

# STATEMENT

On the documents submitted for participation in a competition for the academic position "Full Professor" in the professional field 4.6. Informatics and Computer Science (Informatics) in the competition for "full professor", announced in the State Gazette no. 99 / 20.11.2021 and on the website of the University of Plovdiv for the needs of the University of Plovdiv, as a candidate participates associated professor Elena Petrova Somova, PhD.

## **1. General descriptions of the procedure and some biographical notes**

By order № P33-74 of 12.01.2021 of the Rector of Plovdiv University "Paisii Hilendarski" (PU) I was appointed as a member of the scientific jury of a competition for the academic position of an "full professor" in the field of higher education 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.6 Informatics and Computer Science (Informatics), announced for the needs of the University of Plovdiv. The only candidate for participation in the announced competition has submitted documents associated professor Dr. Elena Petrova Somova, from the University of Plovdiv.

The set of documents on electronic media presented by Dr. Somova is in accordance with the Regulations for development of the academic staff of the University of Plovdiv, and includes all required documents.

I accept for review 34 scientific papers from conference proceeding and scientific journals that have not been involved in previous procedures and are considered in the final evaluation, along with chapters of 5 monographs, a textbook and participation in 34 research and educational projects. The documents are well described and completed.

Elena Somova has a PhD of informatics (with code 01.01.12. Informatics) with a dissertation title Instrumental system for design, creation and maintenance of virtual learning environments. Since 2007 she has been working as an associated professor at the University of Plovdiv, and before that she held the positions of assistant (1996-1999), senior assistant (1999-2002) and chief assistant (2002-2007). He has diverse teaching and research experience.

## **2. General description of the applicant**

The candidate takes part in the competition with a rich teaching job. She has prepared and leads lecture courses in Logic and Functional Programming - for FMI Bachelor's Degree, Programming Paradigms - for FMI's Bachelor's Degree, Programming Languages - for PhilF's Bachelor's Degree,

Object Oriented Programming (C # ) - for FMI Bachelor's Degree, Algorithms and Data Structures (C #) - for FMI Bachelor's Degree, Algorithms and Data Structures (C ++ ) - for FTF and FMI Bachelor's Degree, Web Programming - for FMI Bachelor's degree, Business Process Modeling and Management - for FMI's Bachelor's degree, Information Technology in Education - for FMI's Master's degree, Design of e-learning content - for FMI's Master's degree , Multithreaded programming in C # - elective course for FMI bachelor's degree, Modern information technologies in education - for FMI teacher's qualification, Informatics Workshop 1 - for FMI teacher's qualification, Functional Programming in C #. LINQ (in English), Modeling of Business Processes with BPMN (in English). Evidence of lectures given at foreign universities from Hungary, Austria, Slovakia, Spain, Slovenia and Romania is presented.

He is currently supervising 3 doctoral students. Upon request, assoc. prof. Somova provided me with information on the successful supervising of 38 university student thesis's and 19 peer-reviewed university student thesis's.

The documents and evidence submitted in the competition are sufficient to cover the minimum national requirements for a full professor in Professional Field 4.6 Informatics and Computer Science, and at the same time the specific requirements of FMI of PU. 16 publications are presented in collections and journals monitored by WoS and/or Scopus. I made sure that the publications are present in the relevant databases. There are no articles with WoS impact factor. 126 new citations are presented.

The following areas in which Dr. Somova works are outlined (with some important contributions):

Approaches to:

- gamification in a traditional e-learning environment by using appropriate elements and techniques of e-games; [24, 26, 30, 31, 37, 40]
- creating, accompanying and tracking interactive learning activities in an independent mobile environment based on the xAPI standard; [32, 34, 38, 41]
- invariant teaching and learning of computer programming, regardless of the specific programming language; [19, 23, 27]
- automatic generation of multiple types of test questions from one accumulating test question; [3]
- creation of mobile games in support of the teaching of mathematics to students in primary school on the basis of a variety of game types and with applied game-based methodology; [36]

- standardization of e-learning in Bulgaria by creating an integrated national information environment for e-learning and automated creation of digital repositories based on standards, specifications and models for e-learning; [2]
- ensuring interoperability of a specific university information system with the relevant European standards; [4]
- description and publication of scientific content on the basis of structured data (metadata from relevant standards) to increase the visibility of scientific articles published on the Web through integration in social media; [39]
- development of green software for mobile devices through localization of mobile applications; [35]
- providing protection of NoSQL databases by encrypting and configuring services. [28]

Models of:

- the process of gamification of e-learning based on the game elements, techniques and actions of e-games that are suitable for gamification of e-learning; [24, 26, 30, 31, 37, 40]
- the process of tracking interactive learning activities carried out in different educational environments, based on the xAPI standard; [32, 34, 38, 41]
- e-learning (including training course) based on information and assessment units and logical connections between them. [9, 21]

Methodologies are proposed for:

- creation of a playful e-course from any subject area in an e-learning environment (including according to the game type of the learners); [24, 26, 30, 31, 37, 40]
- gamification in joint face-to-face training, supported by a cloud environment; [43]
- joint and project-based e-learning based on diverse and controlled engagement of learners throughout the learning process through the use of a variety of learning resources and activities in an e-learning environment; [18, 25, 29]
- classification of syslog messages based on rules for classifying messages in a tree hierarchy of regular expressions. [12, 17]

Classifications have been made, in order to implement the relevant systems, of:

- the main template algorithms (invariants) that are taught during the training in computer programming; [19, 23, 27]
- game types, suitable for mobile realization and in the teaching of mathematics in the primary school; [36]

- the main types of accumulating test questions for automatic generation of many different test questions from them. [3]

I assess as completely justified the claims on the contributions formulated in this way by the candidate, according to the high level of the proceedings and journals where the research are presented.

### 3. Comments

I believe that the candidate has reached the necessary scientific competence to publish single-authored papers and those in journals with WoS impact factor in the scientific areas related to her scientific career.

### CONCLUSIONS

The documents and materials submitted by assoc. prof. Dr. Elena Somova, cover all the requirements of the LDASRB, the Regulations for the implementation of LDASRB and the specific rules of PU.

The candidate in the competition has submitted a sufficient number of scientific papers not presented in previous scientific procedures. There are original scientific-applied and applied contributions, which have received international recognition. As a representative part of them have been published in journals and proceedings monitored by WoS and/or Scopus. The scientific and teaching qualification of Dr. Somova is indisputable.

The candidate, Elena Somova, fully “covers” the required minimum scientometric indicators for “full professor” in professional field 4.6. Informatics and Computer Science.

After getting acquainted with the materials and scientific papers presented in the competition, analysis of their significance and contained in them scientific, scientific-applied and applied contributions, I find it reasonable to give my **positive evaluation** and recommend to the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Mathematics and Informatics for election of associated professor Elena Petrova Somova, PhD to the academic position of “Full Professor” at the Paisii Hilendarski University of Plovdiv in the professional field 4.6. Informatics and Computer Science (Informatics).

05.03.2021  
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