# R E V I E W

in relation to a competition for the academic position "Associated Professor"
in the Field of higher education 1. Pedagogical sciences
Professional field 1.3. Pedagogy of Informatics and Information Technologies
for the needs of Plovdiv University "Paisii Hilendarski"
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professor, PhD in Mathematics, Doctor Habil in Pedagogical sciences

## 1. <u>General presentation of the procedure</u>

This review is prepared in accordance with Order № РД-22-444/18.02.2025 г. of the Rector of Plovdiv University "Paisii Hilendarski" – Prof. Dr. Rumen Mladenov, in compliance with Art. 4 (3) from the LDASRB (Law for the Development of the Academic Staff in Republic of Bulgaria), Art. 2 (2) and Art. 57 (2) in connection with Art. 62 of the Regulations of this Law, also in accordance with Art. 68 (2) of the Regulations for the Development of the Academic Staff in Plovdiv University (RDASPU) and on the basis of the corresponding Decision of the Faculty Council of the Faculty of Mathematics and Informatics, РД-21-363/17.02.2025, report by Prof. Dr. Angel Atanassov Golev – Dean of the Faculty of Mathematics and Informatics (FMI). In SG, issue 98/19.11.2024 a competition for the needs of PU "Paisii Hilendarski", Faculty of Mathematics and Informatics, is announced in relation to the occupation of the academic position "Associated Professor" in the Field of higher education 1. Pedagogical sciences; Professional field 1.3. Pedagogy of Informatics and Information Technologies. The only candidate in the competition is Chief Assistance Dr Elena Hristova Todorova from PU, FMI, Department "Computer Technologies". No procedure irregularities were identified.

As a member of the Scientific Jury, appointed by a decision of the Faculty Council of FMI (protocol №14/22.01.2025), I have received an access to the documents of the candidate, which include:

1. Application form to the Rector for participation admission in the competition;
2. CV in European format;
3. Higher Education Degree Diploma for the acquisition of the educational-qualification degree "bachelor": serries PU-2005, № 015495, registration № 3790 from 8 July 2005 (a copy);
4. Higher Education Degree Diploma for the acquisition of the educational-qualification degree "master": serries PU-2008, № 032574, registration № 666 from 19 September 2008 (a copy);
5. Doctoral Degree Diploma: № 1000095, issued on 24 February 2014 г. a copy);
6. List of all publications;
7. List of the publications presented for the competition;
8. Reference for implementation of the minimal national requirements;
9. Reference for implementation of the additional requirements of FMI at PU;

10. Annotation of the scientific works for participation in the competition according to Art. 65 of RDASPU:

    10.1. Annotation in Bulgarian of the scientific works for participation in the competition;

    10.2. Annotation in English of the scientific works for participation in the competition;

11. Author reference and self-evaluation of the scientific contributions of the scientific works participating in the competition;

    11.1. Author reference and self-evaluation in Bulgarian of the scientific contributions;

    11.2. Author reference and self-evaluation in English of the scientific contributions;

12. Documents for educational activities:

    12.1. Reference for auditorium and out-auditorium occupancy;

    12.2. Reference for activities with students;

13. Documents for research activities:

    13.1. Reference for research activities;

    13.2. Reference for participations with reports at international and national scientific events;

    13.3. Official notice № НПД 725/06.07.2014 from the service "Scientific and application activity" at PU "Paisi Hilenfrski"';

    13.4. Official notice № НПД 016/22.01.2025 from the service "Scientific and application activity" at PU "Paisi Hilenfrski"';

14. Certificate for work experience – № РД-38-11/09.01.2025;

15. Citations reference;

16. Copies of the scientific work participating in the competition;

17. Declaration for the originality and assurance of the applied documents;

18. Collection of documents on paper medium from item 1. to item 17.;

19. Collection of documents in electronic form from item 1. to item 17.

The documents and materials have been carefully presented and enable an objective and complete evaluation in accordance with the requirements of the National Acts (LDASRB) and the Regulations for its implementation, as well as the Regulations of PU and the specific requirements of FMI with PU (RDASPU).

**2. <u>Biographic data for the candidate</u>**

Ch. Assist. Dr Elena Todorova was born on 25 June 1982. She acquired secondary education – manager with average and European qualification in 2001 in SOU „Hristo Prodanov", Karlovo, profile „Management". In the period 2001 – 2005 she studied in PU . учи в ПУ "Paisi Hilendarski", Faculty of Mathematics and Informatics, specialty „Mathematics and Informatics" acquiring bachelor degree, teacher in Mathematics and Information technologies. In 2008 she acquired master degree in PU, specialty „Software technologies". In the period 2006 – 2010 she was a teacher in SOU „P. K. Yavorov", Plovdiv and conducts teaching in Informatics and Information Technologies. In the period 2005 – 2012 was a part-time assistant in PU, occupied with research and teaching activity – conducting seminar exercises in Information technologies, School course in Informatics, School course in Information Technologies, Integrated practicum in Informatic and s. o. I the

period 2012 – 2014 she was an assistant in PU, doing research and teaching seminar exercises in Information Technologies, Introduction to Information Technologies, School course in Informatics, School course in Information Technologies, Integrated Practicum in Informatics, Accounting and accounting information systems.

In the period 2010 – 2014 Elena Todorova was a PhD student in PU in the Field of higher education 1. Pedagogical sciences, Professional field 1.3. Pedagogy of Informtics and Information Technologies. Since 2014 until now Dr Elea Todorova is Chief Assistant with activities in preparation and conducting lectures and seminar exercises in: Information Technologies, Information and Communication Technologies in teaching and work in a digital environment, School course in Informatics, School course in Information Technologies, Integrated Practicum in Informatics, Integration of activities, Information Technologies in Mathematics, Accounting and accounting information systems, elective courses, Electronic commerce for bachelors and masters, and s. o. Besides teaching Ch. Assist. Dr Elena Todorov was occupied with research and monitoring of graduate students.

**3. Scientific production of the candidate**

For the participation in the competition to acquire the academic degree of "Associated Professor" Ch. Assist. Dr Elena Todorova has presented 45 scientific works (2 in English), including 1 monograph, 1 book, 26 research publications, 8 textbooks and 9 educational handbooks. All the above were not used in the procedures for acquiring the educational and scientific „doctor", nor for acquiring the academic degree „chief assistant". 11 among the scientific publications are in journals (1 abroad) and 8 in proceeding of international conferences.

The main scientific interests of Ch. Assist. Dr Elena Todorova are in the area of the methodology of teaching Informatics and Information Technology. One part of the presented works are connected with the education of students, while the other part concerns the corresponding methodological elaboration and is dedicated to help the work of teachers in the education of students. The research of Ch. Assist. Dr Todorov could be grouped in the following areas:

Planning and developing didactic materials for students teaching. The contributions of the candidate in this field include elaboration of learning content in Informatics and Information Technologies for teaching in secondary and middle school. It is proposed an analysis of the tasks in teaching Informatics and Information Technologies in school, based on a classification with respect to the specific curriculum. Many examples and tasks are considered helping the formation of knowledge, capabilities and competence in students teaching.

Formation of reflective skills in teaching Information Technology and Informatics in school. In the publications in that field are presented some theoretical-pedagogical bases for actual problems of reflection in the Methodology for teaching Informatics and Information Technology in school. An adapted ALACT model is presented for teaching Information Technology students with the goal of forming reflective skills and key competences. A methodological approach is suggested for the formation of reflection in teaching Information Technology to students in junior high school. The developed technological model and methodology for formation of reflective skills are tested with students in school grades 5, 6 and 7.

Formation of reflective skills in educating teachers in Informatics and Information Technologies. The elaborations in this field continue the investigations of Ch. Assist. Dr Elena Todorova in her PhD dissertation concerning formation and development of reflections in Education. It should be mentioned the candidate's monograph *Reflection in educating teachers in Informatics and Information Technology* is the process of forming reflective skills among students who are learning to become teachers in Informatics and Information Technology. Some methodological approaches are suggested for the formation of reflective skills among teachers in teaching Informatics and Information Technologies. Sample problems are developed which follow the steps of the adapted ALACT model for the formation of reflective skills among students – future teachers.

Methodological approaches for teaching Informatics and Information Technology in school. What are suggested in this direction are methodological approaches directed towards creating a suitable environment for a more effective acquisition of skills and forming cognitive skills in learning Programming. The block-programming language Scratch's main possibilities and characteristics are discussed as well as its application in teaching Programming in the primary school. Some methodological aspects of teaching Programming in the junior high school are discussed connected with the development of algorithmic skills among students through using a block-programming language and a script text language. A methodological approach is presented for teaching Programming in school by simultaneous use of the languages Python, Java and C#.

Pedagogical strategies in education. The main characteristic in the papers of the field is the development and elaboration on the students' practical and application skills in the area of Information Technology as well as forming algorithmic skills in teaching Programming by using the capabilities of Visual Basic for Applications in Excel. A set of problems is presented along with their solutions which are realized with the help of the integrated programming means in Excel. Some methodological approaches are suggested for interdisciplinarity in teaching Mathematics. Furthermore, some aspects of teaching Robotics are reviewed as an out-of-class form of learning. A methodological approach is reviewed for realizing an adaptive electronic learning. The emphasis is on structuring the teaching matter for achieving adaptability and creation of adaptive computer tests. For improving accuracy in evaluation an opportunity is presented for the difficulty of questions to be adapted to the level of the examined student. A parametrization for test questions and examination problems is reviewed with the goal to evaluate different students by different but equivalent tests.

Training manual for teaching Information Technology to students. The presented textbooks and teaching aids are intended for teaching students in Information Technology and Computer Modeling and Information Technology in different grades in Bulgarian schools. The learning content corresponds to the curriculum of the Ministry of Education and Science.

**4. Actuality of the theme and expediency of the goals and problems to be solved in the scientific production of the candidate**

One of the most essential tasks of Education is the implementation of various educational methods, while effective realization is an important prerequisite to master students' interest and to increase successful teaching. Extremely important is to create a suitable environment for learning by doing and experience. The students are supported by their teachers who lead them to convert themselves to discoverers of learning content. An essential condi-

tion is the motivation for independent individual learning of the material, and this leads to progress and development. The corresponding information could be used for individual additional occupations to enlarge and deepen it. A compulsory condition is to create an active attitude to the educational process concerning students. In everyday communications in the virtual environment students are looking for and finding information. The classic way of teaching in classes is not efficient sufficiently since listening and the obligation of playing back leads to a loss of motivation. The contemporary generation is „digital" one and this requires digital competences, and they are missing a personal realization is not possible nowadays. The rapid development of communications in the contemporary society from one part and the progress of the information and communication technologies development from the other part give opportunities for the creation of corresponding environment for the progress of the ways to present the learning material and its connections with pedagogical problems. The way of teaching should be such that to provoke interest of learning and perceive the new. All this gives sense to the scientific production of the candidate, while the successful realization of the results proves their actuality.

Bulgaria has traditions in the field of the candidate's results. Let us mention the composition of electronic educational materials and the first electronic lesson in Mathematics, elaborated by the professors Asen Rahnev and Kosta Garov with a demonstration in 1984 in the Mathematical school „Academician Kiril Popov, Plovdiv. In 1994 teaching of the discipline „Information Technologies" was introduced in the Bulgarian school, while in 1998 a conception was created for information literacy in the Strategy and the National Program for the development of the information society in the Republic of Bulgaria. Of importance are also the online assessments of competencies which corresponding not only to the State educational standards concerning the educational disciplines „Information Technologies" and „Informatics", but also the European reference frame for digital competence. Ch. Assist. Dr Elena Todorova belongs to the community of researchers and teachers who work actively, communicate experience among them and contribute to the administrative processes in teaching and learning. The presented works contain new ideas and results in the domain of Pedagogy of Informatics and Information Technologies.

The high level of the scientific production of Ch Assist. Dr Elena Todorova is proved also by the considerable number of citations – 57 in total, including 11 in referred and indexed issues, 23 in monographs and group collections, 23 in not-referred issues.

## 5. Teaching activity of the candidate

Ch. Assist. Dr Elena Hristova Todorova had and has classes in FMI at PU, Department „Computer Technologies", as it follows: from 2005 until 2012 as a part-time assistant and PhD student; from October 2012 until October 2014 s an assistant; from October 2014 until now as a chief assistant. After acquiring the academic position „chief assistant" she is engaged in teaching: **ECD bachelor – lectures** on the disciplines: *„Using dynamical software in Mathematics teaching", „Information and Communication Technologies in Education and work in digital environment", „Accounting and accounting information systems", „Electronic trade"*; **seminar exercises** on the disciplines: *„Information Technologies", „School course in Informatics", „Integrated Practicum in Informatics and Information Technologies", „Information and Communication Technologies in Education and work in digital environment", „Introduction to Information Technologies", „Information technologies in Mathematics",*

*„Accounting and accounting information systems", „Electronic trade";* **lectures** on the disciplines: *„Integration of activities", „Application of contemporary Information Technologies in Mathematical education";* **seminar exercises** on the disciplines: *„School course in Informatics", „School course in Information Technologies", „Integration of activities", „Competence approach and innovations in Education", „Application of contemporary Information Technologies in Mathematical education".* Additionally in the Department for language and specializes preparation of foreign students (DESPFS) **seminar exercises** on the discipline: *„Information Technologies".*

Ch. Assist. Dr Elena Hristova Todorova taught teachers at: National Scientific Program at MES *„Mmotivated teachers",* 2019 – 2020; International Project BG05M2OP001-2.011-0001 „Support for success" – Phasea 2, teaching pedagogical specialists on *„Application of the instrumentation for early identification of students under the risk of prematurely leave of the educational system and for a differentiated approach in the determination of their needs in individual support",* Operational program „Science and education of intelligent growth" 2014–2020, co-financing by the European Union through the European structure and investment fonds, 2021.

Ch. Assist. Dr Elena Todorova participates actively in administrative activities as a member of: Faculty Council of FMI – from 2012 until 2023; Commission for State exam and defense of graduation theses for bachelors in FMI – from 2016 until now; Commission for State exam and defense of graduation theses for masters in FMI – from 2021 until now; Commission for the quality in FMI – from 2015 until now; Commission for Internal audit in PU as a certified auditor – from 2020 until now; Protocol clerk of the Department „Computer technologies" – from 2019 until 2023. Academic mentor of students for: *„Specialty practice",* 3rd year full-time and part-time education; *„Undergraduate internship",* 4th year full-time and part-time education in the specialty *Business Information Technologies, Informatics, Software Technologies and design, Software engendering.* Academic monitor of more than 100 students, supporting the practice education in: International Project of MES BG05M2OP001-2.002-0001 *„Student practices" – Phase 1,* operational program „Development of human resources", co-financed by the European social fond of the European Union, 2016 – 2018; International project in MSE BG05M2OP001-2.002-0001 *„Student practices – Phase 2,* operation program „Development of human resources", co-finance by the European social fond of the European Union, 2019 – 2022.

Ch. Assist. Dr Elena Todorova participated in the National Commission for the organization and performance of *The National Autumn competition in Information Technologies* and *The National Olympiad in Information Technologies* – from 2015 until mow.


**CONCLUSION**

From all of the above it is obvious that Chief Assistant Dr Elena Hristova Todorova is a proven specialist in Pedagogy of Informatics and Information Technologies with an impressive results and experience in this professional field. Her scientific production complies with the minimum national requirements of LDASRB for the scientific field 1. Pedagogical Sciences, 1.3 Pedagogy of Informatics and Information Technologies with 958 points in total. Her works have been repeatedly cited. There is no reason to believe

that they are not her personal work and work of her co-authors, which excludes a presence of plagiarism. This makes me conclude that her scientific, scientific-applied, teaching activity and her qualities fulfil the requirements of the LDASRB, the Regulations of its implementation, as well as the Regulations of Plovdiv University "Paisii Hilendarski" for academic staff development required to candidates for the academic position "Associated Professor". The additional requirements of the Faculty of Mathematics and Informatics are fulfilled too. Therefore, **my conclusion is positive about the election of "Associated Professor"** and I would like to propose to the honourable members of the Scientific Jury to support this application and to submit a proposal to the Faculty Council of FMI, PU to elect Chief Assistant Dr Elena Hristova Todorova for **"Associative Professor" in the Field of higher education 1. Pedagogical sciences Professional field 1.3. Pedagogy of Informatics and Information Technologies** with the strong believe that she deserves it.


Sofia, 31 March 2025                                                    Reviewer:




                                                                    (Prof. Dr Habil Sava Grozdev)