REVIEW

from Prof. PhD Eng. Kolyo Zlatanov Onkov, Agricultural University-Plovdiv, appointed a member of the Scientific Jury according to Order № РД-21-1599/31.07.2023 of the Rector of the Plovdiv University ”Paisii Hilendarski”

on competition for academic position “Associate Professor” in domain of Higher education 4. Natural sciences, mathematics and computer science professional field 4.6 Informatics and computer science (Internet information technologies), for the needs of the Plovdiv University (PU) ”Paisii Hilendarski”, Faculty of Mathematics and Informatics (FMI), announced in State Gazette No 39/02.05.2023 and on the Internet pages of the Plovdiv University

1. Brief presentation of the candidate

Only **Chief Assistant Professor PhD Hristo Toshkov Hristov** has submitted materials to participate in the competition. He graduated bachelor degree in “Informatics” and Master degree in "Information security" at the University of Veliko Tarnovo “St. Cyril and st. Methodius”. In 2016, he defended PhD thesis entitled „Methodology of training in modern technologies for creating software” at FMI, PU “Paisii Hilendarski”. In the period 2003-2008, he worked as a teacher at the "Alexander Popov" Vocational High School of Electronics, Veliko Tarnovo and at the "Ivan Vazov" High School of Mathematics and Natural Sciences, Dimitrovgrad. He worked as a project manager and software architect in the period 2010-2020. Thus he acquired experience in developing software applications. Since March, 2013 PhD Hristo Hristov is Chief Assistant Professor at department “Software technologies”, FMI, PU “Paisii Hilendarski”.

2. General description of the presented scientific works

PhD Hristo Hristov has submitted his materials in the competition for “Associate Professor” in accordance with the Low of Academic Staff in Republic of Bulgaria, Regulations for its implementation as well as specific requirements of FMI, PU “Paisii Hilendarski”.

The candidate's scientific works are presented by groups of indicators as follows:

- *group of indicators **А*** – PhD thesis;
- *group of indicators **В*** – **4** scientific publications;
- *group of indicators **Г*** – **10** scientific publications; one book chapter and two utility model requests;
- *group of indicators **Д*** – **10** citations of **6** publications in SCOPUS or Web of Science.

Six of the **14** scientific publications were published in issues with SJR without IF. The remaining **8** are in issues referenced and indexed in at least one of the databases storing scientific information: Web of Science, SCOPUS or IEEE Xplore.

In none of the publications PhD Hristo Hristov is a “single author”. The candidate is first author of **10** papers. **Two** publications are in Bulgarian language and **12** in English. **Ten** papers were published in scientific journal and the remaining **4** in conference proceedings.

I consider that the applicant's personal contribution to the publications is significant and is directly related to his competence in the thematic areas: Internet learning technologies, models and approaches in the design of software systems on the Internet, Web content management. This conclusion is based on the analysis of the candidate’s scientific and applied results, presented in item 3 of the review. The fact that PhD Hristo Hristov is the first author in a large part of the submitted publications should not be overlooked.

The table below presents the minimum national requirements in accordance with the Low of Academic Staff in Republic of Bulgaria, Regulations for its implementation and their fulfillment by the candidate for "Associate Professor".

Group of indicators	***А***	***Б***	***В***	***Г***	***Д***
Minimal points required	50	-	100	200	50
Acknowledged by the reviewer	50	-	108	261	80

I accept the “Reference of compliance with the additional requirements of FMI, PU “Paisii Hilendarski” submitted by the candidate.

PhD Hristo Hristov **meets the minimum requirements** of the above mentioned law, regulations and additional requirements of FMI, PU “Paisii Hilendarski” for the academic position of "Associate Professor" in domain of Higher education 4. Natural sciences, mathematics and computer science, professional field 4.6 Informatics and computer science.

3. Analysis of scientific and applied results. Evaluation of the contributions

The main results and contributions of PhD Hristo Hristov's scientific and research work can be presented in the following thematic areas:

A) **Models and approaches in the design of software systems on the Internet**

A1) Valuable publication with a strong scientific-applied contribution is „Modeling of Pedagogical Patterns in an E-learning System" [4]. This paper presents a model of educational objects adapted for software implementation. The decision to encapsulate learning resources, methodological information and technical information derived from content management system is appropriate. The paper presents a conceptual framework of e-learning software system, but there is no indication of working on the practical realization of a prototype of such system;

A2) Model of hierarchical system is developed for organizing and sharing learning content [9]. The model is integrated and tested in the realization of hierarchical learning management system that is used by companies in the insurance industry;

A3) Approach to information security through authentication and authorization is proposed as part of the development and operation processes of modular Web-based software systems [2].

B) Web content management

B1) Methods, models and approaches for managing accessible content on the Internet are developed. They refer to a method applicable in parallel with the implementation of the software process in the renewal of Web infrastructure [8], evaluation of Web content for people with special educational needs [13], including accessible color and contrast in visual deficiency and color blindness [10] and approach to content validation of Web pages [12];

B2) The fact that the created models and methods [8, 10] were implemented and tested during the renewal of part of the Web content of the Web infrastructure of PU "Paisii Hilendarski" after 2020 is undoubtedly positive.

C) Internet learning technologies

C1) Method for teaching technologies for designing and styling Web pages in university environment is developed [14]. The simulated role-playing game from the practice of a

software company is analyzed. The aspects of the experimental training in "Web design" are presented in detail;

C2) Method of "conference online learning" is created [3]. It is based on the integration of a conference platform, Web resources, cloud services and digital learning materials. The methodology is tested with students of FMI, PU “Paisii Hilendarski”;

C3) Application of a system for the identification and assessment of problematic educational situations in teaching discipline "Computer Modeling" has been implemented [5].

D) Models of a device for obtaining electrical energy through a piezo crystal and its control are proposed [15, 16]. A model of a communication system with a vending machine for food and beverage distribution is created [17]. Software implementation of finite deterministic automaton is developed through the software application (GPM3) for monitoring Internet Protocol Television in Bulgaria [11]. The results of these works have practical significance.

The tendency to work on methods and software with application in education is well expressed in the candidate's research work.

There are no joint publications of PhD Hristo Hristov with foreign scientists or researchers. Usually this is accepted negatively in academic environment.

There are scientific-applied contributions of analyzed results in sections A) and B1). The results in sections B2, C) and D) have applied character.

The cited papers of PhD Hristo Hristov exceed the minimum national requirements. Only three of the ten citations of a single paper were made by foreign authors, the remaining seven were by Bulgarian authors. This gives me reason to determine that the results in the candidate's works are not well known by scientists and researchers abroad. Judging by the co-authorship in the cited articles and the citations themselves, the results of the research work of PhD Hristo Hristov are known to his colleagues at FMI, PU “Paisii Hilendarski”.

Probably, I will be quite critical, but I have reason to claim the following. The candidate has focused his efforts on overcoming the minimum requirements under the Law and Regulations to receive the academic position of "Associate Professor". At the same time, he has not achieved in-depth results of scientific significance, and there are no visible results of joint work with scientists from other universities in Bulgaria and abroad.

Based on the above presented arguments, I assess **the scientific and research work** of PhD Hristo Hristov as **well** in the domain of Higher education and professional field of the competition for academic position “Associate Professor”.

4. Evaluation of the teaching activity

In the "Software Technologies" department, PhD Hristo Hristov lectures the following main courses: "Web design", "Introduction to programming 1", "Internet information technologies" for bachelors and "Web technologies" for masters. He has experience in teaching Object oriented programming, Data structures, Analysis, design and programming of software applications etc. He is author of the textbook “Guide to Designing and Styling Web Pages with CSS GRID SYSTEM”.

PhD Hristo Hristov has supervised 20 FMI graduates and participated in committees for the State Examination and defending diploma works for bachelors and masters. He indicates 7 publications co-authored with PhD students and 4 with students – a fact that is rarely found at all among candidates for Associate Professor.

I find the **teaching activity** of PhD Hristo Hristov multilateral and valuable therefore I evaluate it **very highly**. He has successfully implemented his scientific-applied and expert knowledge in all levels of the educational system.

5. Notes and recommendations

❖ I would categorically advise PhD Hristo Hristov to raise the quality requirements for his own scientific work. I would recommend that he look at the application of software systems in the field of education and the instrumental issues of the Web in learning rather as a passing stage in his development as a scientist and researcher. For example, it is a good idea to reorient his research to structuring information and knowledge from natural sciences or business, and then developing original algorithm and analytical software. I am convinced that he has the capacity and opportunities to carry out more in-depth scientific research.

❖ PhD Hristo Hristov has expert knowledge and potential to develop scientific projects at national and international level in the future. This will give him the opportunity to develop his scientific research, to expand his contacts and to begin supervising PhD students.

6. Conclusion

The scientific and applied results, contributions and high quality teaching work are in the base of my **POSITIVE** opinion regarding all academic activities of **PhD Hristo Toshkov Hristov.** He meets the requirements of the Low of Academic Staff in Republic of Bulgaria, Regulations for its implementation and specific requirements of Faculty of Mathematics and Informatics, Plovdiv University ”Paisii Hilendarski” for the academic position **“Associate Professor”**.

I recommend to the members of honorable Scientific Jury to vote positively for **PhD Hristo Toshkov Hristov** to receive academic position **“Associate Professor”** in domain of Higher education **4. Natural sciences, mathematics and computer science,** professional field **4.6 Informatics and computer science (Internet information technologies)**

September 25, 2023 **Reviewer: …….....**

/ Prof. PhD Kolyo Onkov /