

OPINION

COMPETITION FOR THE ACADEMIC POSITION OF "ASSOCIANT PROFESSOR"
BY FIELD OF HIGHER EDUCATION 4. NATURAL SCIENCES, MATHEMATICS AND INFORMATICS
PROFESSIONAL FIELD 4.5. MATHEMATICS (HIGH MATHEMATICS)

COMPETITION announced by the University "Prof. Dr. Asen Zlatarov" - Burgas in State Gazette No. 45 of June 17, 2022.

Candidate: Principal Assistant Stancho Vulkanov Pavlov, PhD

Prepared the opinion: Associate Professor Evgeniya Petrova Nikolova, PhD, Faculty of Computer Science and Engineering, Burgas Free University; Institute of Mathematics and Informatics, Bulgarian Academy of Sciences

By Order No. R-929/19.09.2022 of the Rector of the University "Prof. Dr. Asen Zlatarov" - Burgas, I have been appointed as a member of the scientific jury in connection with a competition for the academic position of "Associate Professor", professional field 4.5. Mathematics (Higher Mathematics) at the "Mathematics and Physics" Department of the University "Prof. Dr. Asen Zlatarov" - Burgas. As a member of the scientific jury, I received a set of materials in accordance with the Regulations for the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions (PURPNSZAD) at the University "Prof. Dr. Asen Zlatarov" - Burgas.

Contest details. The competition for the occupation of the academic position "Docent" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.5. Mathematics (Higher Mathematics) is announced by the University "Prof. Dr. Asen Zlatarov" - Burgas in the State Gazette number 45 of 17.06.2022.

One candidate has submitted documents for participation in the competition - Principal Assistant Stancho Vulkanov Pavlov, PhD.

Applicant data. Stancho Vulkanov Pavlov was born on 31.01.1958. In 1982, he completed his higher education at Plovdiv University "Paisiy Hilendarski" majoring in "Mathematics", qualification: teacher of mathematics, and in 2015 he obtained the educational and scientific degree "Doctor" in Southwest University "Neofit Rilski" - Blagoevgrad. In the period 1982-1985 he worked as a teacher in the Science and Mathematics High School "Acad. Nikola Obreshkov" - Burgas. From 1985 until now, he has been teaching and researching at the University "Prof. Dr. Asen Zlatarov" - Burgas.

Description of scientific works. The candidate for the academic position "Associate Professor" at the University "Prof. Dr. Asen Zlatarov" - Burgas must satisfy the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDAS) and the Regulations for the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions (PASDHAP) at the University "Prof. Dr. Asen Zlatarov" - Burgas.

According to the Regulations for the Implementation of the LDAS, the candidate for the academic position "Associate Professor" must meet the conditions specified in Art. 24, as well as Art. 24 para. 1 of PASDHAP at University "Prof. Dr. Asen Zlatarov" - Burgas. The candidate in the competition meets the requirement of Art. 24 para. 1 item 1 of the LDAS and Art. 24 para. 1 of PASDHAP at University "Prof. Dr. Asen Zlatarov" - Burgas, as he has a doctorate in informatics since 2015 based on a defended dissertation on the topic "Actual problems of the mathematical theory of catastrophes - computer simulation".

The candidate in the competition fulfills the requirement of Art. 24 para. 1 item 2 a/ of the RSARB and Art. 24 para. 2 PASDHAP at University "Prof. Dr. Asen Zlatarov" - Burgas, as he is the main assistant at the University "Prof. Dr. Asen Zlatarov" - Burgas since 2015.

The candidate in the competition fulfills the requirement of Art. 24 para. 1, item 3 of the LDAS and Art. 24 para. 3 PASDHAP at University "Prof. Dr. Asen Zlatarov" - the city of Burgas, as he presented a monographic work and publications in specialized scientific publications for the period 2003-2018. The documentation presents a published monographic work in Bulgarian of 134 pages and a bibliography of 104 titles: "Catastrophe theory and its applications", Demarge, 2022, ISBN 978-954-8726-18-4, reviewers: Professor Galina Panayotova, PhD, Associate Professor Doctor of Sciences Krasimir Iordjev. According to the full list of publications of Principal Assistant Stancho Vulkanov Pavlov, PhD, the candidate presents a total of 22 titles, of which 6 are referenced and indexed in world-renowned scientific information databases (1 – Scopus; 2 – Scopus and Web of Science; 3 – Web of Science), which are accepted as publications for participation in the competition for the academic position "Associate Professor". Seven of the publications are in Bulgarian, the remaining 15 publications in English, all co-authored. Of these publications, three are SJR (Scimago Journal & Country Rank) published in 2 international journals: Oxidation Communications, Journal Category 2015 - Q4, SJR 0.12(2015) and Journal of Chemical Technology and Metallurgy, Journal Category 2018 - Q3, SJR 0.259(2018). The documentation presents a Declaration on the degree of participation in the publications.

The candidate complies with Art. 24 para. 3 PASDHAP at University "Prof. Dr. Asen Zlatarov" - Burgas, since the number of points that can be recognized are: 50 points from group of indicators A, 100 points from group of indicators B, 167 points from group of indicators D, 180 points from group of indicators D and 180 points from indicator group E.

The scientific indicators of Principal Assistant Stancho Vulkanov Pavlov, PhD, based on three samples from the world's scientific databases are: Scopus: 4 Documents by author, 13 citations, h-index 1; Web of Science: 5 Documents by author, 12 citations, h-index 1; Google Scholar: 19 Documents by author, 30 citations, h-index 2.

According to the documentation provided by the candidate, it can be seen that he participated in 2 research and educational international projects and took part in the development of 15 topics in research projects of the University "Prof. Dr. Asen Zlatarov" - Burgas. The list of scientific forums with the participation of Principal Assistant Dr. Stancho Vulkanov Pavlov, PhD presents Bulgarian and international conferences in which the candidate participated with reports and posters. He has published 4 textbooks and developed an electronic teaching aid. The content of the textbooks and study aids are aligned with the content of the relevant disciplines studied by the students at the University "Prof. Dr. Asen Zlatarov" - Burgas and contain a sufficient number of examples and tasks that are useful for students' independent work, as well as help supplement and improve already acquired knowledge.

The main part of the publications presented for the competition are devoted to Biological modeling in plants; Digital methods with applications in physics and chemistry; Software programs and computer simulations of accidents and other areas.

A list of 30 citations is presented, of which 7 are with SJR.

Scientific and scientific-applied contributions. The author of this opinion accepts the scientific and applied contributions defined by the candidate, Principal Assistant Stancho Valkanov Pavlov, PhD namely:

- Biological modeling in plants.
 - Investigating the possibility of applying artificial intelligence methods in eco-physiological research;
 - Developed methodology for quantitative and qualitative analysis of harmful substances and formulated recommendations for effectively overcoming stress in plants and improving the ecological condition of plant systems;
 - Using artificial neural networks to identify differences.
- Digital methods finding applications in physics and chemistry.
 - Porous structure of charred materials from agricultural activities was studied;
 - The degree of surface roughness was evaluated by Fourier analysis;
 - A methodology has been developed for computer determination of the degree of roughness of a surface based on an electron microscope photograph;
 - A computer model of an electric field generated by stationary charges has been developed;
 - A method for atomic absorption analysis, which does not need a light source, was developed and a computer program was prepared for statistical processing and the presentation of the results;
 - A method has been developed for molecular absorption analysis in the visible spectrum that does not require monochromatic light to measure absorption. Polynomial regression was used to determine the dependence of the tristimulus (RGB) values with the unknown concentrations;
 - An optical method for quantitative analysis of sediment concentration based on digital image analysis was developed.
- Software programs and computer simulations of catastrophes.
 - The stability of functions from the point of view of group theory was investigated and an addition was made to Henry Whitney's topology;
 - The mathematical concept of "infinitesimal stability" was analyzed from the point of view of de Maser's algorithm;
 - The potential mathematical function in the practical theory of catastrophes (PTK) was analyzed;
 - Information-mathematical models of Euler rod buckling and arch cracking have been created;
 - The change of the type of resistance of the dynamic risk systems was studied;
 - The sensitivity to imperfection of a composite mechanical system was investigated;
 - A mathematical approach for engineering optimization was created;
 - A mechano-mathematical model of support brackets has been synthesized.
- Other directions.
 - The bifurcation theory has been applied to the analysis of dynamic risk technical systems after their modification;
 - A methodology has been prepared for automated verification and assessment of manually completed tests with a pattern recognition program.

• Patent No. 112845/08.12.2018 was applied for the invention "Combined Bridge", Dimcho Anev, Stancho Pavlov.

Teaching. Principal Assistant Stancho Vulkanov Pavlov, PhD led the following:

- lecture courses of students from the University "Prof. Dr. Asen Zlatarov" - Burgas: "Higher Mathematics 1"; "Higher Mathematics 2"; "Applied Mathematics"; "Mathematics";
- seminar exercises of students from the bachelor programs at the University "Prof. Dr. Asen Zlatarov" - Burgas: "Higher Mathematics 1"; "Higher Mathematics 2"; "Applied Mathematics"; "Mathematics".

He participated in the compilation of study programs and examination materials for the above-mentioned disciplines, as well as in the compilation of candidate-student tests.

Conclusion

On the basis of the above, I consider that Principal Assistant Stancho Valkanov Pavlov, PhD fulfills all the criteria and requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation and the Regulations for the Conditions and Procedures for Acquiring Scientific Degrees and Holding academic positions at the University "Prof. Dr. Asen Zlatarov" - Burgas for the academic position of "Associate Professor". I give a positive conclusion for the selection of Principal Assistant Stancho Valkanov Pavlov, PhD in the competition for an associate professor at the University "Prof. Dr. Asen Zlatarov" - Burgas I propose that the Scientific Jury vote on a proposal to the Faculty Council of the Faculty of Natural Sciences of the University "Prof. Dr. Asen Zlatarov" - Burgas to elect Principal Assistant Stancho Valkanov Pavlov, PhD for the academic position of "Associate Professor" in professional field 4.5. Mathematics (Higher Mathematics).

Signature:
/ Associate Pr., E. Nikolova, PhD/

Burgas
01.11.2022