

REVIEW

of the application for academic position "Associate Professor"
in the field of higher education: 1. Pedagogical Sciences
Professional field: 1.3. Pedagogy of Teaching in... (Information Technology in Primary School)
for the needs of Sofia University "St. Kliment Ohridski",
Faculty of Education Sciences and Arts

1. General presentation of the procedure

In SG 96/19.11.2021, a competition was announced for the selection of an "Associate Professor" in Professional field 1.3. Pedagogy of Teaching in... (Information Technology in Primary School) for the needs of the Faculty of Education Sciences and Arts (FESA), Sofia University "St. Kliment Ohridski". The only candidate in the competition is Chief Assistant Professor Ivan Nikolaev Dushkov, PhD. This review is based on Order № ПД 38-4/04.01.2022 of the Rector of Sofia University "St. Kliment Ohridski"- Prof. Anastas Gerdjikov, DSc, on the basis of the decision of the Commission for Admission to the Competition, appointed by Order ПД 38-1/04.01.2022 of the Rector. By Minutes of 21.01.2022, the Commission unanimously found that all the necessary documents for participation in the competition, according to Article 107 (1) of ПУПНЦЗАД in Sofia University, were present and admitted the applicant to the competition. On the basis of the Minutes of the first meeting of the Scientific Jury dated 27.12.2022, the candidate's eligibility has been verified in accordance with the minimum national requirements and the additional requirements of Sofia University, according to Article 105, items 4 and 5 of ПУПНЦЗАД in Sofia University. The Scientific Jury has unanimously decided that the candidate meets the national minimum requirements under Article 25, paragraphs 2 and 3 of the Academic Staff Development Act in the Republic of Bulgaria (ЗПАССБ), based on all documents submitted by the candidate. No plagiarism in scientific works has been legally proven.

As a member of the Scientific Jury, I have found no procedural irregularities. I received access to the documents and materials of the only candidate in the competition, Chief Assistant Professor Ivan Nikolaev Dushkov, PhD, which are carefully prepared and allow for an objective and complete evaluation in accordance with the requirements of ЗПАССБ and the Regulations for its applications, as well as the Regulations of Sofia University and FESA.

2. General presentation of the applicant

I have known Chief Assistant Professor Ivan Dushkov, PhD since 2006, the year he started his academic career at Sofia University. For 10 years (until 2015) we worked together - he was my assistant and also my PhD student. These facts give me reason to assert that I know well both the teaching and research work of the candidate. In 1998 the applicant graduated from 7th High School "St. Sedmochislenitsi" with extended study of mathematics in Sofia. Then he graduated the Faculty of Mathematics and Informatics at Sofia University in 2002. He holds a Bachelor's degree in Applied Mathematics. Since 2004 he is a Master in Mathematical Modeling and Application of Mathematics. In 2003-2004 he completed a postgraduate qualification for acquiring a teaching qualification in Mathematics and Informatics at the Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski". From 2004 to 2006 Ivan Dushkov was a teacher in Mathematics and Informatics at 8th "Vasil Levski" High School. As it was said, since 2006 he has been an Assistant Professor at the Department of Primary School Pedagogy

(DPSP) of the Faculty of Primary and Preschool Pedagogy (FPPP) at Sofia University "St. Kliment Ohridski". Until now he has held the academic positions of: Assistant Professor (2006-2008), Senior Assistant Professor (2008-2011), Chief Assistant Professor (2011-2015), Assistant Professor (2015-2016), Chief Assistant Professor (since 2016). Since joining the Faculty, he has taught classes in the information communication disciplines ABITO and ABIT. During this period Ivan Dushkov also taught classes in Modern Information Technology, Information Technology and Data Processing and Analysis at the Faculty of Mathematics and Informatics and classes in Historical Informatics at the Faculty of History. I would especially like to mention his active and professional participation in the teaching (and organizational work) in the very first Master's program "Information Technology in Primary School" at DPSP. The deep commitment to the program (Assistant Professor Dushkov was a tireless organizer, lecturer and indispensable consultant for both students and colleagues) largely determined the subject of his dissertation. Along with teaching, he is constantly working to improve his professional qualifications. Already in 2009 he was trained to work with the Moodle platform and obtained a qualification in "Creating E-courses for Distance Learning". In 2012 he passed training in the use of educational software "Envision" and acquired the qualification "Creation of Electronic Materials (Lessons, Tests, etc.)". In the same year, as a participant in the university's doctoral school, he successfully passed all its courses. From 2010 to 2015 he was a part-time PhD student in Methodology of Teaching Mathematics with research supervisor Prof. Zdravko Lalchev, PhD. In 2015 he defended a doctoral thesis, titled "Integration of Information and Communication Technologies in Mathematics Education in Primary School (in Geometric Content)" in the field of 1.3. Pedagogy in Teaching in ... (Mathematics in Primary School) at FPPP, Sofia University. Since 2016 Chief Assistant Professor Ivan Dushkov, PhD has been the scientific supervisor of the postgraduate qualification program "Primary School Pedagogy". He was a scientific supervisor of 8 graduate students. He is a member of the FESA Faculty Council and the General Faculty Assembly Election Committee. As a special note, Chief Assistant Professor Dushkov, PhD is the administrator of the Moodle platform for FESA. I will conclude on this point saying that Chief Assistant Professor Ivan Dushkov, PhD already has extensive (16 years) teaching experience related to IT and mathematics at school and university. At the same time, he has a very good theoretical background in this field, acquired during his studies and postgraduate qualifications. He speaks English, has good communication skills acquired during his teaching career, has excellent teamwork skills, and has a rich sports biography.

3. Presentation of the candidate's scientific works

Chief Assistant Professor Ivan Nikolaev Dushkov, PhD's scientific works are 28, including 1 monograph, 1 book, 2 textbooks, 2 school appliances, 1 study in a scientific journal, 7 articles in scientific journals and 14 articles in conference proceedings. For the competition he presented 1 monograph – main habilitation work (Indicator B.3.), 1 book based on a defended doctoral thesis (Indicator Г.5.), 3 articles and reports published in scientific journals, referenced and indexed in internationally-recognized databases of scientific information (Indicator Г.6.), 16 articles and reports published in unreferenced journals with scientific review or in peer-reviewed journals (Indicator Г.7.) and 1 study published in scientific journal, referenced and indexed in internationally-recognized databases of scientific information (Indicator Г.8.). The presented publications for the competition outline mainly two areas of research - information technology in mathematics education and computer modeling in primary school and application of mathematics for modeling real processes and objects based on systems of ordinary differential equations.

In the monograph Dushkov, I. (2021) *Multimedia Presentations - Mistakes, Omissions and Guidelines How Future Primary School Teachers to Overcome Them*, Sofia, Veda Slovena, the theory and practice of creating multimedia presentations for educational purposes are studied. A theoretical analysis of the problem related to the integration of information and communication technologies in education is made. The most common mistakes are typified and norms (rules) for overcoming the shortcomings when creating a multimedia presentation intended for training are outlined.

In the book Dushkov, Iv. (2021) *Integration of Information and Communication Technologies in Geometry Teaching in Primary Grades*, Sofia, Veda Slovena, an in-depth analysis of the problem of integration of information and communication technologies in education and in particular the study of geometric content in mathematics in primary school is made. A specialized author's set of educational multimedia presentations is proposed, which has been successfully tested in teaching in primary grades.

In the study Lalchev, Z., Varbanova M., Vutova I., Dushkov I., (2016) *Euler-Venn Diagrams or MZ-Maps in Primary School Mathematics, Mathematics and Informatics*, a comparative analysis of two methodological approaches - a traditional ("Euler-Venn diagrams") and an innovative ("MZ-maps") for modeling and solving problems in primary school mathematics is made. It is argued that there is a need to complement the two approaches, which can be done in a traditional or modern way (through computer modeling).

The articles Γ 7.8, Γ 7.14, Γ 7.15, Γ 7.16 are devoted to multimedia presentations for the purpose of mathematics education and, in particular, to the didactic qualities of new electronic products for education. A multimedia presentation engages the two main channels for information processing, thus holding attention and providing meaningful learning when the presentation is designed according to the laws of didactics (and technology). The articles discuss both didactic and technical requirements for presentations in training and systematize the most common mistakes in their creation. One of the articles reflects the first stage in the history of multimedia presentations at the faculty - presentations on entertaining mathematics.

The articles Γ 7.2, Γ 7.4, Γ 7.5, Γ 7.1, Γ 7.17, Γ 7.19, are devoted to computer modeling in primary school. Computer modeling is a school subject included in the primary school curriculum in 2018/2019 school year. This is a new discipline that has no prototype in education and for this reason everything starts from scratch. Through Chief Assistant Professor Ivan Dushkov, PhD's research this beginning is put on a scientific basis. In his works the question of the educational content, the cores in this content, about the individual topics and types of lessons, as well as issues of the methodology of teaching computer modeling takes place. In the works I see the continuation and development of a high professional level of ideas, starting from the first master's program at the faculty (which we cited in point 2).

In the articles Γ 6.1, Γ 6.2, Γ 7.9, Γ 7.11, Γ 7.12, Γ 7.13, Γ 7.14, Γ 7.15 are presented, generally speaking, mathematical models (based on a system of differential equations), of real processes related to the nonlinear dynamics of the system when there is a time delay. In the article Γ 7.6 an important conclusion for the practice is drawn that the time delay is the reason for the nonlinear dynamics of the studied system to be enriched, e.g. new orbits in the phase space appear, which depend on the delay parameters. The theoretical conclusions in economics processes are illustrated by the Dimitrova-Vitanov economics model. The article Γ 7.10 presents a method to reduce the number of equations in the model by using different time scales. In the article Γ 7.12 is developed a procedure for selecting collective variables for metadynamic

simulations of large molecules based on criteria reflecting the specificity of the objects and processes under study.

In the procedure documents, the contributions are classified into three categories – contributions in theoretical-systematic plan, contributions in experimental-research plan and contributions in practical-applied plan. I accept the proposed classification, as well as the contributions in terms of content. The development of new and the update of traditional courses related to information technologies, which are already included in the curricula of the FESA students, is very impressive. There is no doubt that scientific publications present Chief Assistant Professor Ivan Nikolaev Dushkov, PhD as a high-valued specialist in pedagogy of information technology in primary school. This is evidenced by the 14 citations noted.

4. Presentation of the candidate's teaching activity

In the attached documents, the applicant's teaching activity record for the last five academic years is provided. It is noteworthy that the Chief Assistant Professor Ivan Dushkovq PhD's annual teaching load during this time exceeds 2 to 3 times the norm (360 academic hours). According to the reference, the teaching activity of Chief Assistant Professor Ivan Nikolaev Dushkov, PhD includes lectures and seminars in:

- "Information and Communication Technologies in Education and Work in Digital Environment" (compulsory discipline in Bachelor's Program - 5 courses: МПХК full-time students, НУПЧЕ full-time students, ФВС full-time students, ПНУП full-time students, ПНУП distance learning students and in Master's Program - 3 courses: ПНУП distance learning students, СП distance learning students, МСПД);
- "Audiovisual and Information Technologies" (compulsory discipline in Bachelor's Program - 1 course: "Speech therapy" full-time students);
- "Mathematical and Statistical Methods in Physical Education and Sports" (compulsory discipline - 1 course: ФВС);
- "Pedagogical Statistics" (compulsory discipline in Master's Program - 3 courses: СП);
- "Data Processing and Analysis in Social Research" (compulsory discipline in Master's Program - 2 courses);
- "Specialized Modern Information Technologies (compulsory discipline in Master's Program - 1 course: Лог-КНР);
- "Web Design for Pedagogical Purposes" (compulsory elective discipline in Bachelor's Program - 1 course: НУПЧЕ full-time students and Master's Program - 1 course: НУП with teacher qualification);
- "Digital Competence and Digital Creativity" (compulsory elective discipline - 2 courses: НУПЧЕ full-time students, ФВС full-time students).

In addition to the above, he has lectures and seminars with students in postgraduate qualification - НУП, as well as seminars in "Current Pedagogical Practice" and "Pre-graduation Practice". As can be seen from the reference, lectures in "Information Technology" at the faculty, which Chief Assistant Professor Ivan Dushkov, PhD has are enough and even exceed the norm for a lecturer with the academic position of "Associate Professor".

5. Presentation of the candidate's applied scientific activity

During the time he has been a lecturer at the University (16 years) Chief Assistant Professor Ivan Nikolaev Dushkov, PhD has participated in a total of 14 research projects, most of which Have been under the Research Fund. I will quote only the years and the titles of the projects: 2020, "Creating a Positive Learning Environment for Inclusive Education Students"; 2018, "Exploring the Potential of Interactive Learning to Improve the Academic Achievements

of Students-Teachers”; 2016, “Application of (2+1) Dimensional Dynamical Systems in Migration Theory”; 2016, “Resourcing E-Courses for Distance Learning”; 2016, “Student Internships - Phase 1”; 2014, “Student Internships”; 2013, “Qualification of Pedagogical Specialists under Item 2 Conducting One-Year Specialized Training in Higher Education Institutions for the Purpose of Acquiring Additional Qualification of “Child and/or Primary School Teacher” in a View to the Professional Development of Young Pedagogical Specialists Who Wish to Upgrade Their Qualifications”; 2013, “Human Resources Development”; 2012, “Increasing the Capacity of the Academic Staff of Pedagogical Specialists of Sofia University in the Design, Implementation and Provision of Quality E-Learning”; 2011, “Development and Improvement of an Interfaculty Doctoral Program in Educational Research and E-Learning at Sofia University”; 2011, “Exploring Best Practices in Interactive Learning”; 2009, “Educational Software Laboratory - Creator of Educational Software Products for Primary School”; 2008, “Development and Promotion of a Virtual Laboratory for Educational Software”; 2007, “Design and Creation of a Virtual Laboratory Model for Educational Software”.

The above list of research projects unequivocally indicates Chief Assistant Professor Ivan Nikolaev Dushkov, PhD’s positive research experience.

CONCLUSION

It is evident from the foregoing that Chief Assistant Professor Ivan Nikolaev Dushkov, PhD is a proven specialist in pedagogy of information technology education in primary school with impressive experience in this field. His scientific works meets the national minimum requirements under Article 25, paragraphs 2 and 3 of ЗПАСРБ in the scientific field 1. Pedagogical Sciences, professional field: 1.3. Pedagogy of Teaching in... (Information Technology in Primary School). His works have been repeatedly cited. There is no reason to believe that they are not his personal work, which rules out plagiarism. This gives me grounds to conclude that his scientific, scientific-applied, teaching activity and qualities meet the requirements of ЗПАСРБ, the Regulations for its implementation, as well as the Regulations of Sofia University “St. Kliment Ohridski” of the Academic Staff Development for the academic position of “Associate Professor”. Therefore, I give a **positive conclusion on the election of “Associate Professor”** and I take the liberty to propose to the honorable members of the Scientific Jury to support this nomination and to make a proposal to the Faculty Council of the Faculty of Education Sciences and Arts at Sofia University “St. Kliment Ohridski” to elect Chief Assistant Professor Ivan Nikolaev Dushkov, PhD for **“Associate Professor” in Pedagogy of Information Technology Education in Primary School** with the conviction that he deserves.

Sofia, February 28, 2022

The review was prepared by:

(Prof. Zdravko Voutov Lalchev, PhD)

