

## OPINION

by Prof. Dr. Veselka Dimitrova Boeva  
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of the materials submitted for participation in the competition  
for the academic position of **'professor'**  
**of Plovdiv University "Paisii Hilendarski"**

in the field of higher education **4. Natural Sciences, Mathematics and Informatics**  
professional field **4.6 Informatics and Computer Sciences (Informatics)**

In the competition for 'professor', announced in the State Gazette, SG no. 99 / 20.11.2020 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of Computer Informatics at the Faculty of Mathematics and Informatics, as a candidate entered Assoc. Prof. Dr. Elena Petrova Somova from the Department of Computer Science informatics

### **1. General presentation of the procedure and the candidate**

By decision № P33-74 of 12.01.2021 of the Rector of the University of Plovdiv "Paisii Hilendarski" (PU) I was appointed a member of the scientific jury of a competition for the academic position of **'professor' in PU** in the field of higher education **4. Natural sciences, mathematics and informatics**, professional field **4.6 Informatics and computer sciences (Informatics)**, announced **for the needs of** the Department of Computer Informatics at the Faculty of Mathematics and Informatics.

Only one candidate has submitted documents for participation in the announced competition:  
Assoc. Prof. Dr. Elena Petrova Somova from the Department of Computer Informatics.

The set of materials presented by Assoc. Prof. Somova on electronic media is in accordance with the Regulations for development of the academic staff of PU.

The candidate Assoc. Prof. Dr. Elena Somova has submitted a total of 39 scientific publications (11 of which are indexed in the world-famous databases with scientific information Web of Science, SCOPUS, ACM and / or IEEE Explorer), 5 participations in monographs and 1 textbook. The presented materials do not repeat others used in previous procedures for obtaining the educational and scientific degree "Doctor" and for holding the academic positions "Chief Assistant"

and "Associate Professor". A list of 125 notable citations of the candidate's scientific papers is also presented. The enclosed reference for observance of the National minimum requirements for acquiring the academic position "Professor" under 4.6. Informatics and Computer Science shows that these requirements are met by Assoc. Prof. Dr. Elena Somova. The additional faculty requirements of FMI at PU are also satisfied by the candidate.

## **2. General characteristics of the candidate's activity**

Assoc. Prof. Somova has 25 years of teaching experience, entirely at the University of Plovdiv "Paisii Hilendarski". She has taught lectures and exercises in many disciplines of Bachelor's and Master's programs at the FMI of PU and programs of the Faculty of Physics and the Faculty of Languages and Literature of PU. She has developed curricula for her lecture courses and participated in the development of the curriculum and in the preparation of the accreditation documents of the Master's program "E-learning".

Assoc. Prof. Somova has participated in numerous international, national and university projects and teams in the field of information technology and distance learning. In addition, the candidate has been the coordinator of 2 international educational projects on the comparability, comprehensibility, correctness and sustainability of the software. Assoc. Prof. Somova was a BSc/MSc thesis supervisor of undergraduate students and respectively the main and second scientific supervisor of two successfully defended PhD students. For the last 8 years Assoc. Prof. Somova has been the Head of the Computer Informatics Department at the FMI of University of Plovdiv "Paisii Hilendarski".

I highly appreciate the pedagogical, administrative and managerial activities of Assoc. Prof. Dr. Elena Somova.

Assoc. Prof. Dr. Elena Somova has submitted for participation in the competition for 'professor' 39 scientific publications and 5 participations in monographs. 25 of the enclosed publications are in scientific journals and 14 publications are in conference proceedings. 11 of the enclosed 39 publications are indexed in the world-famous databases with scientific information Web of Science, SCOPUS, ACM and / or IEEE Explorer.

The scientific productions of the candidate are divided into four thematic areas: 1) Technologies, models and systems for e-learning; 2) Models and systems for gamification of training; 3) Mobile learning technologies; 4) Automated generation of metadata for digital documents and Artifacts. In total in the four directions are achieved many mainly scientific-applied and applied contributions such as more than 10 approaches, 3 models, 4 methodologies and 4

classifications mainly in the field of gamification and e-learning. In addition, many software tools and systems have been designed and implemented. The proposed methods and methodologies have been experimentally tested, evaluated and analyzed.

In the first direction 18 scientific publications and 3 monographs have been published. The contributions in this direction are divided into four areas: E-learning in the information society; Methodology of e-learning; E-learning and e-assessment systems; Systems for administration of university activities. In some of the papers a systematic presentation of the field of e-learning and distance learning has been made. Another part of the research is focused on joint training and assessment in e-learning, as well as on project-based learning. Another group of publications discusses the idea of invariant teaching and learning of computer programming, regardless of the specific programming language and version. Finally, in the last area, two approaches are proposed for the implementation of systems for administration of learning activities. A long list of results is presented, which corresponds well to the fact that half of the enclosed scientific publications of the candidate is in this direction.

7 scientific publications are enclosed in the second direction. Many of these scientific papers discuss game elements and activities and their possible implementation with the standard elements of a non-game e-learning environment. Some of the publications explore the potential of serious games as well as their impact on learner motivation. Methods for creating a gamified e-course in any subject area are proposed, as well as a methodology for gamification in joint face-to-face training, supported by a cloud environment.

The third area discusses 7 scientific publications, which present a basic study in the field of mobile learning (m-learning) for creating interactive learning content. Many results were reported, mainly applied, as well as several with a scientific-applied character, such as a general model of a process for tracking interactive learning activities carried out in different educational environments.

In the fourth direction are presented 7 scientific publications and 2 monographs. They are in two areas: Specifications and standards in e-learning and Digitization of cultural and historical heritage. In the first area of this direction are presented scientific-applied and applied contributions using standards in the field of training, e-learning and scientific publishing. In the second area, research has been done related to digitalization, creation, preservation and distribution of digital cultural and historical sites.

The volume of the achieved results in each of the four commented scientific directions is significant and convincingly demonstrates the high research productivity of Assoc. Prof. Somova.

### 3. Critical remarks and recommendations

I have a general critical remark regarding the scientific papers presented in the competition, namely the predominant applied nature of the results of the candidate, which in my opinion will affect their long-term significance. This is to some extent compensated by the large volume of achievements in each of the four areas in which the candidate has been active.

### CONCLUSION

After getting acquainted with the materials and scientific papers presented in the competition, analysis of their significance and the scientific-applied and applied contributions contained in them, I find it reasonable to give my **positive** assessment and **recommend to** the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Mathematics and Informatics for promotion of Assoc. Prof. Dr. Elena Somova for the academic position of 'Professor' at the University of Plovdiv "P. Hilendarski" by professional field **4.6 Informatics and Computer Science** (Informatics).

08.03.2021 г.

**Signature:** .....

(Prof. Dr. Veselka Dimitrova Boeva)