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in a competition for an academic position "Associate Professor" in a professional field 5.13. General engineering, scientific specialty "Safety engineering and fire-fighting equipment", published in the State Gazette, issue 15 of February 19, 2021 with candidate chief assistant Dr. Eng. Sonya Kancheva Vachinska - Alexandrova

Member of the scientific jury: Associate Professor DSc. Lubomir Vladimirov
Vladimirov

1. General characteristics of the research and applied research activity of the candidate

During the period 2009-2021 Dr. Sonya Kancheva Vachinska-Alexandrova participated in a number of national and international research projects. They are performed by the Technical University of Varna.

The main part are national projects. Two of the projects are funded by the state budget. One project № NP 43 / 15.03.2009 is for the study of visual and multimedia modules in the training and research work in engineering graphics, and the other project №NP 20 / 29.04.2011 modules for ergonomic assessment of the work environment and the Internet.

The projects funded by the Research Fund are related to problems of ergonomic research and assessment of the learning environment (project № DMU 03-99 / 13.12.2011 and project № KP-06-N 37/1 / 06.12.2019).).

The international project for improving professional skills for dealing with the risk of earthquakes inside buildings (project №517560-LLP-I-TR-LEONARDO-LMP) is directly related to safety and security at work - Lifelong Learning Program, sector "Leonardo da Vinci" of the European Union.

Her participation in ergonomic research of the working environment through innovative computer models, in order to prevent musculoskeletal disorders (project № KP-06-N 37/1 / 06.12.2019) is dedicated to safety at work.

A related project in the field of education is the project on "Innovation and ergonomic assessment of the learning environment and its impact on the effectiveness of the educational process and human physiology in the learning process."

The scientific work of Dr. Eng. Sonya Kancheva Vachinska-Alexandrova on electronic forms in education is impressive. An example is the participation in the project "Observation and interpretation of physiological states through artificial intelligence" (project № 10 IF-02-13 / 28.11.2019), as well as "New electronic forms of education at the Technical University - Varna" (Project (TO 1-402 / 11.10.2012 VO051RO001-4.3.04.-0014).

The topic of the project under the Maritime Affairs and Fisheries Program may at first glance seem to be unrelated to the professional field and the scientific specialty of the competition. However, taking into account that the aquatic environment in Varna Lake is also a working environment and part of the human living environment, the conclusion is reached for a direct connection with the topic of the competition (project № BO14MPOP001-6.004-0003-C01 / 21.01.2021).

The candidate has been the leader of two projects, of one project she is an expert coordinator, and in the others she is a member of the working teams. I cannot assess the extent of her participation as a member of the teams.

The candidate Dr. Eng. Sonya Kancheva Vachinska-Alexandrova follows a line of research work, which coincides with the professional field and the specialty of the competition. She has found her place and role as a specialist in ergonomic design, research and evaluation of work systems.

The short and complete reference, according to art. 26 of the Law for development of the academic staff, art. 60, para. 3 of the Regulations for its application and art. 1, para. 2 of the Regulations on the terms and conditions for holding academic positions at the Technical University of Varna, show that the minimum national requirements for holding the academic position "Associate Professor" in the field of higher education 5. Technical Sciences.

The publication activity of Dr. Eng. Sonya Kancheva Vachinska-Alexandrova can be judged by the presented total of 22 works. They include 16 publications, one monograph and 5 teaching aids.

The monograph is on "Healthy and Safe Workplaces" (publication B.3.1). Its entire content is dedicated to the safety of ergonomic systems.

The publications are in five thematic areas: • organization of workplaces (three publications - G.8.1, G.8.2, G.8.5), • environmental risk factors (three publications - G.7.1, G.8.3, G.8.10), • safety and health prevention (three publications - G.8.4, G.8.6, G.8.7), • innovative training (three publications - G.8.8, G.8.9, G.8.12) and • fundamental engineering competencies (four publications - G.8.11, G.8.13, G.8.14, G.8.15).

Four of the publications are in English (publications G.7.1, G.8.3, G.8.8, G.8.9). Two publications are from conferences abroad (publications G.8.3, G.8.8), and one publication is from a conference indexed in the Scopus database (publication G.7.1).

The other publications are from participations in international scientific congresses and conferences in Bulgaria. On most of the publications - 13 pcs. author is Dr. Eng. Sonya Kancheva Vachinska-Alexandrova. Four publications are co-authored.

Dr. Vachinska-Alexandrova is the first author in 3 publications. A second author is in only one publication. Dr. Eng. Sonya Kancheva Vachinska-Alexandrova was awarded for an article on e-learning. The above gives me grounds to give a high professional assessment of the research and applied research activities of the candidate.

2. Assessment of the pedagogical preparation and activity of the candidate

Dr. Eng. Vachinska-Alexandrova conducts lectures and exercises in Bulgarian and English in the education of students at the Bachelor's Degree. She teaches full-time and part-time students from the four faculties of the Technical University - Varna.

The disciplines led by Dr. Vachinska-Alexandrova are Applied Geometry and Engineering Graphics, Engineering Graphics and Technical Documentation,

Electrical Engineering Documentation and other related disciplines, including versions in English. He teaches mainly to students of technical specialties.

Dr. Eng. Vachinska-Alexandrova has published five textbooks in these disciplines. The review of the textbooks showed me that he shows professionalism and ability to master the audience through effective illustrations and explanations. Of course, a university lecturer has been built. He is the author of 12 curricula.

Its international mobility is in Greece, Spain, Italy, Austria, Romania, Poland, Portugal. It has been awarded with appropriate certificates. The participation of Dr. Eng. Vachinska-Alexandrova in various forms of pedagogical work outside the Technical University - Varna from 2017 to 2021 makes a strong impression.

I mean the training of talented students from the Vocational Technical High School - Varna in the implementation of the National Program "Student Olympiads and Competitions". This is an achievement that proves her pedagogical skills outside the university.

Dr. Eng. Sonya Kancheva Vachinska - Alexandrova has a personal contribution to the modernization of the material and technical base of TU - Varna.

In 2012, under a competition for "Young Scientists", funded by the Research Fund, under her leadership, a project DMU 03-99 "Innovation and ergonomic assessment of the learning environment and its impact on the effectiveness of the educational process and human physiology" was developed. In the process of training ". The first interactive board was purchased on it in TU - Varna, which is still used today in hall 518M of the Faculty of Mechanical Engineering.

Dr. Eng. Sonya Kancheva Vachinska-Alexandrova actively participates in the project № NP 20 for the development of aids and visual modules for training and research in ergonomic assessment of the work environment and the Internet. Aids for the learning process were purchased - mannequins for men and women.

They are used in the design of equipment and products. They illustrate the minimum requirements for accessibility and accessibility of various workplaces, machine cabins, passages, service areas for repair and operation of technical systems.

Under the candidate's guidance, worktops and desks have been renovated. Models of projection planes are made to illustrate orthogonal constructions. The models unfold and the projections lie in one plane.

3. Main scientific and applied contributions

I agree with the reference prepared by Dr. Eng. Sonya Kancheva Vachinska-Alexandrova for the scientific contributions. The contributions contained in the presented publications can be divided into two groups.

Group I. Scientific - applied contributions:

1) Two types of tasks for research of the risk for health at work are defined and argued. The first type is the study of the risk of developing musculoskeletal disorders (publications B.3.1, G.7.1, G.8.6). The second type is workplace stress risk management (publication B.3.1). I believe that these contributions are of a scientific and methodological nature and complement the theory and practice of occupational risk research.

2) A model for evaluation of harmful and or dangerous working postures and movements has been proposed (publications B.3.1, G8.5, G.8.7). The model is a theoretical summary that can be widely applied in the information and management aspect of safety in work systems.

3) The risks for development of musculoskeletal injuries during work have been identified (publications B.3.1, G.7.1, G.8.5). The results of their analysis can be used to apply effective prevention methods. The contribution is in establishing regularities that are subject to further improvement, but are sufficiently substantiated and can be used to predict the risks at work.

4) Recommendations for protection of health and limitation of risk factors in the work environment are substantiated (publications G.8.4, G.8.10). The contribution is a scientifically advanced thesis based on conducted research.

5) The characteristics of the working environments are established and a model for research of the health risks is proposed in connection with them (publications G.8.1, G.8.2, B.3.1). The health risk model is dedicated to a specific and sensitive issue. It is derived through research, analysis and comparison of scientific results of

other authors. A creative solution is sought, understanding the details and features of the nature of risk. It leads to in-depth and reasoned conclusions and formulations.

6) Solutions for development of basic engineering - educational problems have been derived (publications G.8.13, G.8.14, G.8.15). They contribute to the theory and practice of higher education, to improving the pedagogical skills of teachers.

7) Original graphics, figures and models of the multidisciplinary influences of the working environment on human psychophysiology have been created. They reflect the basic formulations, methods and means of safety at work (publications B.3.1, G.7.1, G.8.3, G.8.6, G.8.12).

8) Based on an analytical review of innovations in basic engineering training and education, guidelines have been formulated for improving their application (publications G.8.8, G.8.9, G.8.11, G.8.12, G.8.13, G.8.14, G.8.15).

The derived generalizations have methodological significance and help to develop the specific category apparatus. I can attribute the above contributions to the following three groups of achievements: • proving with new means of significant new aspects of already existing scientific fields, problems, theories, hypotheses; • creation of new classifications, methods, constructions, technologies; • obtaining confirmatory facts.

Group II. Applied contributions:

1) Models for research and analysis of the effects of the environment on the health of workers have been created (publication B.3.1),

2) On the basis of well-founded arguments, innovative training techniques have been applied that allow effective results (publications G.8.8, G.8.9).

3) Original questionnaires for expert examination of the impacts of the working environment have been compiled and attached (publications G.8.6, G.8.7, G.8.8, G.7.1).

4) An algorithm has been developed to study the impacts on people in the work environment of computerized workplaces and workplaces in the garment industry (publications G.8.2, B.3.1).

Authorship is evident from everything - style, presented facts and competent evidence. It is clear that he has his own reading and style of work. Her handwriting is easy to understand as both a scientist and a teacher.

The monograph "Healthy and Safe Workplaces" (publication B.3.1) is dedicated to a sensitive and topical issue for the health of workers in daily and long-term work with computers.

It is understood that the physiological and psychological effects of the potential risk of working with a computer.

The emphasis, the problems, the methods for solving and protection from the risks in the working systems with computers have been found. It is a completed scientific work, which is developed consistently, with sufficient evidence, with appropriate graphical interpretations, facts and conclusions. The knowledge acquired from research by other authors are appropriately used and precisely cited.

An important point in the candidate's publications are the specific in-depth analyzes of the risk factors. Ways are proposed to limit the effects of risks. Here I want to note that the competencies of Dr. Eng. Sonya Kancheva Vachinska-Alexandrova are much broader and are not only in the field of technical sciences. The results of her work are managerial, informational and technological in nature. They can be applied both at the design stage and at the stage of operation of ergonomic systems.

4. Significance of contributions to science and practice

The presented contributions are theoretically and practically significant for ergonomics and safety at work. I cannot suggest degrees of significance, as it will be extremely subjective. The contributions are the result of in-depth long-term work of Dr. Eng. Sonya Kancheva Vachinska-Alexandrova. I would even point out that there is a commitment, a professional love, a desire to prove oneself in an area that has been forgotten for years. The candidate defines and brings to visible positions the issues of risk management in ergonomic systems.

The achievements of Dr. Eng. Sonya Kancheva Vachinska-Alexandrova are recognized in scientific and public circles. A total of 20 citations are presented for participation in the competition, as follows:

- a) Citations or reviews in scientific journals, referenced and indexed in world-famous databases (group D.12) - 7 citations;
- b) Citation in monographs and collective volumes with scientific review (group D.13) - 11 citations;
- c) Citation or reviews in unreferenced journals with scientific review (group D.14) - 2 citations.

5. Critical remarks and recommendations

My recommendation to Dr. Eng. Sonya Kancheva Vachinska-Alexandrova is in connection with the formulation of contributions and achievements. I believe that in addition to what has been done ("studied ...", "studied ...", "analyzed ...", etc.), it is appropriate to indicate and show the original, significant, applicability, efficiency and prospects for implementation and development, improvement. Indeed, there are many of these descriptive characteristics, but the author should try and show the ability to derive them lexically as short and meaningful as possible. Then he can accurately and fully present the results of his work.

CONCLUSION

The presented works contain scientific - applied and applied contributions. They are important for the field of risk management and safety in ergonomic systems. They are responsible for the professional field and the scientific specialty of the competition.

The requirements of the Law for development of the academic staff in the Republic of Bulgaria, of the Regulations for its application and of the Regulations for the terms and conditions for holding academic positions at the Technical University - Varna are fulfilled.

I find it reasonable to propose Dr. Eng. Sonya Kancheva Vachinska-Alexandrova to take the academic position of "Associate Professor" in the

professional field 5.13. General engineering in the scientific specialty "Safety and fire-fighting equipment".

Date: 31.05.2021

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по Регламент (ЕС)
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JURY MEMBER: [REDACTED]

Associate Professor DSc Lubomir Vladimirov Vladimirov