCLEROSIS

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Abstract: Multiple sclerosis (MS) is a demyelinating disease. This damage disrupts the ability of parts of the nervous system to communicate, resulting in a range of signs and symptoms, including physical and mental problems. Symptoms can include blindness in one eye, muscle weakness, decreased muscle tone, abnormal sensation, or trouble with coordination. The nurse is a part of multifunctional team taking care of patients with multiple sclerosis. Emotional support, prevention of complications, skin care and pain control are part of the tasks the team has to deal with.

Keywords: Multiple sclerosis, disease, demyelinating disease, nurse, multifunctional team.

JEL Codes: I1-I19

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CHRONOMETRATION OF HEALTH CARE SPECIALISTS IN DEPARTMENT NEUROSURGERY OF UMBAL-RUSE AD

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Abstract: Healthcare management increases the quality of nurse cares and it increases the patient satisfaction. The success of every change depends on the ability to provide positive attitude and direct involvement of human. It's a very important fact that in many countries with developed health systems there is an obvious increase in the interest in the efficiency and effectiveness of medical care. Time management is a unique process with specific traits and peculiarities. The chronometric methodology for determining the necessity of personnel allows optimal and rational use of human resources and it gives an objective assessment of its workload.

Keywords: employment, timing, healthcare professionals

JEL Codes: I1-I19

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QUALITY OF LIFE IN PATIENTS FOR HEMODIALYSIS

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Abstract: The term quality of life is used to assess the overall well-being of individuals or entire societies. In recent years there has been an increasing interest in assessing the quality of life. Chronic illnesses affect the patients' psyche and have an impact on their quality of life. Renal failure is one of the most frequent chronic diseases causing disability or a lasting and significant decrease in quality of life. Patients with chronic renal disease on hemodialysis also change their rhythm of life, which is already subordinated to the three times a week procedure, and their whole lives are planned and lived according to dialysis time. To improve the quality of life in hemodialysis patients, the program "Living with hemodialysis" is approved. Implementation of the program increases patient awareness of the required diet care for vascular access and ways to increase social activity. The emphasis is on the need to change their lifestyle and strictly respecting the diet, which will improve the quality of life.

Keywords: quality of life, patients, hemodialysis

JEL Codes: I1, I18

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THE SOCIAL INFLUENCE OF THE SIGNIFICANT OTHERS ON THE RISK BEHAVIOR OF YOUNG PEOPLE USING ALCOHOL ON A REGULAR BASIS

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Abstract: *The present study's aim is to analyze some social influences of the relationship among the closest ones as possible factors determining the grouping of risk behaviors in adolescents tied to regular alcohol use, associated with Tabaco use as well as use of drugs and risky sexual behavior.*

The survey was conducted from February to March 2017. A forward group survey was made among students aged 15-19 on the territory of Bulgaria, covering 301 pupils, equally distributed by gender - 150 boys and 151 girls. As 57 respondents identifying themselves as regular alcohol users and 94 as abstainers. The remaining 150 of the questioned students define themselves as being occasional drinkers.

A questionnaire was used in the survey for the research of psychosocial determinants concerning risk behaviors in adolescence, which included questions about self-assessment of risk behaviors and assessment of risk behaviors of the significant others. Differences between regular alcohol use adolescents and non-alcoholic adolescents were analyzed using descriptive statistics and one-way logistic regression analysis.

The result of the present study confirms the tendency for risk behavior in adolescence to occur in groups of risk clusters. In the context of health promotion, the risky grouping phenomenon takes out as a priority to seek out effective approaches to defeating social pro risk influences. It is necessary to optimize the model of preventive interventions with wider effects on the social environment.

Keywords: *risky behavior, significant others, parents, friends, adolescents, alcohol, risk clusters, social environment*

JEL Codes: *J13, I10*

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PROPHYLAXIS OF OVERWEIGHT AND OBESITY IN SCHOOL AGE

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Abstract: *The prevention of overweight and obesity in is one of the top priority tasks for the health of the pupils. This problem gets more and more serious every next year, and grows to catastrophe sizes. This trend is not observed in an isolated way in just our country, but it's also typical in the developed countries around the world. Overweight and obesity in early child age, are a proven precondition for cardiovascular diseases, endocrine diseases, gastro-esophageal reflux disease, heavy pressure on the joints, and low self-confidence in the future. The researched international experience and good practices of fighting overweight can be successfully applied in our country by engaging all sides, concerning the formation of a healthy lifestyle in children.*

Keywords: *overweight, obesity, school age, prevention, international experience*

JEL Codes: *I1, I12*

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PROCEEDINGS ON A TRADER'S STABILISATION – ESSENCE AND OPPORTUNITIES FOR DEVELOPMENT

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Abstract: *The report reviews the legal regime of proceedings on stabilization as a mechanism of preservation and recovery of the insolvency of a trader suffering financial difficulties. The objective of the report is to present the new legislative model regards the legal regulation of bankruptcy and to formulate legal criteria to be used as a methodological base for assessment of the proceedings efficiency in the contemporary conditions. A comparison has been made, within the study, with the proceedings on enterprise sanitation oriented to the specific features of the stabilization proceedings from a legal point of view. Based on the comparative legal method and normative analysis, a comparison has been made with analogical proceedings in countries with developed markets. The results from the scientific study have been formulated in proposals for improvement of legislation*

Keywords: *bankruptcy, insolvency, enterprise sanitation, stabilization proceedings*

JEL codes: K20

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LEGAL ARGUMENTATION AS PART OF THE CATEGORIES OF THE COMMON THEORY OF LAW

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Abstract: *The present article explores the importance of the legal argumentation as a means of achieving a certain legal outcome. It reveals its specificity and dogmatic character, which justifies its inclusion as part of the problems explored by the general theory of law. It examines the essence of the knowledge, focusing on its practical applicability. It is concluded that, without legal argumentation, prerequisites are created to undermine the fundamental legal principles and the function of the law as a regulator to be violated. The objectives of this report are three: Outlining the importance of the legal argumentation; The justification of the theoretical position in the subject of study of the general theory of law and the identification of the urgent necessity of theoretical research in the field of the legal argumentation.*

Keywords: *legal argumentation, concept for legal argumentation, ontological characteristics, necessity of argumentation.*

JEL Codes:

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EVOLUTION OF THE ANTI-DISCRIMINATION POLICY OF THE EUROPEAN UNION RELATED TO THE CHARACTERISTICS "AGE" AND "DISABILITY"

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Abstract: *The EU policy aimed at counteracting discrimination on the grounds of age and disability is built on a complex conglomerate of legal provisions, both at international, as well as at European and national level. This means that the expression "European law in the area of discrimination" has in fact a wider perimeter, since the very grounds for discrimination, as well as the tools for counteraction in practice, are contained in various sources - international treaties, regulations, directives, decisions and programs for action.*

Keywords: *discrimination, the grounds of age and disability, counteracting*

JEL codes: K32

FRI-2B.313-1-L-04

POSSIBLE CONSTITUTIONAL AMENDMENTS CONCERNING THE MAJORITY FOR VOTING IN THE NATIONAL ASSEMBLY OF THE REPUBLIC OF BULGARIA

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Abstract: *the paper examines the majority requirements in the Constitution of the Republic of Bulgaria concerning the decision making in the National Assembly. Constitutional amendments are suggested for raising the majority for some of Bulgarian Parliament's most important laws and decisions. According to the author the increased majority would make parliamentary acts better motivated and would influence society to respect more the acts of the national representative authority.*

Keywords: *National Assembly of the Republic of Bulgaria, majority, constitutional amendments, voting in Parliament*

JEL code: D72

FRI-2B.313-1-L-05

THE CITY COUNCIL AS AUTHORITY FOR MANAGING THE WATER SUPPLY AND SEWERAGE SYSTEMS

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Abstract: According to the Water Act, the City council manages the water supply and sewerage systems when the territorial unit is on the territory of only one municipality. In that case, the City councils act as administrative authority. The powers of the City councils are connected with defining the water and sewerage operator, taking decisions on signing contracts with the operator for providing the water supply and sewerage services and maintaining the system, elaborating and adopting a regional plan for water supply and sewerage systems, etc. The report reviews the powers and the procedure upon which the City councils work as authority for managing the water supply and sewerage systems in the Municipalities.

Keywords: Water Act, City Council, water supply and sewerage systems, municipality

FRI-2B.313-1-L-06

CENTER OF MAIN INTERESTS – MEANING AND INTERPRETATION

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Abstract: The aim of this paper is to analyze and clarify the meaning of the term “Centre of main interests” as the criterion for determining the international jurisdiction and applicable law to cases of cross-border insolvency when applying the EU Regulation 2015/848. The analysis focuses on the judgements, given by the European court of Justice, which clarify to a certain aspect the definition of the term. The importance of a clear understanding of the term is shown. Also examples of rebuttal of the presumption, regarding the center of main interests, are given.

Keywords: center of main interests, definition, criteria.

JEL Codes: L10, L11

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FRI-2B.313-1-L-07

ABOUT THE ESSENCE OF THE CLAIM ESTABLISHED IN ART.30 OF THE FAMILY CODE

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Abstract: *The article examines the essence of the claim established in art. 30 of the Bulgarian Family Code, for part of the value of the other spouse's takings. The two views expressed in the theory are considered – for the claim as a condemnation and for the constitutive essence of the claim. It is argued that the claim is condemnation in all cases, and in its favor of this opinion are expressed various arguments - teleological, historical, comparative, etc.*

Keywords: *claim for part of the value of the other spouse's takings; spouse's takings.*

JEL Code: K36

FRI-K1-1-QHE

FRI-K1-1-QHE-01

NEW EDUCATIONAL PLATFORMS IN HIGHER EDUCATION

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Abstract: *Higher education is a conservative system. At the same time, it is constantly evolving. The principle is "Student centered education".*

New platforms for higher education are specified in the work:

The process of updating the training documentation.

The "Teaching Technology" section of the curricula.

Practical training - a mandatory component of curricula.

Joint educational programs between higher education institutions in the country and abroad.

Coordination of quality education systems between higher education institutions in the country and abroad.

Active survey to evaluate educational activities.

Publishing activity of the higher schools.

On these platforms and their elements an increase in the quality of higher education is achieved.

Keywords: *Platform; Higher Education; System; Curricula; Quality Education Systems; Publishing activity.*

JEL Codes: *L10, L11*

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GENERALIZED METHODOLOGICAL MODEL OF THE QUALITY OF HIGHER EDUCATION

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Abstract: *Light is life - a human necessity a priori. Light is a specific matter that is emitted from natural and artificial light sources. Lighting forms the organized light that is emitted or reflected by objects in order to realize different lighting tasks. Light (non-organized visible energy) and light (organized visible energy) form the so-called lighting environment. The harmonious lighting environment is a factor directly affecting quality of life, working conditions and productivity. Organized light is a matter of safety and health issues and has a great influence over the cultural development of society. This report represents a generalized methodological model of quality in the higher education, lighting design educational programme in particular.*

Keywords: *Systemology, Methodology, Quality, SATI+, Gestalicht, Synergy Bridges, Culture of Lighting, Lighting Organization, Aesthetics, Creativity, Expert Assessments, Good Practices, Higher Education, Standards, Philosophy.*

JEL Codes: *L10, L11*

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FRI-K1-1-QHE-03

STATE OF HUMAN CAPITAL FORMAT IN THE FIELD OF HIGHER EDUCATION IN BULGARIA

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Abstract: *In the world, education becomes the generator through which economies are developing intensively. The priority of education in the state policy predetermines its long-term development. Bulgaria is a country with a successful education system in the recent past and an inefficient one in the present. Despite the existence of a number of reforms, the adoption of new normative, strategic and methodological changes, the human capital formed in the field of higher education remains unrelated to the contemporary requirements. Curriculum is based on non-functional knowledge, assessment methodology does not encourage critical thinking, and investment in science centers is too limited to generate scientific knowledge and achievements relevant to the contemporary environment. Formed human capital does not meet the modern needs of the economy.*

Keywords: *condition, formation, high education, human capital, problems*

JEL Codes: *I21, I22, I23, I24*

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FRI-K1-1-QHE-04

REGIONAL IMPACT OF THE UNIVERSITY OF RUSE, BULGARIA – NATIONAL AND INTERNATIONAL DIMENSIONS

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Abstract: *As a result of the globalization, fast development of the information and communication technologies and focusing on the economy of knowledge a continuing increase of the role and social responsibility of the universities can be observed. This is valid not only for the creation of the social capital and entrepreneurship in universities' regions on national level but also for the intensification of the societal development in international scope. In parallel with their efforts for the sustainable affirmation of the traditions and quality of education, the good universities are sensitive to the needs of the labour market and digital generations and find flexible solutions, compatible with the dynamic of the surrounding environment.*

The current paper presents the innovative experience and achievements of the University of Ruse in its efforts to serve as a driver for the development of its target region within the country through an intensive work with the public administration, businesses and NGOs. Another aspect of the work is the review of the systematic academic actions aimed at the strong international positioning of the University of Ruse in the Bulgarian-Romanian cross-border region and the Danube space. In connection with this the university priorities for educational connectivity, transfer of innovations within trans-national networks as well as for intensification of the partnerships through international educational and research projects are underlined.

Keywords: *Regional impact, Cross-border region, Danube region.*

JEL Codes: *Z18*

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FRI-K1-1-QHE-05

**IMPROVING THE DEVELOPMENT OF HUMAN RESOURCES
FOR SCIENTIFIC RESEARCH AND INNOVATION
IN THE UNIVERSITY OF RUSE "ANGEL KANCHEV"**

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Abstract: The paper describes a project with contract № BG05M2OP001-2.009-0011-C01, "Supporting the development of human resources for scientific research and innovation in the University of Ruse "Angel Kanchev". The project is funded with support from the Operational Program "Science and Education for Smart Growth", 2014-2020, financed by the European Social Fund of the European Union. The specific targets of the project are the main tasks focused on students, PhD, post-doctoral students and lecturer's professional and scientific development. Identified needs of these scientific groups are described in different project activities such as increasing the level of qualification of the lecturers by attending specialized courses, implementations of students' mobilities in foreign companies and universities conducting in depth research and development, material support and conferences attending for PhD, post-doctoral students and young scientists.

Keywords: lecturers, PhD, post-doctoral students, young scientist, professional and scientific development.

JEL Codes: Z18

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FRI-K1-1-QHE-06

THE NEW SYSTEM OF CRITERIA OF THE NEAA – A STEP FOR IMPROVING THE QUALITY OF EDUCATION

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Abstract: *The paper presents the challenges arising from the new criteria for accreditation of the National Evaluation and Accreditation Agency /NEAA/ of the Republic of Bulgaria and their direct and indirect influence on the improvement the quality of higher education. Very briefly is discussed the European standard ESG /Standards and Guidelines for Quality Assurance in the European Higher Education Area/ as a document which lays the foundations for the formulation of the new system of criteria in the light of the main guidelines for improving the quality of higher education both in Europe, and in Bulgaria. Presented is the relationship between this standard and the new criteria for assessment and accreditation of the NEAA. Along with each of the criteria are listed some urgent measures which have to be taken in order to respond to the new reality.*

Keywords: Accreditation criteria, quality of higher education, European standard ESG.

JEL Codes: I23

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FRI-K1-1-QHE-07

STANDARDIZATION OF MANAGEMENT SYSTEMS IN EDUCATION

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***Abstract:** The paper reviews international standards and guidelines, which can improve the quality of education. The focus is on the impact that the standard ISO/DIS 21001 and the agreement IWA 2 could have on the quality management system in higher education. The purpose of the paper is to establish a reference for improving the internal system for assessment and maintenance of the quality of education and of the academic staff at the University of Ruse ‘Angel Kanchev’.*

***Keywords:** international standards, excellence models, higher education, ISO 21001, IWA 2.*

***JEL Codes:** I23*

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FRI-K1-1-QHE-08

NATIONAL ACADEMIC LEADERSHIPS' OPINION IN THE CONTEXT OF THE ESG

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Abstract: *The opinion of National Academic Leaderships (28 Rectors) in the context of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) is an element of the quality system of the National Evaluation and Accreditation Agency (NEAA).*

The methodology of the study was exposed in a specialized quality procedure.

The study was conducted on a questionnaire with 12 questions in four sections: General Information; NEAA Criteria for Assessment and Accreditation in accordance with ESG; NEAA Criteria with ESG in the Legislative and Higher Education Development; Methodological activity related to the application of the NEAA Criteria.

The obtained representative results confirm that the rectors of the higher education institutions in Bulgaria accept the NEAA Criteria for Assessment and Accreditation in accordance with ESG as complying with the requirements for quality assurance in the European Higher Education Area.

Keywords: *Opinion, NEAA, ESG, Accreditation, Criterion System, Quality System, Procedure, Questionnaire List, Higher Education.*

JEL Codes: *L10, L11*

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FRI-K1-1-QHE-09

THE SYNERGY POLICY BETWEEN THE MAIN UNITS IN THE UNIVERSITY OF RUSE

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Abstract: *The management of the University of Ruse conducts a policy of synergic interaction between its main units, resulting in a synergy effect for better education and research. Combining the knowledge and capabilities of engineers, pedagogues, lawyers and economists crosses the borders and builds a shared model of training, provides opportunities for building bridges and new relationships between learners and students. This new paradigm is a model for building a strong academic environment and uniting all the actions of the structural units to achieve competitiveness in the higher education market. The synergy between the faculties of the University of Ruse is arranged as a strategic path, which currently leads the university to the elite of higher schools in Bulgaria.*

Keywords: *synergy between core units; academic structure; synergy effect for better education and research*

JEL Codes: *I20*

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FRI-1.417-2-MEMBT

FRI-1.417-2-MEMBT-01

**INFLUENCE OF THE PHASE TRANSFORMATION RATE OF THE
NICKEL-SULFIDE INCLUSION ON THE STRESS CONCENTRATION
IN TEMPERED GLASS**

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Abstract: *The presence of nickel sulfide inclusions in tempered glass usually results in a sudden rupture caused by the sharp increase in volume of the inclusion in its phase transformation. Despite the actions taken, prevention of such defects in the flat glass production process is impossible for now. They often cause micro cracks and breakage of the glass.*

This work presents a study of the stress-strain state around the inclusion with phase transformation inhomogeneity, the conditions for the cracks formation and the stress concentration around them. The study is conducted by computer simulation using the analogy between temperature and phase expansion. The crack propagation is evaluated by stress intensity. The change in volume during allotropic transformation is modeled using different coefficients of temperature expansion for alpha and beta phases.

Keywords: *Nickel-Sulfide inclusion, Numerical analysis.*

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FRI-1.417-2-MEMBT-02

NUMERICALLY SIMULATING THE IMPACT OF HAIL IN PHOTOVOLTAIC PANEL

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Abstract: A numerical model of a low velocity impact from a hail to the photovoltaic panel is created. The hail stone is modeled with smoothed particle hydrodynamics method. The photovoltaic panels are modeled with finite elements like a laminate structure. The glass is modeled with user defined brittle fracture material model. The cracks patterns and the stress in a silicon cells are obtained for different locations of impact.

Keywords: Photovoltaic panel, Hail stone, Low velocity impact, Finite element method, Smoothed particle hydrodynamics.

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AN EQUIVALENT STRESS CALCULATION OF STRUCTURAL GLASS PLATES MODELED BY TRIANGULAR PLATE FINITE ELEMENTS

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Abstract: *If the physical characteristics of the surface cracks are unknown, characteristic tensile strength of glass for a reference test duration can be evaluated statistically from load testing of nominally identical glass specimens with a reference surface area, a reference test duration and a reference probability of failure. The principal surface stresses on the structural glass plate can be determined by means of FEA but they will generally vary over time and across the surface so they must be transformed into an equivalent equibiaxial stress applied for the same reference stress duration and over the same reference surface. This paper makes contributions to the calculation of the equivalent stress for structural glass plates modeled by triangular plate finite elements.*

Keywords: *structural glass, equivalent stress, finite element method.*

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POSSIBILITIES FOR PRODUCING EQUAL STRENGTH WELDS OF COPPER WIRE BY COLD PRESSURE WELDING

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Abstract: Cold pressure welding is a method in which joint takes place with pressure and appreciable plastic deformation, without external heating of the joined parts. It is one of the most expedient method for welding of malleable metals and alloys.

The paper presents results obtained after welding copper wire with different diameters by cold pressure welding of the front parts. The effect of the working modes on the mechanical characteristics of the welds was determined. We propose optimal working modes which allow production of equal strength welds.

Keywords: cold pressure welding, copper wire, tensile strength.

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EFFECT OF THE PROCESS PARAMETERS ON MECHANICAL PROPERTIES OF TITANIUM ALLOY TI-6AL-4V WELDS

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Abstract: *The fast development of a great number of industry fields impose the use of new construction materials, among which titanium and its alloys are most used. The unique combination of high specific strength, good plasticity and excellent corrosion resistance specifies these materials as extremely suitable for aircraft and space shuttle constructions, chemical industry, machinery constructions and many more.*

In our work we present results showing the effect of the welding thermal cycle on the mechanical properties of vacuum arc-welded joints of titanium alloy Ti-6Al-4V. The geometric dimensions of the weld were determined in different modes of operation. After hardness measurement in the weld and heat-affected zone and tensile testing, results for mechanical properties were obtained.

Keywords: *titanium alloy, welded joints, mechanical properties.*

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MODERN METHODS FOR MEASURING TEMPERATURE, STRESSES AND STRAINS IN THE FIELD OF MICRO- AND NANO- TECHNOLOGIES

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Abstract: *In recent years the stress and strain measurements have been implemented by laser-scanning systems and high-speed cameras monitoring the movements of pre-defined meshes. One of the crucial issues of these methods is the identification of the place of the necking region, that is usually accompanied by heat generation. In order to resolve this problem, specialized cameras enabling image taking in real time for processes such as deformation, heat treatment or model building with 3D printers are needed. In the particular study, the possibility of using a thermal imaging and infrared camera for separating the elastic from plastic zone during deformation and taking account of the sliding lines with the increase of load is demonstrated. This modern approach allows setting the occurrence of the necking region. On the other hand, during the building of the 3D models, the materials used are heated or melted and then they cool down that leads to the appearance of stresses and changes in dimensions thereafter. The stress occurrence is accompanied by residual temperature dissipations that could be registered by high technology thermal imaging cameras.*

Keywords: *3D Print, Model, Heat treatment, Stress and strain deformation, Thermal cameras, 3D models, Temperature dissipations.*

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INVESTIGATION AND METHODS TO REDUCE CURLING IN 3D PRINTING

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Abstract: The paper describes the curling phenomenon and possible causes and effects of it in 3D printing. A coordinate grid method for investigation is used to quantitative measurement and consecutive analysis of the curling in 3D printing. Some measures are suggested to reduce the effect of curling. The results are illustrated on FDM RepRap printer. Further investigation and development of the grid method is also proposed.

Keywords: Rapid Prototyping, Accuracy, Layer Based Technology, Curling.

JEL Codes: L60, L63, L64

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METHODS FOR INVESTIGATING ACCURACY CHARACTERISTICS OF INSTRUMENTS MEASURING PARAMETERS OF MOVING OBJECTS

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Abstract: The paper considers a system model for checking and calibrating measuring instruments operating on moving objects, in particular ships. The system is a stand-simulator based on a six-degree-of-freedom Stewart Platform, which ensures the required sensitivity, maneuverability and accuracy of the motion of the operating platform. Methods for determining and investigating the dynamic accuracy of instruments measuring parameters of moving objects have been developed. In addition, the results obtained upon investigating the accuracy characteristics.

Keywords: Dynamic measurements, dynamic error, stand-simulator, moving objects.

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ANALYSIS OF THE KNOWN SOLUTIONS IN ENGINEERING TO REDUCE THE VIBRATIONS THAT OCCUR WHEN PROCESSING PARTS BY CUTTING

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Abstract: It is known that in the case of mechanical processing of parts of metal-cutting machines it is possible to generate vibrations under certain conditions. Their impact in the cutting area results in a deterioration of the surface quality and a decrease in the cutting edge durability of the tool. The process is often accompanied by a sound effect that degrades working conditions. The publication briefly examines the essence of vibration and their origin. Here are presented the main known methods of combating vibrations in the so-called "the technological system" (machine - tool - device - part). Some of the advantages and disadvantages of known private solutions for reducing the vibrations in the technological system are presented also. Based on the review of available literature sources, there is a lack of publications describing effective methods to reduce the vibration of the material. The main conclusion is that this finding justifies the need to investigate the possibilities to combat vibration of the material and the possible development and implementation of a corresponding technical solution.

Keywords: Metal cutting, vibration.

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How to reduce vibration in metal cutting

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ANALYSIS OF SELECTED CONSTRUCTIVE SOLUTIONS OF 3D TOUCH TRIGGER PROBE ACCORDING TO THE CRITERION OF ACCURACY

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Abstract: In the engineering practice for solving certain control tasks, are used CNC machines, mainly milling machines, have to be used as coordinate - measuring machines. To carry out the measurements, is necessary the so-called 3D touch trigger probe (TTP). In the publication studies of the accuracy of different TTP are presented. Among them, with the simplest construction, low cost and high propensity for manufacturing conditions, are the TTP operating by the kinematic resistance method. It is known that they generate a random and significant systematic error. The magnitude and fluctuation of the systematic error creates difficulties in the measurements on milling machines. The integration of additional sensors in the 3D touch trigger probe reduces the systematic error, but occurs additional bigger requirements to the operating conditions arise. In many cases, these requirements cannot be executed measurements in work zone. Through the study has justified the need for a more appropriate 3D touch trigger probe for measurements in the work zone.

Keywords: Coordinate measuring, 3D trigger touch probe, Accuracy.

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ADAPTED METHOD FOR RTM WITH PARALLEL WORKING MACHINES

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Abstract: This paper discusses some features in modeling robotic technology modules. An adapted model of PTM with parallel structure is presented. With more than 2 machines with different handling times serviced by a robot, waiting service losses accumulate, which affects the overall performance of the PTM.

Keywords: RTM, Probabilistic model, Performance of RTM, Line graph of states, Branched graph of states.

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UNIVERSAL FREQUENCY RELATION FOR DETERMINATION OF YOUNG'S MODULUS USING IMPULSE EXCITATION TECHNIQUE

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Abstract: Impulse excitation is commonly used technique for obtaining natural frequencies of beam vibration and further calculation of Young's modulus of beam material. The analytical relation used for calculation of Young's modulus $E = K \cdot f^2 \cdot T_n$ comes from an approximate solution of the notorious differential equation obtained by Timoshenko for transversal vibration of stubby beams. Coefficient $T_n(h/L, \nu)$ is calculated numerically by Pickett and in common standards approximated polynomes for the first and second natural frequencies are given. On the other side, in series of publications of Chirikov and others, such called "universal relation" for the natural frequencies, is derived. The relation gives an opportunity for brief calculation of all transversal natural frequencies of stubby beams by avoiding complex and hard algorithms of vibration analysis.

In this paper, equations for calculation of Young's modulus of beams with rectangular and circle cross section, based on the universal relation, are given. Differences between standard and universal equations are discussed and some experimental results are shown.

Keywords: stubby beam, Timoshenko beam, Young's modulus, Poisson ratio.

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FORMATION OF THE MENTAL PROCESSES IN CHILDREN WITH SPECIAL EDUCATIONAL NEEDS THROUGH THE GAMES-EXERCISES IN THE ENVIRONMENTAL SITUATIONS

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***Abstract:** The paper reviews the core of the correctionally and pedagogical work with children with developmental deviations, the fundamental paradigm in psychology for the genetic connection of different forms of thinking is realized. At pre-school age, the three main forms of action: visual-acting, visual-imaging, and verbal-logical thinking are closely intertwined (expressed in a spiral sequence of genetic development). The given forms form this unified cognitive process of the real world in which one and the other forms can prevail and, in this connection, in the cognitive process of the picture of the world acquires a specific character. In doing so, we must remember and take into account that thinking develops in the conscious and meaningful purposeful subject matter. The important stage in the development of thinking is related to the mastery of speech in the child. In the course of action, there are incident motives for speech: action-based fixation, reasoning and mind-finding. The verbal summary of one's own activity leads to the emergence and perfecting of a full-fledged image and to the operationalization of it in the mind's mind. It is on this basis that an image- tabature is formed, which becomes much more flexible and dynamic.*

The use of a developed system of pedagogic gameplay for the development of mental activity in children with deviations from the norm of development will allow them to form the relationship, the relationship, among the main components of knowledge: action, speech and image.

***Keywords:** correctionally, pedagogical work, development of thinking, mental activity, children with deviations from the norm*

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DYNAMIC OF REASONS FOR EXECUTION FROM EDUCATIONAL SYSTEM IN PRIMARY LEVEL FOR THE PERIOD 2006–2016 YEAR

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Abstract: *The last decades have been marked by many events, some of them negative in nature and character. Due to inappropriate action or inaction of policies and institutions, a number of social parameters are getting worse and the results are all visible. One of these social parameters of fundamental importance to the quality of life of everyone and to the prosperity of the nation is education in all its degrees and forms. The low degree of literacy or its complete lack is sufficient condition for total social isolation, which damages both the individual and the society. This paper examines the dynamics and growth of dropouts from primary school in percentage and absolute numbers. The causes and factors of dropping out, as well as the extent of their impact, are being explored. Comparability of objective and subjective factors detrimental to the learning process is made.*

Keywords: *Primary education, drop out of school, reasons for dropping out*

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THE COMPLEX UNDERSTANDING OF FEAR AS EMOTION

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Abstract: *The complex understanding of fear as emotion and its manifestation in subjective and objective terms predisposes to the existence of a cause and effect relationship between the processes covering the social aspects of reality and those that are formed at the emotional level.*

Keywords: *fear, emotion, phobia, reality.*

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THE FEAR IN MODERN SPECTACLE

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Abstract: According to the authors of this paper, nowadays sport is a spectacle. Sports like box, wrestling etc. are very popular spectacles but they are unique because they are related with fear. The fear is not only for the observers but for the athletes as well. This paper aims to show some specifics and characteristic for this kind performances. The stress is on the fear.

Keywords: Philosophy of Sports, Box, Fear

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STRUCTURAL ASPECTS OF THE SOCIO- PSYCHOLOGICAL TRAINING

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Abstract: *The report presents the main points in the logical structure of the socio-psychological training. The underlying trends in its historical development have been explored. The concept of the socio-psychological training has been introduced. The basic structural components of the training have been annotated - such as: mutual presentation of the participants and the trainer; sharing expectations and concerns; creating working rules; conducting the actual training; sharing feedback. The idea is that the need for a tightly structured socio-psychological training is directly related to observing the logical development of the group process, so that the envisaged changes can be realized initially and later they can be consolidated in the behavior of the participants.*

Keywords: *socio-psychological training.*

JEL Codes:

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SCHOOL COMMITTEES FOR ANTISOCIAL ACTS - A FORM TO COMBAT AGGRESSION

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Abstract: *Violence can become a lifestyle. In many families, parents regularly show violence against their children or among themselves - they react with bums, mutual insults, insults. This behavior of parents is often a model of behavior for children. There are studies that children of violence and aggression come from similar families.*

Children who regularly harass other children are aggressive not only to their peers. They often take the established order as a challenge and try different ways to break the rules (at school, in public places but also at home) or simply decide that they do not apply to them. This type of behavior can go hand in hand with a bitter, bold and arrogant attitude towards adults as a whole, and in some cases also with aggressive behavior towards them, including teachers and parents.

To this end, under the Anti-Juvenile and Juvenile Delinquency Act, schools are set up in schools for the prevention of juvenile delinquency.

These committees are regulated by the law and play an important role in the prevention of violence and aggression in schools.

Keywords: *Education, Violence ,Behavior.*

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**THE SIGNIFICANCE OF ANTITUBERCULAR TEAMS
FOR PREVENTION OF TUBERCULOSIS**

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Abstract: The prevention of tuberculosis in early child age is of absolute importance. In 2017, the World Health Organization (WHO) accentuates on those children whose disease remains unnoticed, because its symptoms are difficult to be found. The attention focuses on the prevention of tuberculosis in global, national and regional significance. The national program for prevention and control of tuberculosis in the Republic of Bulgaria 2017-2020 determines a number of measures for improving the range of initial immunization with antitubercular vaccine within the National immunization calendar. A retrospective research of the activity of the one and only working antitubercular team in our country, in Specialized hospital for active treatment of pneumo phthiziatric diseases Dr. Dimitar Gramatikov-Russe, shows a well-organized activity and range of children, who are a subject of revaccination to 90-95%.

Keywords: antitubercular team, significance, nurse, testing of Mantu, antitubercular vaccine, prophylaxis

JEL Codes: I1, I12

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ACTIVITIES OF THE NURSING IN CHILDHOOD AND CARE FOR CHILDREN WITH INTEGRATED LEAVE OF THE ORAL AND NECESSITY

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Abstract: Congenital facial anomalies are a heterogeneous group of diseases with different genetic backgrounds and clinical manifestations. The prevalence rate for Western countries is 1: 500-700 newborn babies; 70% of cases of VCSD were isolated and the remaining 30% appeared in the overall picture of various syndromes, chromosomal abnormalities, or in connection with many congenital anomalies of unknown origin. A member of the birth crevice team is the nurse specializing in the care of persons with congenital fissures. Breastfeeding of these children should begin as early as possible and not the first week after the newborn gets used to the teat. The network of specialized nurses and midwives has been created for the benefit of newborn children with facial anomalies and their families. Before starting with assisted meals, a nutrition assessment by a healthcare professional with special knowledge of the mechanisms and eating skills in the presence of a crack is performed. The aim of the study is to achieve better organization and quality in the work of nurses and midwives by the neonatal and pediatric wards providing care for children with VLA achieved by expanding competencies and measured by increasing the number of children in the family by The birth itself. Conclusions. The prevalence of isolated VCTN (91.7%) is prevalent, which allows for normal breastfeeding or assisted feeding as well as for timely surgical correction. Not good coordination between professionals at different levels, which can be overcome by training, expanding competencies and skills of nurses and midwives, better coordination with the nutritionist, and sharing the thesis that home breeding is best for Baby.

Keywords: congenital cleft of the mouth and the palate, newborns, newborn feeding with slit, care for children with slits, nurse

JEL Codes: I1-I19

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THE NEED FOR PREPARING HEALTH CARE FOR PATIENTS OF SEXUALLY TRANSMITTED DISEASES - ACTUALITY OF THE PROBLEM CONNECTED OF SEXUALLY TRANSMITTED DISEASES

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Abstract: Sexually transmitted infections are known as venereal diseases. These diseases are characterized by a variety of clinical symptoms, but the same mechanism of transmitting and spreading the infection - the sexual contact between the partners - is the same. While the concepts of sexual life and sexual orientation are "shameful" for the family unit and school units, early pregnancy and diseases such as AIDS, syphilis, chlamydial infections and others are a potential risk for adolescents at puberty. Purpose: The study aims to determine: the level of contraceptive use among respondents; Preferred contraceptive methods by participants in the study, respondents' response to sexually transmitted diseases.

Keywords: sexually transmitted diseases, sexual life, sexual orientation, mechanism of transmission of sexually transmitted diseases.

JEL Codes: I19, J13

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ORAL MUCOSIT - ANY REACTION BACKGROUND AND CHEMOTHERAPY. TASKS AND ACTIVITIES OF THE MEDICAL NATION

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Abstract: In modern society, malignancies are one of the leading causes of death after cardiovascular and brain diseases. Oral mucositis is inflammation of the oral mucosa, one of the unwanted effects of chemotherapy and radiotherapy for patients with oncological diseases. Clinical signs: erythema to severe ulceration - from mm to 1-2 cm; Pain; Discomfort: difficulty feeding, fluid ingestion and swallowing, enlarged lymph nodes. Objective: To determine the level of awareness of the respondents about the complication of oral mucositis and the quality of their training to prevent and treat the complication. Causes: Respondents have a high level of awareness about the complications resulting from the treatment (chemotherapy and radiotherapy), particularly for the "Oral Mucositis" complication. Good awareness of complications is a criterion for adequately conducted training by the nurse involved in the treatment of cancer patients.

Keywords: oral mucositis, radiotherapy, chemotherapy

JEL Codes: I1-I19

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FRI-2G.104-2-HC-05

ATTITUDES FOR CONTINUING EDUCATION OF HEALTHCARE PROFESSIONALS

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Abstract: The professional development of nurses, midwives and associated health care specialists is tied with support, increase and extension of their theoretical knowledge and practical skills, aiming to provide health care of good quality. The current scientific exploration aims to determine the level of professional qualification, awareness, as well as the health care professionals' from the hospitals in Ruse wish, to take part in the proposed forms of postgraduate training. Dissatisfactory results concerning the participation in different forms of training are being reported, for the majority of people. Unsatisfactory awareness is also observed about the compulsory postgraduate training and the accepted qualification levels.

Keywords: Health professionals, continuing education, awareness, qualification levels

JEL Codes: I 1, I

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https://www.uni-ruse.bg/education/PO/courses/health_care (**Оригинално заглавие:** Русенски университет „Ангел Кънчев“)

Zakon za saslovnata organizatsia na meditsinskite sestri, akusherkite i asotsiiranite meditsinski spetsialisti, obnar. v DV br. 103 ot 27.12.2016g. <http://www.lex.bg/laws/ldoc/-2135504377> (**Оригинално заглавие:** Закон за съсловната организация на медицинските сестри, акушерките и асоциираните медицински специалисти, обнародван в ДВ бр. 103 от 27.12.2016г.)

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ROLE AND PLACE OF THE NURSE IN INVASIVE CARDIOLOGY

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Abstract: Health always it was primary life needed of human. The quality increase in health systems leads to improving the health of the patients. Nurses are people with knowledge, skills and specific professional behavior. What the nurse does is very important and influential onto the quality of the applied medicines. Over the years there is more and more specialized training needed to become a nurse. Already in the last century the nurses have proven their irreplaceable place in the catheterization laboratory

Keywords: Nurses, Invasive cardiology, Nursing activities, Continuing nursing training, Specially trained nurses.

JEL Codes: I1, I18

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FRI-2G.104-2-HC-07

THE DIFFERENT FACES OF DEMENTIA AND THE SPECIFICS OF PATIENT CARE

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Abstract: Dementia studies are becoming increasingly important due to the increase in people's average life expectancy. Morbidity increases significantly with age, doubling every 5 years after the age of 60. At present, 3-6% of the population aged 65-79 and 20-30% of the population aged between 80 and 95 suffers dementia in the world. In Europe over 7 million suffer from a form of dementia. The aim of the study is to monitor changes in the behavior of dementia patients and to identify their specific care needs.

Keywords: dementia, specific care

JEL Codes: I1, I12

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<http://alzheimerbulgaria.org>
www.psihichnozdrave.com

FRI-2G.104-2-HC-08

MOTIVATION AND ATTITUDE OF THE HEALTH CARE PROFESSIONALS TO RESEARCH WORK

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Abstract: With the constantly changing status of health care professionals, new requirements for constant training and acquiring new competences are put, as well as scientific and creative work. The current scientific exploration concerns the research of both the mindsets and attitudes of the nurses, midwives and associated professionals of the town of Ruse toward the research work in the field of health care. A very low scientific activity is being found. The reasons for this low motivation of activity in scientific forums, are searched via this exploration. The difficulties in determining the subjects and fields of scientific explorations are being pinpointed, and also in structuring scientific reports. The received answers for the lack of interest and mindsets for taking part in forums with one's own reports, articles or explorations, are disturbing. The majority of the explored ones, only wish to take part as listeners, despite of the proposed methodical help by the University of Ruse "Angel Kanchev", and also possibilities for taking part in joint research teams by a trainer, a student or a professional.

Keywords: research activity, health care professionals, exploration, motivation, attitudes

JEL Codes: I1, I23

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NAREDBA № 1 от 8.02.2011 г. за професионалните дейности, които медитсиските сестри, акушерките, асоциираните медитсински спетсалисти и здравните асистиенти могат да изваршват по назначение или самостоятелно, Издадена от министара на здравеопазването, обн., ДВ, бр. 15 от 18.02.2011 г., изм. и доп., бр. 50 от 1.07.2011 г. (**Оригинално заглавие:** НАРЕДБА № 1 от 8 февруари 2011 г. за професионалните дейности, които медицинските сестри, акушерките, асоциираните медицински специалисти и здравните асистиенти могат да извършват по назначение или самостоятелно, Издадена от министъра на здравеопазването, обнл ДВ, бр 15 от 18.02.2011 г., изм. и доп., бр. 50 от 1.07.2011 г.)

FRI-2B.313-2-L

FRI-2B.313-2-L-01

**DEVELOPMENT RISK DEFENCE UNDER ARTICLE 7 (E) OF THE
PRODUCT LIABILITY DIRECTIVE¹ – THE INEVITABLE CLASH
OF NEGLIGENCE AND STRICT LIABILITY THEORIES**

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Abstract: Article 7 (e) of the Directive introduces the so-called development risk defence by providing that the producer can be exempted from liability for the damage caused by his defective product if he proves that he did not know and could not have known the existence of the defect at the time when he put the product into circulation. The defence in question implies a breach of duty of care on the producer's part typical for fault-based liability. On the other hand, strict liability by definition does not include fault as its constituent element. Thus, the mere existence of the development risk defence distorts the coherence of the institution of strict liability under the Directive. *De lege ferenda* Bulgaria should take advantage of the possibility under Article 15 § 1 (b) of the Directive by removing it from the Consumer Protection Act or at least limiting its application to certain groups of products.

Keywords: development risk defence, state-of-the-art defence, strict liability, fault-based liability, negligence, Directive 85/374/EEC

JEL Code: K130

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¹ Council Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products

FRI-2B.313-2-L-02

THE INFLUENCE OF THE STATE AS A SUBSIDIE IN THE INDUSTRIAL RELATIONS

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Abstract: Most problems of industrial relations are of a legal and legal nature. The role and functions of the state derive from the legislative, executive and judiciary powers. The main legislative function is to create a legal framework that regulates industrial relations within us. Industrial relations are most commonly defined as interaction between workers; working groups and their organizations on the one hand and the state and employers with their organizations on the other. The scope of industrial relations encompasses all interactions between countries in terms of working conditions, pay and insurance. The claims are, by their very nature, a set of rules, principles, norms, etc. of cooperation for cooperation and negotiation by the government and the workers 'and employers' organizations.

The executive branch applies the law and maintains the necessary administrative structures. In the face of government, executive power is directly involved in industrial relations through participation in various committees

Keywords: industrial relations, the state

JEL Codes: K20, K23

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FRI-2B.313-2-L-03

LEGISLATION, SUBJECT, CONTRACTUAL PARTIES AND CONCLUSION OF DISTANCE CONTRACTS

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Abstract: Civil law relations nowadays, the advancement of technology and the possibilities of logistics that provide faster deliveries make necessary the existence of legislation to protect as broadly as possible the rights of the customers when concluding distance contracts. The main rules of law that regulate these relations can be found in the Customer protection act. The distance contract is defined as a type of a contract concluded as part of an organized distance selling or distance service system, by the exclusive use of one or more means of distance communication up to the conclusion of the contract, including at the time of conclusion of the contract. The contracting parties are the trader and the customer and the legal relation between them is characterized by a number of specific features. The current report discusses the parties, the subject of such contracts and its conclusion.

Keywords: sale, distance, customers, protection

FRI-2B.313-2-L-04

THE PREVENTIONAL MODEL - ANCIENT CASE

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Abstract: This thesis is tied to the process of practical training of the students of the specialty "Social activities" at the Faculty of Medicine at Thracian University. The author makes a brief analysis of the outlined social aspects of the educational cases considered as preventive legal models related to: the educational process for dealing with minors before, during and after the case; Psychological and pedagogical methods and approaches used in cases to deal with cases; The role and functions of child pedagogical rooms and the importance of the local commission under the Anti-Juvenile Delinquency Act in the light of the possibility of diverting this category of children from criminal proceedings.

The aim is to make students aware of the educational process and the imposition of measures, such as prevention models and elements of continuing education with child offenders.

Keywords: prevention, legal, education, law, methods

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FRI-2B.313-2-L-05

STRUCTURE AND FUNCTIONS OF INSTITUTIONS FOR SOCIAL SERVICES

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***Abstract:** In the area of social assistance services the protection of the poorest and risky groups of the population is regulated by different laws and regulations, which set specific framework for the individuals subject to social assistance, the competence of the of the administrative bodies that carry out social assistance activities, the rights of the persons and the conditions to conduct social assistance services. The legal acts and the competences of the institutions in the area of social assistance services are the main topic of the report.*

***Keywords:** social assistance services, institutions, structure, functions.*

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FRI-2B.313-2-L-06

FEATURES IN THE LEGAL REGULATION OF ELECTRONIC SPORTS

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Abstract: *This article examines current problem areas related to legislation governing matters related to copyright electronic sports, in particular video games and sports betting. An analysis of the legislation in Bulgaria are analyzed and best practices in other countries.*

Keywords: *Legal regulation, sports, license gambling.*

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FRI-2B.313-2-L-07

THE PERSON OF THE PERPETRATOR COMMITTING THE CRIME OF HOOLIGANISM ACCORDING TO JUSTICE RECORDS OF PUNISHED CRIME IN BULGARIA

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Abstract: *The problem of hooliganism over the last few years has turned into a tremendous issue for the society. Hooliganism is one of the most common crimes against order and public peace. Violence, aggression, and misbehavior make deeper roots in our society, and a sense of anxiety is created in the citizens as a result of the growing trend of hooliganism. This requires that the person of the perpetrator, who is the perpetrator of this type of criminal act, be investigated. The present work aims at the study of the main types of social characteristics of the perpetrators of hooliganism acts according to crime data in the Republic of Bulgaria.*

Keywords: *Hooliganism, Order and public peace, Violence, Aggression, Republic of Bulgaria.*

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FRI-K1-2-QHE

FRI-K1-2-QHE-01

**METHODOLOGY FOR ESTABLISHING BUDGETARY FORECASTS
BY DEPARTMENTS AND FACULTIES WITH REPORTING THE
QUALITY OF THE USED RESOURCES**

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Abstract: *The quality of the training is inextricably linked to the quality of the human, material or information resources used. The ministry of education methodological guidelines for drafting a budget forecast focus on the learning time criterion, but do not allow complementarities with other criteria. The cost of departments in the previous planned moment is an appropriate criterion for the overall reporting of the quality of the resources used.*

The long-standing traditions of university education and the current public needs have determined the fragmentation of university education covered by the Higher Education Act through higher education, professional fields and majors. Another aspect of the fragmentation of the educational activity is expressed by the differentiation of the bachelor, master and doctoral degrees. Additional fragmentation of the possible combinations in the course of the educational activity results from the conditions for their realization in different structural units of the universities and in different forms - regular, absent or distance.

Keywords: Education, budget, quality, criteria, fragmentation, departments.

JEL Codes: I22

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FRI-K1-2-QHE-02

THE CAREER DEVELOPMENT CENTER – KEY FACTOR FOR THE PROFESSIONAL REALIZATION OF STUDENTS

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Abstract: *The Career Development Center is an important factor for the professional realization of students. Its activity covers several key areas. These include contacting employers, informing students about job vacancies, provided by employers, organizing presentations of companies for the students, providing information about available job vacancies during their course of study, informing students, heads of faculties and departments about events related to the professional orientation of students and many others. The Career Development Center also organizes the conducting of traineeships and internships in professional fields, related to the professional field of the training of students.*

To accomplish these main tasks, the Career Development Center supports web-based databases and software products that enable quick contact, provide information about job vacancies and internships from companies, and allow the dissemination of information between students.

Keywords: *Career Development Center, University-Employer Contact, Web Based Databases.*

JEL Codes: *Z18*

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FRI-K1-2-QHE-03

METHODICAL ASPECTS OF GENERATIONAL DIFFERENCES SURVEY CONCERNING LEARNING PREFERENCES

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Abstract: *Methodical aspects of generation differences survey concerning learning preferences are discussed in the paper. The interest for that topic is provoked by the broadening gap between generation differences and their implication over the learning p***REFERENCES.** *Different generation representatives, e.g. students and their lecturers clash in the academical learning process. These differences affect the learning preferences, thus they need to be explored, in order to be properly addressed. Methodical aspects like general paradigms and survey instruments are examined in current paper.*

Keywords: *Generation differences, learning process*

JEL Codes: *I20, M53*

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FRI-K1-2-QHE-04

HOW TO MAKE A LECTURE MORE INTERESTING FOR STUDENTS OF THE DIGITAL GENERATION

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Abstract: *The futurists predict that the changes in the next 10 years would be bigger than the changes in the last 10 centuries. There will be very big changes in the field of education too. Some educational specialists even speak of a revolution in education. The future will show if these predictions are true. However, it is certain that there will be big changes because the scissors between the education system and the digital generation continue to dissolve. That is why a concept for adaptation of the educational system to the digital generation was developed at the University of Ruse. One of the tasks in this program is to make the traditional face-to-face lectures more interesting for the digital generation. How? By making it multimedial and interactive. Why? Because the information that digital students perceive daily from the Internet is exactly the same. This paper proposes a way, how to make such lectures.*

Keywords: digital generation, lectures, multimedia, interactivity

JEL Codes: I20

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FRI-K1-2-QHE-05

REQUIREMENTS OF EMPLOYERS CONCERNING UNIVERSITY GRADUATES' TRANSFERABLE SKILLS: METHODOLOGY FOR ASSESSMENT

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Abstract: *The paper presents a methodology for research and provides further analysis of some aspects of practical orientation of education provided for students in two of the faculties in University of Ruse. The evaluation focuses on practical aspects in teaching materials, tasks, which students receive and direct connection with practice—companies and institutions, which appear to be potential employers for them in future. As a result some recommendations for improvement of practical orientation of education in both faculties are defined.*

Keywords: education, practical orientation, enquire, university – practice relationships.

JEL Codes: I21, I23, J24

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FRI-K1-2-QHE-06

ANALYSIS OF PRACTICAL ASPECTS OF EDUCATION IN UNIVERSITY OF RUSE

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Abstract: The paper presents a methodology for research and provides further analysis of some aspects of practical orientation of education provided for students in two of the faculties in University of Ruse. The evaluation focuses on practical aspects in teaching materials, tasks, which students receive and direct connection with practice – companies and institutions, which appear to be potential employers for them in future. As a result some recommendations for improvement of practical orientation of education in both faculties are defined.

Keywords: education, practical orientation, enquire, university – practice relationships.

JEL Codes: I21, I23, J24

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FRI-K1-2-QHE-07

IMPROVING THE PRACTICAL TRAINING OF STUDENTS IN THE FACULTY OF TRANSPORT

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Abstract: *The quality of the practical training of the students is directly related to their realization. One of the main problems indicated by employers, related to recruiting students to work, is their practical training obtained in universities. This article presents information for different ways to improving the practical training of students in the faculty of transport “Angel Kanchev” University of Ruse.*

Keywords: *University of Ruse; Faculty of Transport; Practical Training; Students.*

JEL Codes: *I21*

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FRI-K1-2-QHE-08

EXPANDING THE ACTIVITY OF STUDENTS FROM PROFESSIONAL FIELD "TRANSPORT, SHIPPING AND AVIATION" THROUGH INNOVATIVE FORMS OF SELF-PREPARATION

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Abstract: In the publication is reviewed the education of students from professional field "Transport, Shipping and Aviation" and are presented the applied innovative forms for self-preparation such as course works, course assignments, referrals, project work, participation in clubs, etc.

Keywords: transport, self-preparation for study, innovative forms of education

JEL Codes: J21

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FRI-K1-2-QHE-09

LIGHTING TECHNOLOGY AND SYSTEM LIGHTING DESIGN IN INDUSTRY 4.0 AND INTERNET OF THINGS

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Abstract: *Lighting technology and lighting design are entering the fourth industrial revolution. They are in a continuous dynamic process of conceptual development in Industry 4.0 and in integration with the Internet of Things (IoT). The report represents the development and content of the contemporary lighting technology. There also have been represented specific technological levels and approaches in support to the system lighting design, incl. perspectives of LED lighting and lighting organization solutions in smart cities. The quality of lighting design and higher education are also an essential part of the successful implementation of Industry 4.0 and the Internet of Things (IoT).*

Keywords: *Lighting technology, System Lighting Design, Industry 4.0, Internet of Things (IoT), Quality of Higher Education.*

JEL Codes: *L10, L11*

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SAT-2B.313-1-L

SAT-2B.313-1-L-01

LEGAL TRENDS IN THE MODEL OF CHILDREN JUSTICE

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Abstract: *European integration, especially in the rule of law, increases the possibilities for protecting citizens' rights. One of the main social problems after the accession of Bulgaria to the European Union is the development of mechanisms for the implementation of child protection in the performance of status violations. There is a tendency for legislative alteration related to the closure of the remedial boarding schools and the socio-pedagogic boarding schools, the establishment of specialized children's courts, the provision of a fair trial for children, affordable and high-quality legal assistance for children, the development of new services and measures alternative to freedom deprivation.*

Keywords: *children justice, rights of children*

JEL codes: *K14*

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SAT-2B.313-1-L-02

HISTORICAL APPROACH TO ADMINISTRATIVE LAW

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Abstract: *The paper aims at defining historical method as an approach in administrative law science, and to apply it to some central institutions of that branch. The author defends the idea that research on state government and administration need to depict the form of the state and the structure of the public administration at the same time. On that basis, conclusions may be drawn that administrative law and some of its institutions are rather old and have been developed together with the stage of development of the polity and society of a state.*

Keywords: *Administrative law, history, legal methodology, public administration*

JEL Codes: *Y20, K39*

SAT-2B.313-1-L-03

COLLECTIVE AGREEMENT AND COLLECTIVE AGREEMENT IN SUPPLEMENTARY VOLUNTARY SOCIAL SECURITY

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Abstract: *The subject of scientific research is the legal effect and legal significance of the collective agreement and the collective agreement in carrying out the additional voluntary social insurance in Bulgaria. Based on a doctrinal analysis of the current positive legal framework, de lege ferenda proposals have been made for its further improvement.*

Keywords: *collective bargaining, collective agreement, social security, social security, de lege ferenda proposals*

JEL codes: *K31, K22*

SAT-2B.313-1-L-04

LEGAL PROTECTION OF TAXPAYERS IN THE LIGHT OF ADMINISTRATIVE COOPERATION IN TAX MATTERS BETWEEN EU MEMBER STATES

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***Abstract:** The paper analyses the issue of the balance between safeguarding taxpayers' rights and safeguarding the financial interests of European Union's member states in the field of mutual administrative cooperation between their tax authorities. In this regard, it includes a review of eventual violations of taxpayers' rights and the protection foreseen according to the European Union's law and the applicable multilateral legal instruments.*

***Keywords:** rights, taxpayers, legal protection, tax authorities, administrative cooperation, European Union*

SAT-2B.313-1-L-05

THE AGREEMENT IN THE ADMINISTRATIVE PROCESS – A BRIEF OVERVIEW OF ADMINISTRATIVE PROCEEDINGS

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***Abstract:** The agreement in Administrative Process can be defined as a new for Bulgarian Law form for resolving problems and disputes of administrative nature. The agreement expresses the consent of the interested parties. An agreement may be concluded both in the proceedings for the issuance of an administrative act and in the procedures for its contestation – administrative or judicial. The brief review of case-law shows that there are already administrative proceedings in contestation of administrative acts in which an agreement has been signed.*

***Keywords:** Agreement, Administrative Act, Administrative Proceedings.*

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SAT-2B.313-1-L-06

THE THESIS OF UNITY OF RIGHTS AND OBLIGATIONS IN CIVIL LEGISLATION AND TYPES OF OBLIGATION IN BULGARIAN PRIVATE LAW

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Abstract: The paper contradicts the traditional theory of Bulgarian private law that, within the bounds of the legal relationship of any subjective law, a legal obligation must be complied with. There are arguments for the existence of both subjective rights, which do not resist conflicting obligations, as well as legal obligations the fulfillment of which is not subject to subjective law. It is proposed to classify the legal obligations of 1) those which are correlated with relative relative rights; denies the existence of (2) counter-obligations contrary to absolute rights, (3) petitive (and in particular non-custodial rights existing in the context of civil relations); 4) non-mandatory obligations (Obliegenheiten); 5) natural obligations - to which it specifically opposes a subjective right of the opposing party, but it can not claim their fulfillment, b. they are not yet due or are time-barred; (6) obligations of bonei fidei arising from good faith, and not by express agreement between the parties or by an express legal rule; 7) obligatio propter rem - obligations of the holder of a limited right in rem against the holder of nuda proprias in connection with the exercise of these rights (Art. 57-58 of the PropertyAct); (8) obligations which at the same time constitute subjective rights governed by the public authority's authority and granted as a right to a person designated by its function (eg a parent) but to exercise it in the interest of another person (the child) - Article 123, paragraph 1 of the Family code and Chapter IX of the Family code.

SAT-2B.313-1-L-07

SUCCESS FEE

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Abstract: Although legislatively introduced in 2004, the resulting lawyer's fee is still not very popular in practice, and is rarely used to determine advocates' remuneration. The essence of this method is that the client does not pay the attorney's remuneration in advance, as is the case under the Bulgarian law, and the fee is paid during and after the winning of the case. The resulting fee is perceived in a contradictory way, which necessitates the analysis of the issues of its origin, legal nature, peculiarities and scope.

Keywords: lawyer, client, fee, success fee, case, winning the case.

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Решение № 33 от 20.03.2017 г. по гр. д. № 491/2016 г. на Районен съд- Тетевен.
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SAT-2B.313-1-L-08

CONTRACTS FOR SERVICES IN SHIPPING

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Abstract: Shipping by sea and river is closely linked to the shipping services provided. The legal framework for agency, ship management, shipping brokerage, towage and pilotage contracts is contained in Chapter IX of the Merchant Shipping Code. The report, by analyzing the rights and obligations of the parties, distinguishes the figures of the ship agent, ship manager, broker and pilot.

Keywords: ship agent, ship management, ship broker, pilot.

Jel Codes: K12

SAT-2B.313-1-L-09

POSSIBILITY OF FOREIGN IDEAL PARTS ACQUISITION IN CASES OF SUCCESSION BY LAW AND BY LEGACY. COMMENTARY OF INTERPRETATIVE DECISION № 1/2012

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Abstract: The acting property legislation admits that the acquiring period has for an object ideal parts of the whole or the limited right that belongs to two or more persons. It is solidly accepted in the theory and the practice that the possessor has to have been dominant of the common property in a legal period of time, removing the possession of the others. The present work is dedicated to the application of art. 69 of Property law presumption in the relations of the co-heirs. A brief commentary of Interpretative decision № 1/2012 is needed, according to which the presumption is automatically refuted in succession by law or by legacy and in this way relevant conclusions shall be made

Keywords: succession by law, legacy

Jel codes: K11

SAT-2B.313-1-L-10

THE RIGHT OF USE AND THE RIGHT TO FUTURE INDUSTRIAL PROPERTY RIGHTS AS A SUBJECT OF SPECIAL PLEDGE

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Abstract: *Bulgarian industrial property special laws contain only reference norms to the basic act who regulates non-possessory pledges. Is it permissible under Bulgarian law to have the property subject to non-possessory pledges? It is necessary to research some of the problems arising in the field of right of use and the right to future industrial property rights as a subject of special pledge.*

Keywords: *industrial property, special pledge, right of use, future industrial property rights*

JEL codes: *O34, D23*

SAT-2B.313-2-L

SAT-2B.313-2-L-01

**CONSTITUTIONAL DIMENSIONS OF RELIGION AS A MAJOR
FEATURE OF ETHNICITY**

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Abstract: Substance of the state is the separate human community that gives its personal content. What is special about the state is that the community has an ethnic character. A second peculiarity of the substance of the state is the staying of the ethno-social community included therein. We consider the substance of the state as a set of human substrates and territory, and in this sense it is the population of the state. Now the Constitution of the Republic of Bulgaria identifies as its initial substance the Bulgarian people. The adjective "Bulgarian" focuses on the ethnical character of the noun "people". The preamble to the Constitution states that we the Bulgarian people ("We, the MPs of the Seventh Grand National Assembly, in our quest to express the will of the Bulgarian people"). From the legal point of view, the characteristics of the ethno-social community are different, but in the Constitution of the Republic of Bulgaria it limits the features of the ethnic group (the Bulgarian people) to three generally accepted and indisputable marks - language, religion and culture. In this report, we will look at religion as the main characteristic of the ethos, as regulated by the provisions of the four Bulgarian constitutions. It is generally accepted in constitutional law that freedom of conscience is a sphere which, by its very nature, does not know any legal sanction. The integration of man into one or another religion depends on an intimate conviction that the state, even if it so requests, would not be able to exert any material influence. The analysis of these texts can not lead us to the conclusion that the right to religion, as well as the rights of thought and belief is an absolute fundamental personal right directly related to the intimate spiritual peace of the human person, and therefore constitutes value from a higher order. This characteristic of the right to religion determines not only the possible powers in exercising it, but also outlines the overall legal regime regulating that sphere. It is essential to reveal the legal content of the right to religion under the current Constitution. Based on Art. 13 of the Constitution of the Republic of Bulgaria, we can infer the following principles related to the legal regulation of religion. The principle of freedom of religion is proclaimed ("Religions are free"). The second principle relates to the separation of the church from the state (Religious institutions are separated from the state). The third principle we can deduce is to prohibit religious communities and institutions from being used to achieve political ends. The fourth principle is the possibility of free exercise of religion: through printing, speech, through the creation of religious communities and associations, their activities within the community and beyond as manifestations in society

Keywords: State, Constitution, Population, Ethnic, Religion.

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SAT-2B.313-2-L-02

LEGAL CHARACTERISTICS OF THE EDUCATIONAL MEASURES CONTAINED IN THE LAW FOR COMBATING ANTISOCIAL DEMEANORS OF MINORS AND JUVENILES

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Abstract: *The educational measures have existed as a legal institute for 60 years. Their application brings up various questions in terms of practical application and enforcement as well as their theoretical clarification. This report reviews some of the most-important problems of the educational measures – kinds of measures, their content, enforcement, and their effectiveness as alternative to the criminal liability, etc.. The problem at hand is extremely relevant, as minors and juveniles delinquents are always object of special attention and the legal framework is about to be updated to conform to the modern social attitudes and tendencies in treating this category of persons.*

Keywords: *educational measures, crime, punishment, minor and juvenile delinquents, prevention.*

SAT-2B.313-2-L-03

SPECIFICS FOR CONDUCTING INTERROGATION OF A CHILD THAT HAS BEEN A VICTIM OF A CRIME

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Abstract: *The exposition looks at questions related to the tactical, procedural and psychological peculiarities when conducting the questioning of children that have been a victim of a crime.*

The article discusses practical aspects concerning the work of investigation authorities, which they need to be familiar with when dealing with minors

Keywords: *questioning, children, victim, crime, peculiarities*

JEL Codes:

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SAT-2B.313-2-L-04

LEGAL PROTECTION OF VIDEOGAMES

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Abstract: Nowadays, the videogame industry is rivaling the size of the motion picture industry and surpassing the music industry in terms of overall revenue. Therefore, the investors in this sector and the videogame developers must be provided with analysis on the applicable legal framework as well as with information on the legal means and ways for protection of their legitimate rights and interests.

This article is an introduction to the issue of the legal protection of videogames. It aims to provide the reader with information about the types of legal protection that videogames can currently enjoy under the effective Bulgarian legislation, including also a Comparative law analysis.

Keywords: Legal protection, Videogames, Copyright, Patent, Utility model (Useful model), Trade secret, Trade mark, Domain name, Intellectual property, Audio-visual work, Computer program, Software;

JEL Codes: Y20, K39

SAT-2B.313-2-L-05

PRESENTATION OF A CLAIM BY A CREDITOR DOMICILED ABROAD IN INSOLVENCY PROCEEDINGS BEFORE A BULGARIAN COURT

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Abstract: Insolvency proceedings are a special action for the satisfaction of creditors' rights. The subject of this report is the peculiarities of making claims from a creditor domiciled abroad. The process of seeking them and specifying the type and amount of their claims is not the same as inviting interested parties to exercise their rights. This does not apply to creditors' claims domiciled abroad. Where a foreign creditor is established, the assignee in bankruptcy is required to seek him / her, notify the open proceedings and clarify her entitlement to a claim, which are equal to those of the others.. The legal framework for lodging a claim by a creditor domiciled abroad has been supplemented by Regulation (EC) 2015/848 of the European Parliament and of the Council of 20 May 2015 on Insolvency Proceedings, in force since 26 June 2017 throughout the European Union.

Keywords: making a claim; a creditor domiciled abroad, insolvency administrator, Invitation to Claim.

SAT-2B.313-2-L-06

THE ROLE OF COURT DURING CONDUCTING TAX CONTROL PROCEDURES ON THE EXAMPLE OF BULGARIAN AND GEORGIAN TAX LEGISLATION

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Abstract: Effective Tax Control is a Guarantor that taxpayers fulfill their obligations in timely and fully way, which is the main basis for the economic stability of the country. Governing bodies have a great power to develop tax control procedure on their own, which will support effective collection of taxes. But at the same time the rights and legal interests of taxpayers should be protected. That's why it is crucial the above mentioned issue to be carefully studied with the help of comparative legal research method, especially the list of procedures which are conducted under the permission of the court. Foreherethat, in the article will be reviewed two of the most important topics of tax control procedures: the first, the role of courts when requiring information/documents about taxpayers from taxpayers themselves and from the third parties, for the establishment taxpayers' real amount of taxable revenues and the second issue will be about emergency field audit, which needs to be conducted according to judge's order. These topics are regulated in different ways in Georgia and in Bulgaria. Thus comparing both of regulations gives us possibility to get clear view about advantages and disadvantages of both systems.

Keywords: tax control procedures, tax legislation

JEL Codes: K34

SAT-2B.313-2-L-07

THE CHALLENGES WHICH THE UNITED EUROPE FACED DURING THE TWO PRESIDENCIES OF CHARLES DE GAULLE 1958-1969

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Abstract: In 1958 the first presidency of Charles De Gaulle marked the beginning of the Fifth Republic of France at the same time the Fifth French Republican Constitution and for his two mandates; he served as President of France until 1968. The end of the 50s and the beginning of the 60s was an intensive period for the ideas and visions of United Europe and in the same time the role of De Gaulle was determinative and impacted the integration process and the future of the continent. The idea of United Europe faces challenges as the French model 'Europe of nation-states', the vision of the national sovereignty and the supranationalism, the empty chair crisis followed by the Luxemburg compromise etc.

SAT-2B.313-2-L-08

LEGAL INTEREST DESCRIPTION IN THE POINT OF INTERESTED PERSON DEFENITION IN THE ADMINISTRATIVE PROCEDURE CODE

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Abstract: *Persons concerned with administrative law are those authorities/bodies and persons in whose legal sphere the appealed administrative act has legal effects. Not all the effects legally challenged by the act create for the legal subjects the right to judicial protection. Such is permitted only when rights and legal interests are infringed and threatened. The presence of infringement or threatening determines the interest of a legal appeal against the administrative act. Thus a question for discussion about the connection between concepts like "legal interest for appeal against an administrative act" and "legal subject concerned according to the Administrative procedure code" is been created.*

Keywords: *Legal interest, interested person, judicial protection, negative legal effects*

SAT-2B.313-2-L-09

LEGAL REGULATION OF LABOR MIGRATION AND LABOR MOBILITY WITHIN THE CIS

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Abstract: *This report presents a task to examine and analyze the basic prerequisites for labor migration and labor mobility of citizens of CIS /Commonwealth of Independent States/ countries. The author will attempt to identify the positions of each of the CIS participants in terms of opportunities and interests and the need for migration in the CIS. The needs of citizens and countries to create favorable conditions within the CIS will be explored and described for both host and job-handing countries. The CIS regulatory framework as well as the principles of labor mobility enshrined in the CIS will be explored.*

Keywords: *Commonwealth of Independent States, labor migration, labor mobility;*

NOVEMBER RESEARCH CONFERENCE IN RAZGRAD

FRI-LCR-KS(R)

FRI-LCR-KS(R)-01

MUSROOM BETA GLUCANS FOR DEVELOPMENT
OF FUNCTIONAL FOOD PRODUCTS

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Abstract: Beta-glucans are structural polysaccharides of fungal cell-wall. Nowadays they are gaining interest due to their multiple functional and bioactive properties. Fortification of ordinary foodstuff with beta-glucans will lead to increase the fiber content of food products and at the same time will enhance their health properties. Beta-glucans can influence activity of immune cells and modulate metabolic dysregulations associated with the metabolic syndrome. In our research it was shown, that beta-glucans can help to weight –control, decrease of cholesterol and glucose levels in blood serum, and support the growth of beneficial Lactobacilli and Bifidobacteria, which are antagonists to pathogenic bacteria in the digestive system.

Development of functional food products containing beta-glucans can be important and prospective in prevention or treatment of disorders associated with immune system disorders, obesity or metabolic syndrome.

Keywords: beta-glucan, functional food, obesity, metabolic syndrome.

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FRI-LCR-KS(R)-02

FUEL ALCOHOL PRODUCTION BASED ON WET CORN MILLING PROCESS



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Abstract: The paper reviews existing technology for production of fuel oil based on corn wet milling process. Corn has traditionally provided all or part of the fermentation substrate for a number of beverage alcohol applications. These usually employ ground whole corn, or “grits”, a high starch fraction resulting from dry milling. Since east, the organism that produces alcohol, is not able to utilize starch directly, the raw material is cooked, and the mash treated with starch digested enzymes. The saccharified product, containing mostly small molecular weight sugars, is then filtered and fermentd with east.

The production of industrial alcohol (ethanol) from ethylene (a petrochemical) was established as the most economical route for many years. However, the increase in fuel prices led to the encouragement of alcohol production from renewable resorsess as a fuel supplement. A number of wet milling operators set up large and efficient alcohol production units and this section of the business continues to expand. The process also provides a convenient outlet for off-quality syrups, spilage and sweet waters too dilute to be worth evaporating..

Keywords: corn, alcohol, fermentation, saccharification, destilation

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POROUS STRUCTURE OF CHARs OBTAINED FROM AGRO-WASTES

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Abstract: Increasing concentrations of agricultural wastes, posing a serious environmental problem, require the development of policies and practices intending the minimization of these wastes and their recycling into value added products. In this regard, the aim of the current research is the valorization of bio-wastes, i.e. rice husks (RH), vine rods (VR), almond shells (AS) and walnut shells (WS), through pyrolysis into bio-chars that may have broad practical application as adsorbents. The porous structure of the chars is assessed using low temperature N₂ adsorption and Surfer apparatus (Thermo Scientific). It has been revealed that RH based char is mesoporous material with SBET and V_{0.95} of 76 m² g⁻¹ and 0.1593 cm³ g⁻¹, respectively. Bio-chars produced from VR, AS and WS are characterized by better developed porous structure represented mainly by micropores (VDR, micro = of 83 – 85%). The calculated SBET and V_{0.95} are respectively in the range of 362 – 463 m² g⁻¹ and 0.1734 – 0.2148 cm³ g⁻¹, maximizing in the case of WS based bio-char.

Keywords: pyrolysis, chars, porous structure, nitrogen adsorption isotherms.

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FRI-LCR-1-CT(R)-02

**FULL ASSIGNMENT OF ^1H AND ^{13}C NMR SPECTRA OF
(9H-FLUOREN-9-YL)-UREA**

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Abstract: The purpose of this paper is to fully assign the ^1H and ^{13}C NMR spectra of (9H-fluoren-9-yl)-urea. The assignment was assisted by data obtained from ^1H - ^1H COSY, DEPT-135, HMQC spectrum and confirmed by HMBC spectrum. The experimental data was compared to data obtained with quantum chemistry. The calculations were performed for two geometrical structures of TMS with the eclipsed one showing closer approximation to the experimental data. Hartree-Fock exchange correlation functional was employed and the 6-311+g(2d,p) basis set. The difference between calculated and experimental ^1H NMR chemical shifts have standard deviation of 0.60 ppm with maximum deviation 0.97 ppm and the difference between calculated and experimental ^{13}C NMR chemical shifts have standard deviation of 6.49 ppm with maximum deviation 11.17 ppm.

Keywords: (9H-fluoren-9-yl)-urea. ^1H NMR spectra. ^{13}C NMR spectra. Quantum chemistry. Gaussian 98

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FRI-LCR-1-CT(R)-03

POWER CONSUMPTION REDUCTION BY MODIFYING THE SHAPE OF MIXING IMPELLERS IN CHEMICAL REACTORS

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Abstract: Referring to the global climate changes caused by the energy production and consumption in all industries, part of the actions to reduce this indiscriminate waste are searching of methods to decrease power consumption in all possible units. One of the significant energy consuming unit in the chemical industry are chemical reactors, because of their mixing and temperature requirements. Therefore, reducing of their power consumption is an important optimization task. In this study was tried to explore the possibility whether the mixing impellers can homogenize reacting fluid with less energy input. The Rushton turbine was selected to be the basis on which the alterations of impeller geometry will be applied to check if this will lead to power saving and at the same time – preserved mixing intensity. Mixing power numbers and flow coefficients were the primary performance characteristics that were monitored during the research. Some significant evidence has been found to support the main aim. All experiments were executed by CFD methodology using RANS equations and k- ϵ turbulence model.

Keywords: mixing, chemical reactors, impeller modifications, energy-saving, CFD.

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OXIDATION KINETICS OF COPPER SLAG

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Abstract: The study presents kinetics of oxidation of copper pyro-metallurgical waste (fayalite), by the TG-DTA analysis method. This is necessary due to the application of a developed method for oxidation of the waste mass, by means of a constructed and developed a suitable laboratory system operating using the "fluidized bed" method, type ProCell System.

For this purpose, oxidation kinetics are investigated with different (relatively high 10 to 40o/min) heating rates and a different amount of synthetic air at 20 to 50 ml/ min. The values of the kinetic parameters, the activation energy and the pre-exponential factor, have been determined based on data DTA and clasical Johnson-Mehl-Avrami-Yerofeev-Kolmogorov (JMAYK) equation. The obtained data can optimize the process of thermal decomposition of the pyrometallurgical copper slag by oxidation in synthetic air.

Keywords: Copper slag, oxidation, kinetics, fayalite, decomposition, Arrhenius parameters.

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POSSIBILITIES FOR TECHNOLOGY TO PRODUCE BIODISEL FROM WASTE OILS

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Abstract: Due to the deepening ecological crisis and the tendency to deplete fossil fuels, attention has to be paid to the utilization of hazardous waste from human activities as alternative sources of fossil fuels.

Waste fats from culinary and food industries are exactly the subject, but their conversion to biodiesel has some peculiarities due to the specificity of their chemical composition compared to vegetable fats.

This paper draws attention to the technological feasibility of biodiesel production from waste oils. It examines the possibilities for transesterification and the integration of different technologies for producing high quality biodiesel in an environmentally friendly way.

Keywords: Biodiesel, waste oils, transesterification, free fatty acids.

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FORMAMIDE-BASED PREBIOTIC CHEMISTRY: ONE-POT SYNTHESIS OF NUCLEOBASES AND AMINO ACIDS

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Abstract: *In scenario framing the origin of life, the generation of precursors in abiotic conditions remains the major initial hurdle. Understanding the formation of biogenic molecules in abiotic conditions is a prerequisite in the origin-of-life studies. Determining the conditions allowing an efficient one-pot synthesis of the largest possible panel of biogenic compounds may shed light on the plausible scenario in which the processes that started life might have occurred. We report experiments describing the syntheses taking place from formamide. The formamide-based synthetic system proved to be particularly robust. Large panels of different compounds were observed – nucleobases (adenine, cytosine, uracil), amino acids (glycine, alanine), hypoxanthine, pterine, purine, urea and urocanic acid. Mechanism of reactions affording nucleic bases and amino acids were simulated by high-level ab initio quantum chemical methods.*

Keywords: *prebiotic chemistry, formamide, amino acids, nucleobases, ab initio*

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INFLUENCE OF WHOLE GRAIN CEREALS ON HEALTH

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Abstract: Today the market offer different types of food produced from whole grain cereals. According to numerous scientific studies, whole grain cereals have positive impact on human health (reducing the risk of cardiovascular diseases, reducing the risk of diabetes, reducing the chances of getting colon cancer). By using the whole grain cereals in the food production, a new type of food, functional food appears. Functional food is food that is consumed in everyday life, ie it is food that, in addition to nutritional values, positively influences one or more important functions of the body, by reducing the risks of certain diseases. Functional food is classified into several groups: unmodified and unprocessed food, enriched products, modified products and improved products. This paper provides a literature review of the impact of integrated cereals and functional foods on human health.

Keywords: whole grain, cereals, functional food.

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DIETARY HABITS OF A PART OF THE POPULATION IN THE REPUBLIC OF MACEDONIA

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Abstract: *The habits for consuming healthy and high-quality foods enable the preservation of health and maintenance of the functionality and vitality of the organism. In order to get a clearer picture of the dietary habits of a part of the population in the Republic of Macedonia, a survey was conducted. The survey was conducted by voluntary electronic surveying of 215 people (44 men and 171 women) aged over 18, from different cities in the Republic of Macedonia, who answered questions related to their daily diet. Based on the results obtained, it can be concluded that most of the respondents have a habit of consuming fruits and vegetables every day. More than half of the respondents consume fish once a week (58.48% of women and 52.27% of men). A small number of those surveyed consume products such as canned food, ready-made dishes, pizzas (1.17% % women and 4.55% men), on a daily basis. Most of the respondents eat sweets and salty snacks twice a week. The percentage of women and men who do not pay attention to the intake of salt and sugar in their body is high. Most respondents consume food twice a day (women 51.46% and men 43.18%), while there is a small percentage of interviewees what eat in between meals. Regarding caloric intake, 47.37% of women and 63.64% of men do not care about calorie intake, although most of the respondents reported that they are familiar with the principles of proper nutrition. From the results obtained, it can be concluded that generally the percentage of people who consume healthy, properly combined foods is low. Therefore, in order to improve the health of the population in our country, the resolution of this big problem that affects the entire population must be encouraged. Promoting the habits of healthy eating and physical activity should be continued in order for such habits to become rules and norms for all people.*

Keywords: *proper nutrition, nutritional habits*

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APPLICATION OF A DOCUMENT CAMERA FOR COLOR MEASUREMENT OF DAIRY PRODUCTS

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Abstract: The report presents the advantages and disadvantages of document cameras in using as a tool for presentations and measurement of features of different objects. The analysis of known literature show that there are a few publications related to measurement of color of dairy products and their surface characteristics. There are no known publications in accessible literature of measurement of color of dairy products by document camera. The use of document camera has advantage that it can measure the color for full object area on the surface of the dairy products. The possibility of objective measurement of color of dairy products is assessed by comparing the results with those obtained by colorimeter. Two color models are used – RGB and HSL. High level of correlation ($R > 0,9$) is obtained for both color models, but the sum of squared errors is higher for the RGB color model for surface characteristics with white brined cheese and yellow cheese. The error rates are low and correlation is high for object areas with mold using both color models. The measurement of color of dairy products by document camera demonstrated to be great potential for rapidly quantifying of their surface color.

Keywords: Color measurement, Document camera, White brined cheese, Yellow cheese.

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BIOCHEMICAL ASPECTS OF WALNUT DAIRY FREE MILK

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Abstract: In the last few years, the population ratio demanding vegetable-based products is growing, either because of the increasing problems related with the intolerances to cow milk or because of changes in the food preferences. As a consequence of new consumer tendencies, food industries are currently producing new, high quality, nutritionally improved products with added value. Vegetable-based “milks” are included in these new products, which are available at any supermarket as an alternative to dairy products, with an increasing consumer acceptance. In this paper as components for obtaining experimental samples of vegetable milk walnuts were used. The technology of walnut milk included following main steps: primary walnut preparation, extraction procedure and homogenization. Standard methods of analysis have been applied for evaluation of walnut milk chemical composition, basic quality properties as well as microstructure and rheological behavior. Study gives a detailed analysis of the fatty acid composition of the product by GC-chromatography; 20 fatty acids were found. The highest content is in the mono- and polyunsaturated fatty acids, namely the linoleic, linolenic and arachidonic acids, which are of great nutritive and biological value. Analysis of walnut milk microstructure showed that dimensions of oil drops in walnut milk are distributed in normal mode, the major part of oil volume is formed by drops with an average diameter of 2.70 microns. These results showed high potential and positive view on walnut milk production, in agreement with the current demand of healthy products.

Keywords: Walnut, dairy free milk, health benefits, perspectives.

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QUALITY OF MILK FOR THE PRODUCTION OF WHITE BRINED CHEESE

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Abstract: The aim of the research was to examine the quality and technological suitability of cow's milk for the production of white brined cheese. To this end, the physico-chemical composition, hygienic correctness and residues in the milk were examined. According to the results of the research, the chemical composition of the milk does not depart from the values stipulated by Macedonian regulations, i.e. the content of proteins, fats, lactose, mineral matter and dry matter in the milk is 3.31%, 4.28%, 4.67%, 0.70% and 12.98%. The average number of somatic cells and bacteria in the milk is 272.556 / ml and 257.667 / ml respectively. No antibiotics were found, and the amount of aflatoxins in the milk is <0.010 µg / kg. After the maturation of 30 days, average values for the following parameters of cheese were determined: moisture 50.01%, dry matter 49.30%, fat in dry matter 48.68%, proteins 24.77% and milk fat 24%. The microbiological quality of the cheese meets the conditions of the regulations relating to the specific requirements of the microbiological criteria for food. Based on the results, it can be ascertained that the milk is of good quality and technologically suitable for processing to white brined cheese.

Keywords: cow's milk, quality, white brined cheese.

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DETERMINATION OF FENBUCONAZOLE IN APPLES (GOLDEN DELICIOUS) FROM DIFFERENT LOCATION

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Abstract: Fenbuconazole is a triazole fungicide that works systemically to prevent the growth of fungi by interrupting their normal growth cycle. Fenbuconazole is used to control powdery mildew, leaf spots and blotches, rusts, smuts, root/stem rots and fruit scab. Fenbuconazole is a systemic fungicide, meaning it is absorbed and translocated throughout the plant. It interferes with fungal sterol production, thereby slowing or stopping fungal growth. Fenbuconazole is primarily used as a preventative fungicide. The aim of our research is to determine the presence of fenbuconazole in apples (Golden Delicious) grown in two different locations. The residues from fenbuconazole in apples were extracted with QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) technique. The fungicide analysis is performed with LC-MC/MS. The concentration of fenbuconazole is analyzed in four development phases of the apples and it is in range from 0.01-0.07 mg/kg. In order to see whether apples are safe for consumption, a comparison of the obtained concentration with the maximum residue limits (MRL) for fenbuconazole was made. The obtained results show that there is a significant difference in the presence and use of fenbuconazole as a protective agent, in the same variety of apples of a different geographical location.

Keywords: fenbuconazole, pesticides, apple, Golden Delicious, maximum residue level (MRL)

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APPLICATION OF DIETARY FIBER IN RAW-SMOKED SAUSAGE TYPE „PETROHAN”

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Abstract: Meat is a highly nutritious and versatile food. Its principal components, besides water, are proteins and fats, with a substantial contribution of vitamins and minerals of a high degree of bioavailability. However, meat and meat products can be tailored into more “healthier” form by adding ingredients considered beneficial for health or by eliminating or reducing components that are considered harmful. Fiber is one of the valuable components that can be incorporated in meat products from health point of view. The paper reviews the addition of oat fiber and wheat fiber to raw-smoked sausage type „Petrohan”, in amounts of 4% and 8%, respectively. The purpose was to research the general composition and texture properties, and sensory evaluation to assess the influence of this dietary fiber on the quality and palatability of raw-smoked sausages. Results showed that the type and amount of dietary fiber introduced did not significantly influence the general composition. However, the addition of wheat fiber and oat fiber significantly hardened the texture of raw-smoked sausages ($p < 0.05$). A greater amount of dietary fiber added implied a harder texture. Results of product assessment showed that, aside from sausages with 8% wheat fiber scoring less than 6 points (on a 9-point scale) in terms of overall acceptability, the other groups of raw-smoked sausages scored over 6 points. Judges preferred the sausage groups with 4% added oat and wheat fiber. This study demonstrates that adding fiber to raw-smoked sausages to increase the amount of dietary fiber is feasible.

Keywords: meat products, raw-smoked sausages, dietary fiber, sensory evaluation

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CHEMICAL COMPOSITION OF AROMATIC PRODUCTS FROM LAUREL LEAVES (*LAURUS NOBILIS* L.)

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Abstract: The content of aromatic compounds in the essential oils obtained by water and steam distillation, concrete and resinoid from laurel leaves (*Laurus nobilis* L.) was determined. The oxygenated monoterpenes were the dominant compounds in the essential oils composition. Aliphatic hydrocarbons and oxygenated monoterpenes were the dominant compounds in the concrete and resinoid composition.

Keywords: Laurel leaves, Essential oils, Concrete, Resinoid, Chemical composition.

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FRI-LB-P-1-BFT(R)-09

FEATURES OF FOREIGN EXPERIENCE OF MIKRO-INSURANCE FOR INSURANCE MARKET IN UKRAINE

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Abstract: The paper investigates the advanced foreign experience of micro-insurance organization. The possibility and advantages of using the experience of micro-insurance in the countries of Europe, Central and South America, Asia for the insurance market of Ukraine are analyzed. The conducted research showed that the current state of micro-insurance development in highly developed countries of the world has many advantages over the development of micro-insurance in Ukraine. Therefore, we consider it necessary to build a Ukrainian model of micro-insurance taking into account the best foreign experience, using highly effective methods of its application and implementation in practice. It has been established that in recent years micro-insurance has been developing at the fastest pace in Central America (Guatemala, Dominican Republic, Mexico) and South America (Peru, Argentina, Chile, Ecuador, Colombia) and Asia (Indonesia, Vietnam, Bangladesh, China, India). The analysis of microinsurance in Ukraine showed a low level of awareness of the population of the country with the benefits of micro-insurance and the need for its use as an insurance protection instrument. It was established that the development of micro-insurance in Ukraine is a promising direction for improving the insurance market.

Keywords: micro-insurance, insurance market, insurance premium, competitiveness.

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SUBSTANTIATION OF THE HEAT TREATMENT MODES OF THE COOKED SAUSAGE IN THE UNIVERSAL SMOKING- COOKING CHAMBER

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Abstract: Heat treatment of sausages is one of the main stages of their complex and long production. The finished product quality, including its microbiological purity, directly depends on the conditions and regimes of its conduct. To ensure the quality sausages production with economical energy resources consumption, it is important to determine the operating modes of the smoking-cooking chambers taking into account the sausages geometric dimensions and the minced meat thermophysical properties.

In the software FlowVision, the problem of conjugate heat exchange was solved, in which the heat transfer by convection (from a heated vapor-air medium to a sausage product) and heat conductivity (in the middle of a loaf) were considered. The process of heat treatment in a smoking-cooking chamber has been studied separately for the roasting and cooking stages (for roasting the temperatures of the vapor-air medium were considered to be 90 ... 110 °C, for cooking they were 75 ... 85 °C).

The temperature values in the center of the sausage product determine the culinary readiness and microbiological purity of the product. For cooked sausage diameter of which is 85 mm it is recommended to keep the temperature of the vapor-air medium at the roasting stage at 100 °C, which provides the required productivity at average energy costs. Cooking is recommended to realize at the maximum of the temperatures which were considered – 85 °C, since a lower temperature significantly increases the duration of the process, since the driving force of the process becomes insignificant.

Keywords: Cooked sausage, Heat treatment, Temperature, Roasting, Cooking.

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INTENSIFICATION OF THE EXTRACTION PROCESS MANUFACTURE OF BITTER TINCTURES

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Abstract: The article substantiates the relevance of the use of extracts of spicy aromatic cheeses in the production of bitter tinctures, such as cardamom, red bitter pepper and ginger. When choosing the type of spicy-aromatic raw material it was guided by its chemical composition, namely high content of vitamin C and phenolic compounds. The disadvantages of traditional technologies are considered and ways of solving these problems are determined with the purpose of intensification of the extraction process. A number of studies have been conducted to determine the kinetics of the extraction process, depending on the type of extractant, the size of the raw material particles, the phase ratio, the duration and temperature of the extraction process. The influence of temperature and mechanical refraction on the speed of passage of the extraction process of spin-aromatic raw materials is considered. The influence of the phase ratio, the type of extractant and the raw material on the process of extracting vitamin C and phenolic compounds from spicy aromatic raw materials was established. Based on the foregoing, recommendations are made regarding the parameters of the extraction process for its intensification, and as a result is obtaining of bitter infusions of high biological value.

Keywords: extraction, aromatic raw materials, bitter tincture, infusion.

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INNOVATIVE METHOD OF WATER TREATMENT IN HYDROPONIC SYSTEM

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Abstract: The paper reviews existing methods of growing crops by hydroponic and shows the necessity to use them in the agriculture as perspective. Great attention was given to the water treatment in such hydroponic systems of different types. The purpose of these studies was to research the influence of the water treatment in recirculation hydroponic system by innovative nonreagent method such as alternating impulses of pressure for changing the pH of the hydroponics. Determination of change of potential of hydrogen of liquid samples of the model systems is carried out with use analogue pH-meter-millivoltmeter pH-150 M with external electrodes. Through researches increases pH of the pure water on 15% have been established, thus the hydrogen potential of the water prepared on technology for recirculating hydroponic system has raised on 15-16,5%. Investigational studies have shown that the method of the alternating impulses of pressure may be suitable for technology of water treatment in recirculation aquaculture-hydroponics system. As a result of research, it was found that the innovative technology of water treatment by alternating impulses of pressure can greatly reduce energy, power and resource consumption, increase efficiency of the growing crops.

Keywords: Hydroponic, Water, Treatment, Alternating impulses of pressure, Growing, Crops.

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FRI-LB-P-1-BFT(R)-13

DEVELOPMENT OF MECHATRONIC MODULES FOR PACKAGING MACHINES ON THE BASIS OF SYNERGETIC INTEGRATION ELEMENTS

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Abstract: A number of local automation tasks in the technological lines of packaging products, the creation of personal packaging, group, attach cardboard strips between layers, installation of more valves or dispensers for packaging, etc. – requires intelligent, productive and adaptive systems move with the functions of robotics. The development of soft robots and new materials to drive is an important way in the development of robotics. In this, work a new design of the Tripod based on the theory of soft robots. This ensures efficient use of resources and materials in the production of food, including operations of packing. Research methods this tripod is based on the theory of plates and shells, the main section of solid mechanics. Possibility of use in the design of the drive control and measuring devices, feedback - allows you to support the values of the specified technological parameters. The analysis and design of process system tripod based on separate functional modules. The authors created and experimentally investigated the model of the parallel mechanism - tripod with drive on bellows pneumatic cylinders. The Tripod control system is based on a new type of programmable relays and closed-loop pressure regulators in the range of 0..10V. To ensure the laws of motion of the base platform, the design decided to use bellows pneumatic cylinders in conjunction with ejectors. The solution described in the work controls the drive with the help of alternating pressure, reduces the disadvantages of the operation of systems with pneumatic cusps, in particular the need for antagonistic kinematic pairs with tension springs.

Keywords: Model, Tripod, Packing, Drive, Bellows, Feedback, Pressure.

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FEATURES OF A ULTRA-FINE GRINDING BY WET METHOD IN BEAD MILLS

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Abstract: *It was conducted an analytical review of the features of ultra-fine grinding in bead mills by wet method. The aim of the study was to reveal unexplored features of ultra-fine grinding processes by wet metod in bead mills with their subsequent study. As a result of the analysis, a relationship was found between mechanical energy and the degree of dispersion by grinding the suspension, the intensity of grinding over time, the temperature rise of the suspension, depending on the degree of dispersion. As a result of the analysis, no relationship was found between the temperature rise of the grinding material and the power, the density of the dispersing suspension and its viscosity. In further studies, special attention should be paid to the relationship between the density of each of the dry bulk components and their wet mixes with energy that is consumed for grinding, the relationship of the degree of grinding to the time that is spent on achieving a given parameter, and what part of the mechanical energy is converted into heat in depending on the grinding time.*

Keywords: *Ultra-Fine Grinding, Relationship, Energy, Time, Temperature, Bead Mills.*

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FRI-LB-P-1-BFT(R)-15

INVESTIGATION OF THE YEAST DOUGH MIXING PROCESS

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Abstract: Nowadays, the baking industry is concerned with improving the quality of bakery products, which can be achieved through the improvement and intensification of individual stages of the baking process, namely the mixing stage. One of the effective methods of accelerating the dough maturation and the quality of bakery products improvement is amplified mechanical process through dough mixing, which allows to influence its structure and physico-chemical parameters.

The process of mixing the yeast dough was studied using precision equipment Farinograph®-AT, the German company Brabender.

There were obtained the mixing process pharinogram and the torque time dependence on the humidity with different speed of rotation. Structural-mechanical properties of yeast dough have been investigated. There have been determined the stamping steps duration and the time required for the dough preparation, depending on the speed rotational and dough humidity.

The conducted studies allowed to establish that the rational mode of working part rotation for yeast dough kneading is the mode with the of 63 rpm.

Keywords: Mixing, Bread, Yeast, Dough.

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THE RESEARCH OF A ONE-STEP AND TWO-STEP EJECTOR WITH A COMPACT AND DISPERSED JET OF LIQUID

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Abstract: *The work of the jet sulphitator ejector of sugar production is analyzed. The tests of a gas-liquid ejector with a compact and dispersed liquid jet in a wide range of changes in geometric characteristics (1.3 ... 11.25) were tested on the test-bench at the laboratory and the range of their optimal values (4 ... 7), which allowed to reach the maximum ejection coefficient, was found experimentally. The ejection coefficient for an ejector with a compact liquid jet is 15 ... 20% lower than for an ejector with a dispersed jet at the same flow rates.*

The design of a new two-stage ejector with improved expendable characteristics is offered, the basic geometric dimensions are justified. An increase of the ejection coefficient without additional energy penalties is experimentally proved. The field of application of the offered design ejector is not limited to food industry and it is recommended to use in those cases where heat-mass transfer processes take place.

Keywords: *liquid-gas ejector, mixing chamber, ejection coefficient, dispersed, compact fluid jet, two-stage ejector.*

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THE FUNCTIONALITY OF INDUSTRIAL CONTROL VALVES IN THE STATION OF DEFECOSATURATION

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Abstract: *The use of automatic industrial control valves allows you to withstand in a given mowed the maintenance of the process that takes place at the defecation station. With the help of the follower drive, the valves support the automatic control circuit: the ratio of diffusion juice to lime milk with milk density correction; the ratio of diffusion juice - the return of the juice I (II) of saturation or suspension of carbonation I (II) juice; first and second carbonation; process of purging from the sand preddefektora, defecator. The technology of control valve choice based on the analysis of static characteristics of the control object where it is shown that the dimension valve for the expenditure equations, and flow characteristics, valve operation is considered separately from the regulatory framework. The flow characteristic of the valve takes into account the change of fluid flow. When operating the process facility was investigate, the results of the automatic control system with the selected valve, in particular, the static characteristic of the control channel. With the help of the experiment examined the behavior of the object with a particular regulatory authority to determine the size of the valve. To assess the applicability of a particular valve size, it is propose to use the integral variability characteristic. Such an assessment is a quantitative assessment of information contained in a deterministic process. The work of control valves allows you to maintain parameters of technological processes and to increase the cleaning effect of the juice and sugar yield, reducing sugar content in the molasses, reduce fuel consumption and milk of lime.*

Keywords: *Valve, Adjustment, Cleaning, Drive, Sugar, Consumption.*

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EFFECT OF INFLUENCE OF *BACILLUS SUBTILIS* TS 01 ON THE GROWTH OF MYCOTOXIGENIC FUNGI

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Abstract: Mycotoxin contamination is now one of the most insidious challenges to food safety. The most prevalent mycotoxigenic fungi belong to the genera *Aspergillus*, *Fusarium*, *Penicillium* and *Alternaria*. In this study the antifungal and antimycotoxigenic capability of *Bacillus subtilis* TS 01 in vitro was evaluated. The results of influence of the bacterium on the growth of some fungi, hyphal morphology and spore germination are demonstrated. *Bacillus subtilis* TS 01 strongly inhibited the growth of the fungi on potato-dextrose agar during a fourteen days after inoculation. A highest average inhibitory percentage - 85,71% was measured by *Alternaria* sp. The effect on growth inhibition was less pronounced by *Aspergillus* species. Malformation of hyphae of fungi as swellings and vacuoles were observed in the presence of *Bacillus subtilis* TS 01. The strain suppressed the conidial germination significantly. Altogether, these results indicate that *Bacillus subtilis* TS 01 could be considered as potential biocontrol agent to combat toxigenic fungal growth and subsequent mycotoxins contamination of agricultural crops in practice.

Keywords: Mycotoxigenic fungi, Mycotoxins, Biological control, *Bacillus subtilis*.

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USING RELATIVE DATA IN FOOD TECHNOLOGY

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Abstract: This work is based on theoretical approaches to the use and handling of tabular (relational) data structures in the field of food technology. The process of creating and processing relational data through the simulation of real processes in the training of students in information technology is considered. The thematic and methodological approach is based on computer skills and learners' knowledge requirements to understand how the relationships in the corresponding data structure allow the search, processing, and output processes to be represented as mathematical dependencies.

The large number of information systems in the field of food technologies using relational data motivate students to be active and interested in learning.

Keywords: Relative data, Food technology, Mathematical dependencies.

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USE OF ESSENTIAL OILS IN DAIRY PRODUCTS 2. ESSENTIAL OIL OF DILL (*ANETHUM GRAVEOLENS*)

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Abstract: Food is important to maintain and protect human health. A lot of traditional products (milk, fruits, vegetables, etc.) contain components with potential health benefits. New ones based on these food are being developed and they increase or join their useful components because of their benefits or desirable physiological effects. Today functional food based on milk takes up two-thirds of the total volume of the functional foods on the market as dairy foods are foods with naturally balanced composition of the essential nutrients such as protein, fats, carbohydrates, minerals, and enzymes.

There are dairy products that were developed with an enriched composition through the addition of linseeds, sesame seeds, oat flakes, honey, and essential oil of dill (*Anethum graveolens*).

The effect of the additives on the process of the acidifying, syneresis, and the development of lactic acid bacteria was researched. It was found that they are good for the lactic acid process. The prepared products have very good organoleptic properties and can be successfully used for the purposes of functional food.

Keywords: dairy products, titratable acidity, syneresis, lactic acid bacteria

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THERMOMECHANICAL CHARACTERISTICS OF HIGH ELASTIC VULCANIZATES USED IN FOOD MACHINERY

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Abstract: *The object of the study in this article is the thermomechanical characteristics of highly elastic materials. On the basis of the analysis of the variation of the location of the individual sections of the curves, the occurrence of transition regions, which determine the temperature range of use of the materials studied in the article, is analyzed. The paper examines the influence of the change of the transition sections on the deformation properties of the highly elastic materials for specific application in the conditions of the food industry.*

Keywords: *thermo-mechanical characteristics, highly elastic materials, experimental research.*

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SAT-LCR-2-BFT(R)-01

PHISICAL CHARACTERISTICS OF FUNCTIONAL BISCUITS

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Abstract: Biscuits are products that are consumed by all age groups. The physical properties of the dough and the type of biscuits depend on the method of biscuit production. During the process of baking, in the biscuits take place processes that cause changes in the dough, which lead to getting a porous, fragile and friable structure of biscuits. It reduces the amount of moisture and changes the color. This paper presents the physical properties (baking loss, volume, diameter, thickness and thickness/diameter ratio) of 16 different types of biscuits, produced by white flour, barley flour, einkorn flour and flaking einkorn in differend ratio. The influence of the used different types of flour has been examined. Statistical processing of results was performed with help of ANOVA, Fisher's LSD-test.

Keywords: Biscuits, Physical characteristics, Functional Food.

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ACTUALITY AND IMPORTANCE OF THE GLUTEN-FREE BAKING GOODS PRODUCTION, CHOICE OF RAW MATERIALS

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Abstract: This paper reviews the actuality and necessity of the production of gluten-free baking goods and the most commonly used raw materials for this production. A description is given of the nature and characteristics of gluten, in order to understand its value and structural role in the production of baked goods. A review of the pathology and epidemiology of the celiac disease shows the importance of this specific production. A review from 2015, collecting and analysing all the articles on the topic in the last 55 confirms that scientists are becoming more conscious about the gluten-free production. An analysis of the basic types of raw materials is done, with a comment of the technological role played by each of the three - primary, secondary and additional. A special attention is paid to the most commonly used primary raw materials such as rice, corn, potato, quinoa, sorghum etc. and their technological and nutritional value. An important point stated is the possible double benefit from the use of some specific flours e.g. chickpea and buckwheat - not only as sensorial, but also as structural agents.

Keywords: Gluten, Celiac disease, Baking goods, Raw materials, Flour..

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SAT–LCR-2-BFT(R)-03

MODELING OF MECHANICAL SYSTEMS BY THE REODYNAMIC METHOD

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Abstract: *There are many natural phenomena, in particular, technological processes that require fundamental researches. The basis of such researches usually are mathematical models based on the same type equations, most of which are differential equations of the second order or their systems. This is due to the possibilities of modern methods of analytical calculations and their visualization capabilities.*

The essence of many equations is the presence of a driving force and resistance forces of a different nature. According to these principles, the majority of mechanical, heat and mass, biological and other processes, and also economic analysis, are modeled. In order to quantify the interaction of mechanical systems with the working elements of technological equipment with the help of differential equations of motion of the second order, a number of mechanical processes were described, in particular, the movement of the knife in the product at cutting, the interaction of the product with the contact surface at the action of the forces of adhesion and friction, the interaction of complex visco-elastic systems with elements of equipment, in particular, transport and packaging systems, and others. The obtained mathematical dependencies allow to determine the displacement, speed and acceleration of the product at the contact with the elements of equipment, and energy indices – the work and the power for different laws of mutual movement.

Keywords: *Modelling, Reodynamic, Movation, Power, Differential, Equation.*

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SAT–LCR-2-BFT(R)-04

INFLUENCE OF PLEUROTUS OSTREATUS PREPARATIONS ON YOGURT CULTURES

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Abstract: The object of our study was polysaccharide preparations, obtained from submerged cultivated *Pleurotus ostreatus* biomass. It was obtained 3 preparations: preparation P1, which was collected after removing from biomass lipids with 80% ethanol repeated; preparation P2, collected after ethanol extraction and extraction in a boiling water bath and then concentrated by evaporation and precipitated with five volumes of 96% ethanol solution; and preparation P3, taken as the solid residue remaining after the ethanol and aqueous extractions. Preparations were added to milk in different concentration before the introduction of yogurt cultures: *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The titrated acidity was analyzed by acid-base titration with sodium hydroxide. Some physical-chemical parameters of obtained dairy products were also evaluated.

Keywords: polysaccharides, *Pleurotus ostreatus*, functional food, *Lactobacillus bulgaricus*, *Streptococcus thermophilus*, yogurt.

SAT–LCR-2-BFT(R)-05

MILK-CLOTTING ACTIVITY OF HIGHER FUNGI *FUNALIA TROGII*

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Abstract: The process of cheese making is known from ancient times. One of the most important point of cheese production is the selection of the milk-clotting enzyme. The taste characteristics and the yield of the finished product will depend on this. When choosing an enzyme, it is necessary to take into account not only its milk-clotting activity, but also the total proteolytic activity. High proteolytic activity can cause bitterness in the cheese and reduce its yield.

Nowadays instead of the traditionally used rennin, enzymes of microbial origin are often used. However, most of them have a high total proteolytic activity. One of the most promising sources of milk-clotting enzymes could be cultures of higher fungi.

The object of the study was the submerged culture of the fungus *Funalia trogii*. It was grown on glucose-peptone medium then the native liquid solution was separated from the biomass by filtration. The ultrafiltration method was used to purify and concentrate the enzyme. In the native solution and ultrafiltrate, the level of milk-clotting and total proteolytic activities, as well as the protein concentration, were determined.

The milk-clotting activity of the enzyme in the ultrafiltrate was 94.19 ± 4.67 U/mg, proteolytic activity was 0.11 ± 0.02 U/mg. The ratio of MCA:PA of milk-clotting enzymes for high-quality cheese producing should exceed 800:1. For the obtained enzyme preparation the ratio of MCA /PA is 823:1. Further comparison with the rennin showed that the milk-clotting enzyme preparation obtained from fungi culture *Funalia trogii* is not inferior to it by the level of enzymatic activity.

Keywords: Milk-clotting, Enzyme, Fungi, Submerged culture.

SAT–LCR-2-BFT(R)-06

COMPOSITION AND SOLUBILITY OF FOULING IN MILK PROCESSING INSTALLATIONS

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Abstract: Fouling in technological equipment for food production is the decomposition of substances of different origins in the process of operation. They are undesirable because they cause a deterioration in the performance of the equipment, lead to the production of poor quality food, increase energy costs, cause damage, and so on. Removal of dirt is an important stage in the operation of the equipment, which is associated with extra costs. In order for this process to be effective, it is necessary to study the composition and structure of the contamination and subsequently solve the problem of their removal. The article provides an overview of literary sources describing the dirt generated by milk processing, the elements of the installations suffering most of them, their structure and composition, the hurricanes influencing the accumulation of dirt, the ways of determining the degree of pollution and the methods used to reduce and eliminate them. The composition of the contamination of specific milk processing equipment has been investigated. The main elements of pollution are identified. An analysis of the possibilities for its effective removal is made. The effect of application of different substances was investigated, leading to the dissolution of the deposited deposits in the technological equipment elements. The results obtained from the study can be used to determine the type and composition of detergents in milk processing equipment and to determine the effective modes of its operation in the washing process.

Keywords: Fouling, Milk, Milk Plants, Milk Stone, Scale, Deposits.

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MUSHROOM POLYSACCHARIDE FOR FORTIFICATION OF DAIRY PRODUCT

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Abstract: In our study we use as functional addition preparation, obtained from submerged cultivated *Pleurotus ostreatus* biomass. Biomass was treated with the 80% ethanol twice. Etanol extraction remove from biomass lipids and low-molecular compounds and improve permeability of mushrooms cell wall. As preparation was taken the solid residue remaining after ethanol extractions, which contained polysaccharides. Preparation was added to milk in different concentration before the introduction of lactic acid cultures. The titrated acidity was analyzed by acid-base titration with sodium hydroxide. The water holding capacity was defined as the ratio of the weight of the fermented bunch to the weight of the total fermented milk product after 24 hours storage from the time of preparation.

Keywords: polysaccharides, *Pleurotus ostreatus*, functional food, dairy product.

SAT-LCR-2-BFT(R)-08

INVESTIGATION OF THE EFFICIENCY OF DECONTAMINATION BY INDIRECT COLD PLASMA OF RAW NUTS

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Abstract: The article examines the possibility for achieving of certain safety degree of food products which are consumed in raw state, as a study has been conducted for the effect of the different processing modes on raw nuts and flakes from einkorn. The experiments are conducted using laboratory equipment providing indirect cold plasma. The results from the study show reduction of the total number of microorganisms by 3 – 4 log units (99,97-99,99% effectiveness) when treating the product (5 g einkorn nuts and 2,5 g einkorn flakes) with 5 ppm ozone concentration and 15s duration of blowing at 0,3m³/h flow. The reduction is sufficient to ensure safe quantity of microorganisms when treating moderately contaminated product.

Keywords: Cold plasma, Non-thermal Dry Decontamination, Einkorn Wheat and Flakes.

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SAT-LB-P-2-CT(R)-01

**SPECIFICS OF FORMATION OF THE COMPOSITION OF NATURAL
WATERS IN STRANDJA MOUNTAIN**

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Abstract: Object of the present study was determination of hydrochemical type of natural waters and pollution from eight water sources in Strandja Mountain. A case study is carried out in this region and the main results show the following: the concentration of dissolved oxygen is from 7.5 to 9.4 mg / dm³ and that is associated with the salt content of the waters and the conditions of formation of their composition. The value of the permanganate oxidation for samples was in the range 1.0-1.8 mgO₂/dm³.

This study could provide a basis for the assessment of the effects of water treatments on ecosystems and environmental exteriority.

Keywords: Ecosystem, Natural water, Strandja Mountain.

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SAT-LB-P-2-CT(R)-02

AQUEOUS SOLUTION PROPERTIES OF DIBLOCK COPOLYMERS OF POLY(ALLYL GLYCIDYL ETHER) AND POLYGLYCIDOL

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Abstract: Preliminary investigation of the aqueous solution properties of a series of diblock copolymers of poly(allylglycidyl ether)-b-polyglycidol bearing a hydrophobic dodecyl residue, fixed molar mass of the block of poly(allylglycidyl ether) of 4900, corresponding to degree of polymerization of 44 and increasing polyglycidol content of 25, 50, and 75 mol %, corresponding to degrees of polymerization of 16, 39, and 98, respectively, was carried out. Upon direct dissolution in water, only the copolymer of the highest polyglycidol content formed stable dispersions. The static and dynamic light scattering parameters of the copolymer aggregates were determined. They were found to slowly change in time indicating formation of non-equilibrium structures.

Keywords: Aqueous solution properties, Diblock copolymers, Light scattering, Poly(allyl glycidyl ether), Polyglycidol.

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SAT-LB-P-2-CT(R)-03

TAUTOMERISM OF INOSINE IN WATER: IS IT POSSIBLE?

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Abstract: Inosine, 9-[(2R,3R,4S,5R)-3,4-dihydroxy-5-(hydroxymethyl)oxolan-2-yl]-3H-purin-6-one is a purine nucleoside that has hypoxanthine linked by the N9 nitrogen to the C1 carbon (β -N₉-glycosidic bond) of ribose. It is an intermediate in the degradation of purines and purine nucleosides to uric acid and in pathways of purine salvage. Inosine is commonly found in tRNAs and is essential for proper translation of the genetic code in wobble base pairs. The water-assisted proton transfer process in inosine was investigated using *ab initio* MP2 and SCS-MP2 quantum chemical approaches. It was found that in the gas phase and in water solution, the most stable tautomer for inosine is the 6-keto followed by the 6-enol form. Available X-ray data suggest that inosine can exist in two conformational forms according to the ribose ring position – *syn*- and *anti*-conformation. The proton transfer for both conformational forms of inosine keto and enol tautomers was considered. Potential energy surfaces of the “bare” finite solute-solvent clusters containing inosine molecule and five water molecules were explored, while within the second approach these clusters were embedded in “bulk” solvent treated as polarizable continuum (C-PCM/SCS-MP2/6-31+G(d,p) level of theory).

The rate constant is sufficiently large to generate the 6-enol tautomer. The analysis of the reaction profiles shows that the proton transfer processes occur through the asynchronous concerted mechanism.

Keywords: tautomerism, *ab initio*, inosine

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HIGH DENSITY POLYETHYLENE COMPOSITES CONTAINING WOOD FLOUR

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Abstract: *The aim of this paper was to investigate of using wood flour as fillers of thermoplastic polymer. Those natural fillers are low-cost, environment – friendly and renewable raw nature. Polymer matrix of high density polyethylene was used to prepare composites with different amounts (1, 3, 5, 10, 20, 30, 40 and 50 mass%) of wood flour filler.*

The results of mechanical properties showed that the tensile strength decreased and the Young's modulus increased with the amount of filling than that the pure PEHD. The MFI decreased with amount of filling.

The samples was analysed with TGA method and the results showed that the composites containing wood flour had a better thermal stability.

Keywords: composite, high density polyethylene, wood flour, tensile strength properties, thermogravimetric analysis.

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THEORETICAL MODEL OF DEVELOPMENT OF CHEMICAL TOXIC ZONE AS A RESULT OF ACCIDENT WITH PROPENE

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Abstract: *The theoretical model of this report is based on data on an incident, which happened on December 10th, 2016 at the Hitrino station, Hitrino village in Shumen district, where a freight train with propane butane and propene directed Burgas-Rousse derailed upon entry into the station, which breaks the integrity of two wagons of the train composition and caused leakage of the transferred highly flammable and explosive substances. After a spark, starts a fire which leads to the loss of seven lives, injures twenty-nine people while destroying the nearest buildings around the station and catastrophic material losses. This incident requires an evacuation of the people from the village over a period of several days as fire fighting and degassing actions take place. The theoretical model is shaped with the help of the hazard modelling program ALOHA within the CAMEO software suite, used to plan prevention and to respond to chemical emergencies. The theoretical model shows the three toxic impact zones resulting from the incident based on the different concentrations of the test gas, coloured in red, orange and yellow, according to their hazard levels, as well as the predicted gas concentration in the vicinity of the incident for the time of one hour after the accident. The presented theoretical model of this incident enables the planning of rapid measures to prevent such events by timely and accurately providing information on the formation of the chemical toxic/contamination zone and providing time for evacuation and rescue operations.*

Keywords: Propylene, fire, accident, toxic zones

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SAT-LB-P-2-CT(R)-06

LOW-TEMPERATURE GLASS-CERAMICS BASED ON SPODUMENE

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Abstract: In this work, the features of obtaining a low-temperature glass-ceramic of β -spodumene composition are investigated. In order to reduce the glass melting temperature, the original composition was chosen in the pseudoternary system $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2$ (the content of B_2O_3 constant is 10 mas %). It corresponded to the stoichiometric spodumene and was in close proximity to the eutectic with a temperature of 1260 °C. The most rational mode of firing experimental glass-ceramics, obtained by the slip-casting method, has been experimentally established. The glass-crystalline material synthesized at 1000 °C is represented by β -spodumen and residual glass phase, which causes a complex of high physical and technical parameters (water absorption of 0.11%, apparent density of 2.01 g/cm³, compressive strength of 100 MPa, the temperature coefficient of linear expansion is 13,2·10⁻⁷deg⁻¹).

Keywords: low-temperature glass-ceramic, firing, spodumene, glass phase, physico-technical indices.

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SAT-LB-P-2-CT(R)-07

EFFECT OF THE COEFFICIENT OF MASS TRANSFER BY RECTIFICATION OF TETRACHLOROMETHANE-TOLUENE MIXTURE

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Abstract: The mass transfer occurring during the rectification in plate columns is not fully studied and has not been described theoretically so far because it takes place under hydrodynamic conditions. To avoid hydrodynamic effects, the experimental studies on the efficiency of the rectification process were carried out with a small diameter laboratory column. The aim of the study was to obtain experimental data on the local efficiency and, respectively, the number of transferred units by the rectification of the model mixture methanol-toluene using a laboratory column with one sieve tray under atmospheric pressure and full reflux.

Keywords: coefficient of mass transfer, rectification.

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SAT-LB-P-2-CT(R)-08

THE EFFICIENCY OF PROTECTIVE ACTIONS OF THE BOROSILICATE COATINGS

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Abstract: To study the protective properties of glasses in the system SiO_2 - K_2O - B_2O_3 in alkali-silicate glass with 20 wt.% K_2O , while maintaining the ratio of SiO_2 and K_2O were injected boron oxide. The effectiveness of the protective action of the coatings was determined by weighing the magnitude of gain (Δg , g/m²) while heating the samples with coating to 1200°C. The high efficiency of protective action have a protective borosilicate coating containing boron oxide and alkali oxide 20-30 and 5-15 wt.% respectively, which is characterized by a minimum gain of 20-22 g/m²

Keywords: Protective coatings, Glass, Heat, Gain, Borosilicates, Alkali oxides.

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SAT-LB-P-2-CT(R)-09

KINETICS OF THERMAL DECOMPOSITION OF $\text{Ce}_2(\text{SeO}_3)_3 \cdot 3\text{H}_2\text{O}$ AND $\text{Nd}_2(\text{SeO}_3)_3 \cdot 5\text{H}_2\text{O}$

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Abstract: By precipitation in aqueous solution the two selenites $\text{Ce}_2(\text{SeO}_3)_3 \cdot 3\text{H}_2\text{O}$ and $\text{Nd}_2(\text{SeO}_3)_3 \cdot 5\text{H}_2\text{O}$ were obtained and characterized with FT-IR spectroscopy and thermal analysis. On the basis of the thermogravimetric curves the kinetics of the dehydration and decomposition of the selenites was studied. Several mathematical models were used to describe the processes as well as eight different calculation methods. The values of the kinetic parameters strongly depend of the kind of $g(\alpha)$ function, whereas the used calculation procedures have not an influence. The decomposition of the anhydrous $\text{Nd}_2(\text{SeO}_3)_3$ at 600°C was shown a small mass loss and a strong exothermic peak which is related to the simultaneous disproportionation of the selenite and its conversion to the selenate, and the reduction of the formed selenate with evolved of oxygen. The kinetic parameters – the values of activation energy, pre-exponential factor in the Arrhenius equation, change of entropy, enthalpy and Gibbs free energy were calculated for the formation of active complex by the reagent.

Keywords: Thermal analysis, Rare-earth selenites, Kinetics, Kinetic parameters

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SAT-LB-P-2-CT(R)-10

INVESTIGATION OF ADSORPTION OF IRON, MANGANESE, AND AMMONIUM IONS FROM NATURAL ZEOLITE – TYPE CLINOPTILOLITE USING ULTRASOUND

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Abstract: A modern and innovative method of purifying contaminated wastewater and drinking water in chemical processes is the use of ultrasound. Adsorption under the influence of acoustic and electromagnetic oscillations of the medium is possible due to the electrical specificity of the zeolite surface. This will allow possibility to study and manage the adsorption of positive cations by natural zeolites. In the present study, the adsorption of several ions - iron, manganese and ammonium ions from natural zeolite, type clinoptilolite has been investigated by applying a 46 kHz ultrasound. As an ultrasonic source, an ultrasonic 500 ml bath with capacity of 50 watts, and a broadcast frequency of 46 kHz was used. A comparison has been made between absorption results both in use and without use of ultrasound. It was observed that the percentage of extraction of iron, manganese and ammonium ions from model solutions by natural zeolite, type of clinoptilolite, is as follows: for the iron ions - 41%, for the manganese ions - 41.3% and for the ammonium ions - 61%.

The percentage of extraction of iron, manganese and ammonium ions from model solutions by natural zeolite, type of clinoptilolite, without ultrasound is as follows: for the iron ions- 65%, for manganese ions -38.6%, and for ammonium ions - 66%. A conclusion has been drawn on the role of ultrasound in extracting the individual ions.

Keywords: Zeolite - clinoptilolite, Wastewater, Absorption, Ultrasound

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SAT-LB-P-2-CT(R)-11

INVESTIGATION OF HYDROCARBON GROUPS OF ALTERNATIVE SOURCES

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Abstract: Determination of chemical composition (hydrocarbon group type distribution) of alternative sources is of great relevance in predicting product quality. An column chromatography method has been developed to determine total saturates, total aromatics and polar compounds distribution in different raw-materials such as heavy fuel oil and pyrolysis oil without prior separation, using refractive index. The purpose of this work is to identify hydrocarbon group type distribution of heavy petroleum fractions based on their elution times. The present method allows the precise determination of the elution profiles of hydrocarbon groups and therefore can be applied for their accurate quantitative determination.

Keywords: heavy petroleum fractions, column chromatography, hydrocarbon groups

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SAT-LB-P-2-CT(R)-12

NUCLEOPHILIC REACTION OF SULFINIC ACIDS WITH 4-HYDROXY-B-CHLORO-B-NITROSTYRENE

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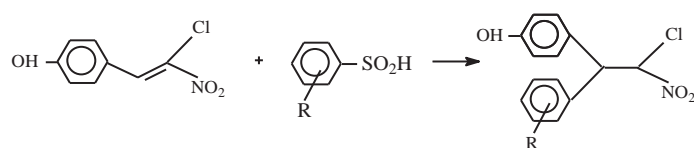
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Abstract: Sulfinic acids as an unique example for reactans, undergoing facile nucleophilic addition to α,β -unsaturated compounds, which results in the formarion of Michael-type products.



The addition starts with nucleophilic attack to ward the β -carbon atom of the double carbon-carbon bond. The second step is the protonation of the carbanion formed and, consequently, the and product formation. The suggested method of obtaining arylsulfonylnitroethanes has some important advantages over the method know so far: it is a relatively short, one stage process, no by-products are obtained, so there is no need of further procedurs to separate the main products from the reaction mixture, the final compounds possess a good degree of purity.

Keywords : Nucleophilic addition, Sulfinic acids, Nitrosulfones.

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SAT-LB-P-2-CT(R)-13

STUDY OF 1,3-INDANDIONE DERIVATIVES FOR THEIR USE AS STEEL CORROSION INHIBITORS IN ACIDIC MEDIA

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Abstract: The inhibiting properties of a group of organic substances (derivatives of 1,3-indandion) during the corrosion of steel in sulphuric acid solution (0.1 M H₂SO₄) have been studied by using a weight method. The present study has been conducted in corrosive solutions with and without the addition of potassium iodide (KI). As a criterion for the efficiency of the inhibiting action of the studied substances has been calculated the degree of protection (Z). It was determined that adding potassium iodide increases the degree of protection, i.e. the anti-corrosive properties of the studied compounds is enhanced.

Keywords: steel, inhibitors, derivatives of 1,3-indandion, corrosion rate

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SAT-LB-P-2-CT(R)-14

SYNTHESIS OF NEW 4- AND 5- NITRO-SUBSTITUTED HETEROARYL CINNAMOYL DERIVATIVES AND THEIR CU(II) COMPLEXES

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Abstract: This article presents the synthesis of 4- and 5- nitro-substituted heteroaryl cinnamoyl derivatives. The synthesis is realized via methods described in previous studies of ours. Newly synthesized compounds like ligands have been used for obtaining Cu(II) complexes.

We have used $\text{Cu}(\text{CH}_3\text{COO})_2 \cdot \text{H}_2\text{O}$. Physicochemical parameters and IR spectral data of the ligands as well as the complexes are given.

Keywords: synthesis, indandione, nitro-substituted cinnamoyl derivatives, Cu(II) complexes

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| Albena Spassova | FRI-2G.104-2-HC |
| Albena Stoyanova | FRI-LB-P-1-BFT(R) |
| Alberto Cabada | FRI-1.405.2-1-NODDEA |
| Aleksandar Andreev | FRI-K.201-1-HP |
| Aleksi Lyutskanov | FRI-9.2-1-THPE |
| Alexander Genbach | FRI-9.2-1-THPE |
| Alexander Zaychuk | SAT-LB-P-2-CT(R) |
| Alexandra Amelina | SAT-LB-P-2-CT(R) |
| Alexei Baerle | FRI-LB-P-1-BFT(R) |
| Alexey Karasyk | SAT-LB-P-2-CT(R) |
| Alina Costea | FRI-239-2-LTLH(S) |
| Alina Sheina | SAT-LCR-2-BFT(R) |
| Alla Sorokoletova | FRI-2G.509-1-ESIR-LIPC |
| Alperen Acar | FRI-1.417-1-MEMBT |
| Ana Antovska | FRI-LB-P-1-BFT(R) |
| Anastas Georgiev | SAT-2B.313-1-L |
| Andrey Dunicov | FRI-1.417-2-MEMBT |
| Angel Dishliev | SAT-LB-P-2-CT(R) |
| Angel Smrikarov | FRI-K1-2-QHE |
| Anka Krasteva | FRI-10.326-1-EEEE |
| Anna Nikolova | SAT-2B.313-1-L |
| Antoaneta Dobрева | FRI-2.203-1-TMS |
| Antoaneta Mihova | FRI-2G.305-1-ERI |
| Anton Antonov | FRI-2.209-1-EC |
| Antonia Lazarova | FRI-2G.404-1-EM |
| Antoniya Ilieva | SAT-LB-P-2-CT(R) |
| Asen Asenov | FRI-2.203-2-TMS; FRI-K1-1-QHE |
| Atanas Atanasov | FRI-8.121-1-AMT&ASVM |
| Atanas Iliev | FRI-2.203-2-TMS |
| Atanaska Bosakova-Ardenska | FRI-2G.303-1-CST |
| Aydın Güllü | FRI-10.326-1-EEEE |
| Bagryana Ilieva | FRI-2G.307-1-PP |
| Baris Alagoz | FRI-10.326-1-EEEE |
| Berkant Gyoch | FRI-2.203-1-TMS |
| Bianka Sartalanska | FRI-2G.104-2-HC |
| Blagovesta Midyurova | SAT-LB-P-2-CT(R) |
| Boril Ivanov | FRI-2.203-2-TMS |

| Name | Session |
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| Boris Kolesnikov | SAT-LCR-2-BFT(R) |
| Boris Kostov | FRI-9.2-1-THPE |
| Boris Sakakushev | FRI-K1-1-QHE |
| Borislav Bedzhev | FRI-2G.302-1-CSNT |
| Borislav Stankov | FRI-9.2-1-THPE |
| Boryana Angelova-Igova | FRI-2G.307-1-PP; FRI-2G.307-2-PP |
| Boryana Borisova | FRI-2G.305-1-ERI |
| Boryana Georgieva | FRI-16.203-1-ID |
| Boyan Ivanov | FRI-LCR-1-CT(R) |
| Boyan Karapenev | FRI-2G.302-1-CSNT |
| Byulent Mehmed | FRI-2B.313-2-L |
| Cătălina Mocanu | FRI-9.2-1-THPE |
| Chavdar Kostadinov | FRI-1.417-2-MEMBT |
| Chavdar Vezirov | FRI-8.121-1-AMT&ASVM |
| Chorny Valenty | FRI-LB-P-1-BFT(R) |
| Christian Girginov | SAT-LB-P-2-CT(R) |
| Christiyan Iliev | FRI-9.2-1-THPE |
| Cristina Popovici | FRI-LB-P-1-BFT(R) |
| Cristo Bozov | FRI-K.201-1-HP |
| Cvetomir D. Konov | FRI-16.203-1-ID |
| Danail Gospodinov | FRI-1.417-2-MEMBT |
| Daniel Bekana | FRI-1.202-1-MR |
| Daniel Kostadinov | FRI-2.203-1-TMS |
| Daniel Lyubenov | FRI-2.203-2-TMS; FRI-K1-2-QHE |
| Daniela Hristova | FRI-2.209-1-EC |
| Daniela Konstantinova | FRI-2G.104-2-HC; FRI-2G.201-1-HC |
| Daniela Velichkova | FRI-2G.201-1-HC |
| Daniela Yordanova | FRI-2G.404-1-EM; FRI-K1-2-QHE |
| Danil Bortyakov | FRI-1.202-1-MR |
| Darina Vedmead | SAT-LB-P-2-CT(R) |
| David Bondarcev | FRI-9.2-1-THPE |
| Dean Todorov | FRI-8.121-1-AMT&ASVM |
| Delian Gospodinov | FRI-LB-P-1-BFT(R) |
| Delyan Lazarov | FRI-2G.404-1-EM |
| Delyan Petkov | FRI-2.203-1-TMS |
| Denica Miteva | FRI-2.203-2-TMS |
| Denitca Stancu | FRI-1.405.2-2-NODDEA |
| Denitsa Miteva | FRI-2.203-2-TMS |
| Desislava Beleva | FRI-1.202-1-MR |
| Desislava Stoyanova | FRI-231-1-DPP(S) |
| Despina Georgieva | FRI-2G.104-2-HC; FRI-2G.201-1-HC |

| Name | Session |
|------------------------------|------------------------------------|
| Detelin Markov | FRI-9.2-1-THPE |
| Deyan Staykov | FRI-2G.307-2-PP |
| Diana Antonova | FRI-K1-1-QHE |
| Diana Apostolova | FRI-2G.307-1-PP |
| Diana Avramova | FRI-2G.404-1-EM |
| Diana Bebenova-Nikolova | FRI-239-1-LTLH(S) |
| Diana Ilieva | FRI-2G.509-1-ESIR-LIPC |
| Diana Indzhelieva | FRI-LB-P-1-BFT(R) |
| Diana Stefanova | FRI-2G.509-1-ESIR-LIPC |
| Diana Yaneva | FRI-2G.307-2-PP |
| Diana Zhelezova-Mindizova | FRI-231-1-DPP(S) |
| Diko Souroujon | FRI-1.405.2-2-NODDEA |
| Diliyana Gradinarska | FRI-LB-P-1-BFT(R) |
| Dilyana Kalinova | SAT-2B.313-1-L |
| Dimitar Dichev | FRI-1.417-2-MEMBT |
| Dimitar Georgiev | FRI-LCR-1-CT(R) |
| Dimitar Grozev | FRI-2.203-2-TMS |
| Dimitar Kehayov | FRI-8.121-1-AMT&ASVM |
| Dimitar Rusev | FRI-LCR-1-CT(R) |
| Dimitar Stavrev | FRI-K.201-1-HP |
| Dimitar Velchev | FRI-1.417-2-MEMBT |
| Dimitar Yordanov | FRI-10.326-1-EEEEA |
| Dimitrina Kiryakova | SAT-LB-P-2-CT(R) |
| Dimitrinka Kostadinova | SAT-2B.313-2-L |
| Dimo Milev | FRI-2G.303-1-CST |
| Diyan Dimitrov | FRI-1.417-2-MEMBT |
| Dmitriy Lulka | FRI-LB-P-1-BFT(R) |
| Doan Dinh Diep | FRI-8.121-1-AMT&ASVM |
| Dobrin Georgiev | FRI-LCR-1-CT(R); SAT-LB-P-2-CT(R) |
| Dobrin Paskalev | FRI-2G.201-1-HC |
| Doroteya Dimova-Severinova | FRI-2B.313-1-L |
| Dragomir Dobrudzhaliev | FRI-LCR-1-CT(R) |
| Dzhichan Menseidov | FRI-216-1-NSMTS(S) |
| Ekaterin Minev | FRI-1.414-1-MIP; FRI-1.417-2-MEMBT |
| Ekaterina Antontceva | SAT-LCR-2-BFT(R) |
| Ekaterina Emilova Ivanova | FRI-2G.307-1-PP |
| Ekaterina Gannochka | SAT-LCR-2-BFT(R) |
| Eleonora Mileva | FRI-2G.307-1-PP |
| Elina Marinova | SAT-2B.313-1-L |
| Elisabetta De Juliis | FRI-K.201-1-HP |
| Elisaveta Georgieva Kirilova | FRI-2.209-1-EC |
| Elisaveta Kirilova | FRI-2.209-1-EC |

| Name | Session |
|--------------------|-------------------------------------|
| Elitsa Kumanova | SAT-2B.313-1-L |
| Emanuil Agontsev | FRI-9.2-1-THPE |
| Emanuil Kolarov | SAT-2B.313-1-L |
| Emil Bargazov | FRI-1.202-1-MR |
| Emil Hadzhikolev | FRI-2G.303-1-CST |
| Emil Indzhov | FRI-2.207-1-HEF |
| Emil Ratz | FRI-9.2-1-THPE |
| Emil Trifonov | FRI-K1-1-QHE |
| Emil Yankov | FRI-1.417-2-MEMBT |
| Emilia Nedkova | FRI-2G.405-1-LL |
| Emilia Velikova | FRI-2G.305-1-ERI |
| Emiliyan Stankov | FRI-2.203-1-TMS |
| Emilya Ivanova | SAT-LB-P-2-CT(R) |
| Emrah Aydin | FRI-10.326-1-EEEE |
| Erman Aslan | FRI-1.417-1-MEMBT |
| Eva Tsonkova | FRI-2G.201-1-HC |
| Evelina Veleva | FRI-9.2-1-THPE |
| Evgeni Enchev | FRI-1.202-1-MR |
| Evgenia Goranova | FRI-216-2- NSMTS (S) |
| Evgeniy Ganev | FRI-LCR-1-CT(R) |
| Evgeniya Angelova | FRI-2.203-1-TMS |
| Evgeniya Bratoeva | FRI-2.114-1-SW |
| Evtim Lefterov | FRI-2G.307-2-PP |
| Ferdinando Pivetta | FRI-K.201-1-HP |
| Fila Yovkova | SAT-LB-P-2-CT(R) |
| Filip Kirilov | FRI-2.203-2-TMS |
| Gabriel Negreanu | FRI-9.2-1-THPE |
| Galina Angelova | SAT-LCR-2-BFT(R) |
| Galina Darakeva | FRI-2G.104-2-HC |
| Galina Djakova | FRI-8.121-1-AMT&ASVM |
| Galina Lecheva | FRI-231-1-DPP(S) |
| Galina Mileva | FRI-2G.404-1-EM |
| Galina Ruseva | FRI-2G.408-2-EM |
| Galina Stefanova | FRI-LB-P-1-BFT(R) |
| Gencho Popov | FRI-9.2-1-THPE |
| George Burdarov | FRI-9.2-1-THPE |
| Georgi Dimitrov | FRI-10.326-1-EEEE |
| Georgi Georgiev | FRI-2G.302-1-CSNT; FRI-2G.303-1-CST |
| Georgi Hubchev | FRI-2G.201-1-HC |
| Georgi Komitov | FRI-8.121-1-AMT&ASVM |
| Georgi Tomov | FRI-9.2-1-THPE |

| Name | Session |
|----------------------------|--|
| Georgi Zagorov | SAT-2B.313-2-L |
| Georgii Nedyurmagomedov | FRI-216-2- NSMTS (S) |
| Gergana Kuncheva | FRI-8.121-1-AMT&ASVM |
| Gergana Stoyanova | FRI-2G.201-1-HC |
| Gheorghe Lăzăroiu | FRI-9.2-1-THPE |
| Gianfranco Brusaporci | FRI-9.2-1-THPE |
| Ginka Baikusheva-Dimitrova | SAT-LB-P-2-CT(R) |
| Gjore Nakov | FRI-LB-P-1-BFT(R); SAT-LCR-2-BFT(R) |
| Gorica Pavlovska | FRI-LB-P-1-BFT(R) |
| Greta Koleva | FRI-2G.104-2-HC; FRI-2G.201-1-HC |
| Guanyi Chen | FRI-9.2-1-THPE |
| Gulizar Alisoy | FRI-1.414-1-MIP; FRI-10.326-1-EEEE |
| Gvantsa Harebava | SAT-2B.313-2-L |
| Hafiz Alisoy | FRI-1.414-1-MIP; FRI-10.326-1-EEEE |
| Hasan Güven | FRI-1.417-1-MEMBT |
| Hilmi Kuşçu | FRI-1.417-1-MEMBT |
| Hovanes Avakyan | FRI-2G.303-1-CST |
| Hristina Georgieva | SAT-2B.313-2-L |
| Hristina Sokolova | FRI-2G.509-1-ESIR-LIPC |
| Hristo Beloev | FRI-8.121-1-AMT&ASVM; FRI-K1-1-QHE; FRI-K1-2-QHE |
| Hristo Deliyski | FRI-9.2-1-THPE |
| Hristo Hristov | FRI-1.417-2-MEMBT |
| Hristo Stahchev | FRI-2.203-1-TMS |
| Hristofor Koev | FRI-1.417-2-MEMBT |
| Hristofor Lazarov | FRI-9.2-1-THPE |
| Iliana Kostova | FRI-LB-P-1-BFT(R); SAT-LCR-2-BFT(R) |
| Iliana Nikolova | SAT-LB-P-2-CT(R) |
| Iliana Petkova | FRI-2G.307-1-PP |
| Ilija Karov | FRI-LB-P-1-BFT(R) |
| Iliya Iliev | FRI-9.2-1-THPE |
| Iliyana Benina | FRI-2G.405-1-LL |
| Iliyana Naydenova | FRI-9.2-1-THPE |
| Ioana Kaneva | FRI-2B.313-2-L |
| Ion Mierlus-Mazilu | FRI-2G.305-1-ERI |
| Ionel Pişă | FRI-9.2-1-THPE |
| Iordan Stoev | FRI-10.326-1-EEEE |
| Irena Kenarova-Pencheva | FRI-2G.408-2-EM |
| Irena Markovska | SAT-LB-P-2-CT(R) |
| Irena Rashkova | FRI-2G.305-1-ERI |
| Irena Valova | FRI-2G.303-1-CST |
| Irinka Hristova | FRI-2G.104-2-HC; FRI-2G.201-1-HC |
| Iryna Dubovkina | FRI-LB-P-1-BFT(R) |

| Name | Session |
|---------------------------|-------------------------------|
| Iskra Simova | FRI-9.2-1-THPE |
| Iskren Marinov | FRI-2G.404-1-EM |
| Ivailo Staykov | SAT-2B.313-1-L |
| Ivajlo Nikolaev | FRI-9.2-1-THPE |
| Ivajlo Vazharov | FRI-K.201-1-HP |
| Ivan Angelov | FRI-LCR-1-CT(R) |
| Ivan Antonov | FRI-9.2-1-THPE |
| Ivan Beloev | FRI-2.203-2-TMS; FRI-K1-2-QHE |
| Ivan Bodlev | SAT-2B.313-2-L |
| Ivan Chobanov | SAT-LB-P-2-CT(R) |
| Ivan Denev | FRI-9.2-1-THPE |
| Ivan Evstatiev | FRI-K1-2-QHE |
| Ivan Evtimov | FRI-2.203-1-TMS |
| Ivan Georgiev | FRI-216-1-NSMTS(S) |
| Ivan Gradinarov | FRI-LCR-1-CT(R) |
| Ivan Kassabov | FRI-9.2-1-THPE |
| Ivan Loukanov | FRI-1.417-1-MEMBT |
| Ivan Mitkov | FRI-8.121-1-AMT&ASVM |
| Ivan Morteu | FRI-8.121-1-AMT&ASVM |
| Ivan Nikolov | FRI-2G.302-1-CSNT |
| Ivan Petrov | FRI-2.203-2-TMS |
| Ivan Rushev | SAT-2B.313-1-L |
| Ivan Zahariev | FRI-8.121-1-AMT&ASVM |
| Ivanichka Serbezova | FRI-2G.201-1-HC |
| Ivanka Peeva | FRI-1.417-2-MEMBT |
| Ivanka Stoyanova-Todorova | FRI-2.114-1-SW |
| Ivanka Zheleva | FRI-216-1-NSMTS(S) |
| Ivayla Dincheva | FRI-LCR-1-CT(R) |
| Ivayla Sopotenska | SAT-LCR-2-BFT(R) |
| Ivaylo Ivanov | FRI-2B.313-2-L |
| Ivaylo Yosifov | FRI-2B.313-2-L |
| Ivelin Velchev | SAT-2B.313-2-L |
| Ivelina Balabanova | FRI-2G.302-1-CSNT |
| Ivilina Dimitrova | FRI-2G.302-1-CSNT |
| Ivo Andreev | FRI-2G.305-1-ERI |
| Ivo Bratanov | FRI-2G.405-1-LL |
| Ivo Draganov | FRI-1.417-2-MEMBT |
| İlkay Çolpan | FRI-1.417-1-MEMBT |
| İlyas İstif | FRI-1.417-1-MEMBT |
| Jose Pablo Solans Vila | FRI-9.2-1-THPE |
| Julia Chaparova | FRI-1.405.2-2-NODDEA |

| Name | Session |
|------------------------------|---|
| Juliana Popova | FRI-239-1-LTLH(S); FRI-2G.509-1-ESIR-LIPC; FRI-K1-1-QHE |
| Kalikov D. B | FRI-2.209-1-EC |
| Kalin Krumov | FRI-9.2-1-THPE |
| Kamelia Assenova | FRI-2G.408-2-EM |
| Kameliya Andreeva | FRI-2G.104-2-HC |
| Kameliya Koycheva | FRI-2G.405-1-LL |
| Kamen Ivanov | FRI-2.203-2-TMS |
| Kamil Feratoğlu | FRI-1.417-1-MEMBT |
| Katerina Kutrovska | FRI-2G.104-2-HC |
| Kateryna Hrininh | FRI-LB-P-1-BFT(R) |
| Katja Valkova-Jorgova | FRI-LB-P-1-BFT(R) |
| Kina Velcheva | FRI-2G.104-2-HC |
| Kiril Kirov | FRI-1.414-1-MIP |
| Kiril Panayotov | FRI-K.201-1-HP |
| Kiril Sirakov | FRI-10.326-1-EEEEA |
| Kliment Klimentov | FRI-9.2-1-THPE |
| Konstantin Georgiev | FRI-K.201-1-HP |
| Kornelia Naidenova | FRI-2G.307-1-PP |
| Krasimir Bogdanov | FRI-2.203-1-TMS |
| Krasimir Kamenov | FRI-2.203-1-TMS |
| Krasimir Ormandzhiev | FRI-9.2-1-THPE |
| Krasimir Radev | FRI-1.202-1-MR |
| Krasimir Tuzharov | FRI-9.2-1-THPE |
| Kristian Valchev | FRI-2G.408-2-EM; FRI-K1-1-QHE |
| Kristina Zaharieva | FRI-2G.104-2-HC |
| Krystin Yordanov | FRI-9.2-1-THPE |
| Kuandikova E. M | FRI-2.209-1-EC |
| Lachezar Atanasov | FRI-1.202-1-MR |
| Lachezar Yordanov | FRI-2G.303-1-CST |
| Lazar Pnayotov | FRI-8.121-1-AMT&ASVM |
| Lenia Gonsalvesh | FRI-LCR-1-CT(R) |
| Leyman Tyuleogluva | FRI-2B.313-1-L |
| Liliana Zashcova | FRI-9.2-1-THPE |
| Lilyana Slavyanova | FRI-239-1-LTLH(S) |
| Lilyana Karakasheva | FRI-2G.305-1-ERI |
| Lilyana Rusanova | FRI-2.114-1-SW |
| Liudmyla Kryvoplias-Volodina | FRI-LB-P-1-BFT(R) |
| Ljupka Necinova | FRI-LB-P-1-BFT(R) |
| Lora Hristova | FRI-2G.408-2-EM |
| Lorena Saavedra | FRI-1.405.2-2-NODDEA |
| Lubomir Stefanov | FRI-LB-P-1-BFT(R) |
| Lucian Mihăescu | FRI-9.2-1-THPE |

| Name | Session |
|----------------------|------------------------------------|
| Lyubomir Borisov | FRI-2G.307-1-PP |
| Lyubomir Lyubenov | FRI-2G.408-2-EM |
| Lyubomir Vladimirov | FRI-2.209-1-EC |
| Lyubomira Todorova | FRI-2G.404-1-EM |
| Lyudmila Mihailova | FRI-239-1-LTLH(S) |
| M. Ozan Aki | FRI-10.326-1-EEEE |
| Mădălina Mavrodin | FRI-9.2-1-THPE |
| Magdalena Andreeva | FRI-216-1-NSMTS(S) |
| Mahamedova B. Y | FRI-2.209-1-EC |
| Margarita Bachvarova | FRI-2B.313-1-L |
| Margarita Filipova | FRI-2.209-1-EC; FRI-216-1-NSMTS(S) |
| Maria Dimova | SAT-LB-P-2-CT(R) |
| Maria Fartunova | FRI-K1-1-QHE |
| Maria Frenkeva | FRI-LCR-1-CT(R) |
| Maria Fărcășeanu | FRI-1.405.2-2-NODDEA |
| Maria Goranova | FRI-2G.305-1-ERI |
| Maria P. Nikolova | FRI-1.417-2-MEMBT |
| Maria Temnikova | FRI-2G.305-1-ERI |
| Maria Tomova-Mihneva | FRI-239-2-LTLH(S) |
| Mariana Bacheva | FRI-2G.201-1-HC |
| Mariana Ilieva | FRI-1.417-2-MEMBT |
| Mariana Karaivanova | FRI-LCR-1-CT(R); SAT-LB-P-2-CT(R) |
| Mariana Tavlieva | FRI-LCR-1-CT(R) |
| Marin Marinov | FRI-LCR-1-CT(R); SAT-LB-P-2-CT(R) |
| Mariya Mihailova | FRI-2G.305-1-ERI |
| Mariyka Petrova | FRI-LB-P-1-BFT(R) |
| Mark Shamtsyan | SAT-LCR-2-BFT(R) |
| Martin Paalits | FRI-2.203-1-TMS |
| Martin Pushkarov | FRI-9.2-1-THPE |
| Maya Grozeva | FRI-10.326-1-EEEE |
| Maya Iskrenova | SAT-2B.313-2-L |
| Maya Tcholakova | FRI-2.114-1-SW |
| Metodi Shamov | SAT-2B.313-1-L |
| Michael Velikanov | FRI-9.2-1-THPE |
| Miglena Angelova | FRI-K1-2-QHE |
| Miglena Hristova | FRI-10.326-1-EEEE |
| Miglena Pencheva | FRI-K1-2-QHE |
| Mihael Deliyski | FRI-9.2-1-THPE |
| Mihaela Dotsova | FRI-2B.313-1-L |
| Mihai Mihailescu | FRI-1.405.2-1-NODDEA |
| Mihail Iliev | FRI-2G.302-1-CSNT |

| Name | Session |
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| Mihail Lichev | FRI-K.201-1-HP |
| Mihail Milchev | FRI-2.203-2-TMS |
| Milen Loukantchevsky | FRI-2G.303-1-CST |
| Milen Venev | FRI-9.2-1-THPE |
| Milica Koleva | SAT-LB-P-2-CT(R) |
| Miluvka Stancheva | SAT-LB-P-2-CT(R) |
| Miroslav Marinov | FRI-2G.303-1-CST |
| Miroslav Rangelov | FRI-LCR-1-CT(R) |
| Miroslav Vasilev | FRI-2.203-2-TMS |
| Miroslava Valchanova | SAT-LB-P-2-CT(R) |
| Mitko Dimitrov | FRI-2.203-2-TMS |
| Momchil Kirinov | FRI-1.417-2-MEMBT |
| Monika Valeova | FRI-2G.201-1-HC |
| Mykhailo Arych | FRI-LB-P-1-BFT(R) |
| Mykola Desyk | FRI-LB-P-1-BFT(R) |
| Myroslav Tarasenk | SAT-LCR-2-BFT(R) |
| Nadezhda Markova | FRI-LCR-1-CT(R); SAT-LB-P-2-CT(R) |
| Nastya Ivanova | FRI-LB-P-1-BFT(R) |
| Natali Perekrest | FRI-LB-P-1-BFT(R) |
| Natalia Popova | FRI-LB-P-1-BFT(R) |
| Natallye Stoyanova | FRI-2B.313-2-L |
| Natasha Vaklieva-Bancheva | FRI-2.209-1-EC |
| Nayden Vasilev | FRI-2G.303-1-CST |
| Nevena Ruseva | SAT-2B.313-2-L |
| Nguyen Viet Tan | FRI-8.121-1-AMT&ASVM |
| Nikola Benin | FRI-2G.405-1-LL |
| Nikola Kaloyanov | FRI-9.2-1-THPE |
| Nikolaj Dimitrov | FRI-1.405.2-2-NODDEA |
| Nikolay Ferdinandov | FRI-1.417-2-MEMBT |
| Nikolay Kostadinov | FRI-2G.303-1-CST |
| Nikolay Kovachev | FRI-2.209-1-EC |
| Nikolay Nikolov | FRI-1.417-2-MEMBT; FRI-2G.307-2-PP |
| Nikolay Shopov | FRI-2G.303-1-CST |
| Nikolay Tashkov | FRI-2G.302-1-CSNT |
| Nikolay Valchev | FRI-9.2-1-THPE |
| Nikolay Zlatov | FRI-9.2-1-THPE |
| Nikolina Angelova | SAT-2B.313-1-L |
| Nikolina Angelova-Barbolova | FRI-2G.201-1-HC |
| Nina Gamakova-Radkova | FRI-2G.201-1-HC |
| Nina Penkova | FRI-9.2-1-THPE |
| Nina Stoyanova | FRI-LCR-1-CT(R) |
| Nino Koleva | FRI-2G.201-1-HC |

| Name | Session |
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| Nurşen Öntürk | FRI-1.417-1-MEMBT |
| Ognyan Alipiev | FRI-1.202-1-MR |
| Ognyan Sherbanov | FRI-2G.201-1-HC |
| Olçay Ekşi | FRI-1.417-1-MEMBT |
| Oleksandr Chepeliuk | FRI-LB-P-1-BFT(R) |
| Oleksii Gubenia | FRI-LB-P-1-BFT(R); SAT-LCR-2-BFT(R) |
| Oleksiy Nescuba | FRI-LB-P-1-BFT(R) |
| Olena Chepeliuk | FRI-LB-P-1-BFT(R) |
| Olena Karasyk | SAT-LB-P-2-CT(R) |
| Olexandr Gavva | FRI-LB-P-1-BFT(R) |
| Orlin Petrov | FRI-10.326-1-EEEE; FRI-K1-2-QHE |
| Osman Yeşen | FRI-1.417-1-MEMBT |
| Pavel Stefanov | FRI-2G.407-1-AS |
| Pavel Stoyanov | FRI-2.203-2-TMS |
| Pavel Tatarov | FRI-LB-P-1-BFT(R) |
| Penka Barakova | FRI-K.201-1-HP |
| Penka Zlateva | FRI-9.2-1-THPE |
| Penyo Kutsarov | FRI-K.201-1-HP |
| Petar Dimitrov | FRI-8.121-1-AMT&ASVM |
| Petar Kazakov | FRI-2.203-2-TMS |
| Petar Pantileev | FRI-2.203-1-TMS |
| Petar Penchev | FRI-2G.408-2-EM |
| Petar Petrov | FRI-2G.305-1-ERI |
| Petar Todorov | FRI-2G.405-1-LL |
| Petina Vicheva | FRI-239-2-LTLH(S) |
| Petko Mashkov | FRI-2.203-1-TMS |
| Petko Tsankov | FRI-9.2-1-THPE |
| Petya Boneva | FRI-16.203-1-ID |
| Petya Grudeva | FRI-2G.305-1-ERI |
| Petya Gudeva | FRI-2G.307-1-PP |
| Petya Petrova | FRI-10.326-1-EEEE |
| Petya Stefanova | FRI-2G.407-1-AS |
| Plamen Daskalov | FRI-K1-1-QHE |
| Plamen Kangalov | FRI-1.202-1-MR |
| Plamen Kolev | FRI-2.114-1-SW |
| Plamen Manev | FRI-2.209-1-EC |
| Plamen Mihaylov | FRI-1.414-1-MIP |
| Plamen Pashev | SAT-LB-P-2-CT(R) |
| Plamen Penchev | FRI-LCR-1-CT(R) |
| Plamena Atanasova | SAT-LB-P-2-CT(R) |
| Polina Antonova | FRI-2G.407-1-AS |

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| Polina Atanasova-Petrova | FRI-2.203-2-TMS |
| Polina Atanasova-Petrowa | FRI-K1-2-QHE |
| Polya Cherneva | FRI-2.207-1-HEF |
| Preslava Velikova | FRI-2G.404-1-EM |
| Quirina Cantini | FRI-K.201-1-HP |
| Radko Mihajlow | FRI-8.121-1-AMT&ASVM |
| Radko Mihaylov | FRI-8.121-1-AMT&ASVM |
| Radoslav Kyuchukov | FRI-K1-1-QHE |
| Radoslava Deleva | FRI-K.201-1-HP |
| Radostin Dimitrov | FRI-2.203-1-TMS |
| Radostina Jordanova | FRI-2G.201-1-HC |
| Radu Prekup | FRI-1.405.2-2-NODDEA |
| Ralica Mincheva | FRI-8.121-1-AMT&ASVM |
| Rayka Vladova | FRI-2.209-1-EC |
| Reneta Zlateva | FRI-2.207-1-HEF |
| Rosana Lopez | FRI-1.405.2-1-NODDEA |
| Rosen I.Tsvetkov | FRI-2G.302-1-CSNT |
| Rosen Ivanov | FRI-2.203-1-TMS |
| Rosica Doinovska | FRI-2G.201-1-HC |
| Rositsa Angelova | FRI-2.203-2-TMS |
| Rositsa Petkova-Slipets | FRI-9.2-1-THPE |
| Rositsa Velichkova | FRI-9.2-1-THPE |
| Rostislav Kandilarov | FRI-2.203-1-TMS |
| Rumen Rusev | FRI-1.414-1-MIP; FRI-1.417-2-MEMBT |
| Rumen Vassilev | FRI-2.114-1-SW; FRI-2B.313-2-L |
| Rumyana Lebedova | FRI-239-2-LTLH(S) |
| Rumyana Yankova | SAT-LB-P-2-CT(R) |
| Rusi Minev | FRI-1.417-2-MEMBT |
| Rybachok Albina | FRI-LB-P-1-BFT(R) |
| Sabina Nedkova | SAT-LB-P-2-CT(R) |
| Sasho Nunev | FRI-2.114-1-SW |
| Selime Sabrieva | FRI-2G.201-1-HC |
| Sencer Karabeyoğlu | FRI-1.417-1-MEMBT |
| Sergei Belchev | FRI-2.203-1-TMS |
| Sergei Sorokin | SAT-LCR-2-BFT(R) |
| Sergey Antonov | FRI-1.202-1-MR; FRI-1.414-1-MIP; FRI-1.417-2-MEMBT |
| Sergey Kalinkov | SAT-2B.313-1-L |
| Sergii Volodin | FRI-LB-P-1-BFT(R) |
| Sevdalina Todorova | FRI-LB-P-1-BFT(R) |
| Sevdalina Turmanova | SAT-LB-P-2-CT(R) |
| Silviya Varbanova | FRI-2G.303-1-CST |
| Simeon Iliev | FRI-2.203-2-TMS |

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| Sneganka Atanasova | SAT-LCR-2-BFT(R) |
| Snezhinka Zaharieva | FRI-10.326-1-EEEE |
| Sonya Ivanova | SAT-LB-P-2-CT(R) |
| Sonya Toncheva | FRI-2G.201-1-HC |
| Stancho Pavlov | FRI-LCR-1-CT(R) |
| Stanimir Penev | FRI-2.203-2-TMS |
| Stanislav Kostadinov | FRI-1.414-1-MIP |
| Stanislav Rangelov | SAT-LB-P-2-CT(R) |
| Stanislava Gueva | SAT-2B.313-2-L |
| Stanka Damyanova | FRI-LB-P-1-BFT(R) |
| Stanka Hadzhikoleva | FRI-2G.303-1-CST |
| Stanka Yaneva | SAT-LB-P-2-CT(R) |
| Stefan Stefanov | FRI-LB-P-1-BFT(R); SAT-LCR-2-BFT(R) |
| Stefko Burdjiev | FRI-2.209-1-EC |
| Stela Kostadinova | FRI-2G.302-1-CSNT |
| Stepan Tersian | FRI-1.405.2-2-NODDEA |
| Stoyna Ilieva | FRI-216-2- NSMTS (S) |
| Stoyan Bundjulov | FRI-16.203-1-ID |
| Stoyan Dimitrov | FRI-1.417-2-MEMBT |
| Stoyan Stoyanov | FRI-1.417-1-MEMBT |
| Suleimenova N. Sh | FRI-2.209-1-EC |
| Svetla Baeva | FRI-9.2-1-THPE |
| Svetla Dyakovska | FRI-2G.307-1-PP |
| Svetlana Genieva | SAT-LB-P-2-CT(R) |
| Svetlana Stoyanova | FRI-8.121-1-AMT&ASVM |
| Svetlin Antonov | SAT-2B.313-2-L |
| Svetlin Stoyanov | FRI-1.417-1-MEMBT |
| Svetlin Vasilev | FRI-2G.302-1-CSNT |
| Svilen Kostadinov | FRI-2.203-2-TMS |
| Svilen Stoianov | FRI-8.121-1-AMT&ASVM |
| Svilen Stoyanov | FRI-10.326-1-EEEE |
| Svilena Ninova | FRI-2G.104-2-HC |
| Svyatoslav Lementar | FRI-LB-P-1-BFT(R) |
| Tamara Pencheva | FRI-2.203-1-TMS |
| Tanya Grozeva | FRI-K1-1-QHE |
| Taras Hnativ | FRI-LB-P-1-BFT(R) |
| Taras Misyura | FRI-LB-P-1-BFT(R) |
| Taşkın Tez | FRI-1.417-1-MEMBT |
| Tatiana Todorova | FRI-2G.201-1-HC |
| Tatjana Kalevska | FRI-LB-P-1-BFT(R) |
| Tatyana Atanasova | FRI-2G.104-2-HC |

| Name | Session |
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| Tatyana Balcheva | FRI-2G.201-1-HC |
| Temenuzhka Bogdanova | FRI-216-1-NSMTS(S) |
| Temenuzhka Haralanova | SAT-LB-P-2-CT(R) |
| Teodor Kyuchukov | FRI-K1-1-QHE; FRI-K1-2-QHE |
| Teodora Gaytandzhieva | FRI-2G.201-1-HC |
| Teodora Nedeva | FRI-2G.201-1-HC |
| Teodora Todorova | FRI-2G.201-1-HC |
| Teodora Zapryanova | FRI-1.405.2-2-NODDEA |
| Tihomir Gulov | FRI-1.405.2-2-NODDEA |
| Tiziano Pacini | FRI-K.201-1-HP |
| Todor Delikostov | FRI-1.202-1-MR |
| Todor Lazarov | FRI-10.326-1-EEEEA |
| Todor Mihalev | SAT-LB-P-2-CT(R) |
| Todor Rachovski | FRI-2G.303-1-CST |
| Todorka Georgieva | FRI-239-2-LTLH(S) |
| Tolga Yusnyu | FRI-2.203-2-TMS |
| Toncho Balbuzanov | FRI-2.203-1-TMS; FRI-K1-2-QHE |
| Toni Miteski | FRI-LB-P-1-BFT(R) |
| Toni Uzunov | FRI-1.202-1-MR |
| Trifon Uzuntonev | FRI-2.203-2-TMS |
| Tsveta Hristova | FRI-231-1-DPP(S) |
| Tsveta Hristova | FRI-2G.201-1-HC |
| Tsvetan Dimitrov | FRI-LB-P-1-BFT(R); SAT-LB-P-2-CT(R) |
| Tsvetan Yanakiev | SAT-LCR-2-BFT(R) |
| Tsvetana Shenkova | FRI-2G.405-1-LL |
| Tsvetelina Georgieva | FRI-K1-1-QHE |
| Tsvetelina Harakchiyska | FRI-2G.509-1-ESIR-LIPC |
| Tsvetelina Petrova | FRI-2G.305-1-ERI; FRI-9.2-1-THPE |
| Tsvetelina Stancheva | FRI-2G.104-2-HC; FRI-2G.201-1-HC |
| Tzvetelin Gueorguiev | FRI-K1-1-QHE |
| Valentin Mihov | FRI-1.417-2-MEMBT |
| Valentina Chonova | SAT-LCR-2-BFT(R) |
| Valentina Vasileva | FRI-231-1-DPP(S); FRI-2G.307-1-PP |
| Valerii Myronchuk | FRI-LB-P-1-BFT(R) |
| Valeriy Myronchuk | FRI-LB-P-1-BFT(R) |
| Valery Spiridonov | FRI-8.121-1-AMT&ASVM |
| Vanya Dineva | FRI-2G.307-2-PP |
| Vanya Zaharieva | FRI-1.417-2-MEMBT |
| Vaska Stancheva- Popkostadinova | FRI-2.114-1-SW |
| Vasko Dobrev | FRI-2.203-1-TMS |
| Vassil Dimitrov | FRI-2B.313-2-L |

| Name | Session |
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| Velichka Georgieva | FRI-2.203-1-TMS |
| Velislava Doneva | FRI-2G.405-1-LL |
| Velizara Pencheva | FRI-K1-1-QHE; FRI-K1-2-QHE |
| Velizara Pentcheva | FRI-2.203-2-TMS |
| Velyana Georgieva | FRI-LCR-1-CT(R) |
| Venelin Enchev | FRI-LCR-1-CT(R); SAT-LB-P-2-CT(R) |
| Venko Vitliemov | FRI-1.417-1-MEMBT |
| Ventsislav Petrov | FRI-2B.313-1-L |
| Ventsislava Zhelyaskova | FRI-2B.313-1-L |
| Vesela Mareva | FRI-2.114-1-SW |
| Vesela Mihova | FRI-2G.404-1-EM |
| Veselin Dochev | FRI-8.121-1-AMT&ASVM |
| Veselin Grigorov | FRI-K1-2-QHE |
| Veselin Iliev | FRI-1.417-2-MEMBT |
| Veselin Mihaylov | FRI-2.203-1-TMS |
| Veselin Videv | FRI-2G.305-1-ERI |
| Veselka Kamburova | FRI-9.2-1-THPE |
| Vezirka Jankuloska | FRI-LB-P-1-BFT(R) |
| Viara Ruseva | FRI-10.326-1-EEEE |
| Victor Chirikov | FRI-1.417-2-MEMBT |
| Victor Goots | SAT-LCR-2-BFT(R) |
| Viktorija Stamatovska | FRI-LB-P-1-BFT(R) |
| Viktoriya Egorova | FRI-2G.509-1-ESIR-LIPC |
| Viktoriya Sedykh | SAT-LCR-2-BFT(R) |
| Vilhelm Hadjiiski | FRI-LB-P-1-BFT(R) |
| Virginia Kiryakova | FRI-1.405.2-2-NODDEA |
| Vitalii Rachok | FRI-LB-P-1-BFT(R) |
| Vitaly Ponomarenko | FRI-LB-P-1-BFT(R) |
| Vladimir Demirev | FRI-8.121-1-AMT&ASVM |
| Vladimir Pachev | FRI-9.2-1-THPE |
| Vladimir Tsankov | FRI-9.2-1-THPE |
| Vladimir Tzvetkov | FRI-2G.303-1-CST |
| Vladislav Ivanov | FRI-2B.313-1-L |
| Volodymyr Telychkun | FRI-LB-P-1-BFT(R) |
| Vyarka Ronkova | FRI-2.203-1-TMS |
| Yana Pacholova | FRI-K.201-1-HP |
| Yaroslav Khitriy | FRI-LB-P-1-BFT(R) |
| Yordanka Stefanova | SAT-LCR-2-BFT(R) |
| Yordanka Tasheva | SAT-LB-P-2-CT(R) |
| Yuksel Aliev | FRI-2G.303-1-CST |
| Yuliana Pashkunova | FRI-K.201-1-HP |

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| Yuliia Telychkun | FRI-LB-P-1-BFT(R) |
| Yuliya Doncheva | FRI-2G.307-2-PP |
| Yuliyana Dimitrov | FRI-2.203-1-TMS |
| Yuliyana Georgieva | FRI-2G.104-2-HC |
| Yunzile Dzhelil | FRI-LCR-1-CT(R) |
| Yuriy Enakiev | FRI-8.121-1-AMT&ASVM |
| Zagra Dzhakhbarova | FRI-216-2- NSMTS (S) |
| Zdravka Petkova | FRI-8.121-1-AMT&ASVM |
| Zdravko Ivanov | FRI-2.203-1-TMS |
| Zhivko Ivanov | FRI-LCR-1-CT(R); SAT-LB-P-2-CT(R) |
| Zlatin Zlatev | FRI-LB-P-1-BFT(R) |
| Zoja Arabadjieva | FRI-2G.201-1-HC |
| Zora Uzunoska | FRI-LB-P-1-BFT(R) |
| Zornitsa Yordanova | FRI-2B.313-1-L |
| Zoya Tsoneva | FRI-2.203-1-TMS |
| Zshivka Zsheliaskova-Koynova | FRI-2G.307-1-PP |
| Zvezdelina Bratanova | FRI-2G.405-1-LL |

Sessions Schedule & Abstracts

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56th Annual Science Conference of Ruse University

INDUSTRY 4.0. BUSINESS ENVIRONMENT.
QUALITY OF LIFE.

56^{та} Годишна конференция на Русенския университет

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