STANDPOINT

From PhD Todorka Jekova Stefanova- professor in University of Ruse

of the materials presented for participation in competition

for filling an academic position **'associate professor'**

in University of Plovdiv „Paisii Hilendarski"

by Field of higher education 1. Pedagogical sciences
Professional direction 1.3 Pedagogy of teaching …
(Scientific specialty Methodology of teaching Physics)

In the competition for associate professor/ professor, announced in National newspaper, copy 40 from 14th May 2021 and in the web page of University of Plovdiv „Paisii Hilendarski" for the needs of the department *„Educational technologies"* to *Faculty of Physics and Technology, chief assistant PhD* ***Hristina Georgieva Petrova*** from *University of Plovdiv „Paisii Hilendarski"* participates as a candidate.

1. General presentation of the procedure and the candidate

Subject:

With order № P33-3129 from 12th July 2021 of the Rector of University of Plovdiv „Paisii Hilendarski" (PU) I am determined for member of the scientific jury in competition for taking an academic position **'associate professor' in PU** by Field of higher education 1. Pedagogical sciences, Professional direction 1.3 Pedagogy of teaching … (Methodology of teaching Physics) **announced for the needs of** the department *„Educational technologies"* to Faculty of Physics and Technology.

For participation in the announced competition one candidate has handed over documents: **Chief assistant PhD Hristina Georgieva Petrova from Univercity of Plovdiv „Paisii Hilendarski".**

Set of materials on paper carrier, presented by chief assistant PhD Hristina Petrova is in correspondence with the Regulations for development of the academic staff of PU, and it includes the following documents:

- Curriculum vitae in European format;
- Diploma for educational qualification degree "Master";
- Diploma for educational and scientific degree PhD;
- Verification on the implementation of the minimum national requirements for acquiring the academic position "Associate Professor";
- list of citations;
- List of scientific works, divided into three parts: publications on the topic of the dissertation; works for the academic position of "associate professor" and other publications;
- Annotations of the materials under Art. 65 of PRASPU, including self-assessment of contributions in Bulgarian and in English;

- Verification for participation in research projects and the relevant certificates:
- Declaration of originality and authenticity;
- Verification for auditory employment, developed curricula and guidance of graduates and relevant certificates

Candidate chief assistant PhD Hristina Petrova has described **total** 37 scientific work. 34 scientific works are accepted for review, which are outside the dissertation and are taken into account in the final evaluation, 3 educational appliances and participation in 3 research projects. 12 scientific works on the dissertation and 13 scientific works outside the competition are not reviewed. Documents in the form of official notes and certificates for participation in projects for qualification of teachers under Operational Programs are also presented.

I think that all the documents have been duly prepared and have the necessary evidentiary status. Verification on the minimum national requirements is accompanied by a list of works grouped by the respective groups of indicators and convincingly proves that the number of points is significantly higher than the required minimum for 'associate professor'. There is an exact correspondence between the list of scientific works for participation in the competition and the author's reference for the contributory nature of the works. I consider that the procedure is administratively correct and the presented materials are a reliable basis for the objectivity of the assessment in this standpoint.

In the professional profile of the candidate there are sustainable educational benchmarks: completed master's degree for chemistry teacher and physics teacher at Paisii Hilendarski University of Plovdiv in 1990 and received Educational and Scientific Degree 'PhD' in Methodology of teaching physics at the same university in 2011. Her academic development began in 1993 as an assistant at the Pedagogical Institute, Smolyan, then in 1996 she was appointed as an assistant at the Faculty of Physics, PU 'P. Hilendarski'. She successively went through academic positions in her university career and at the opening of the procedure she was a senior assistant with a PhD degree. The candidate uses the time, for which she is in each of the academic positions, skillfully and through sustainable motivation to upgrade and enrich teaching and research experience. I appreciate that in terms of educational status and academic development, chief assistant PhD Hristina Petrova is in a relevant position for the announced competition procedure.

2. General characteristics of the candidate's activity

2.1. Assessment of educational and pedagogical activity.

Chief Assistant PhD Hristina Petrova has developed educational documentation and she is the holder of 7 lecture courses, in 4 of which she conducts seminars and practical exercises. She has got three educational appliances, thematically related to one of the courses ‚Graphical method in physics education'.

The courses serve specialties from 5 faculties of PU 'P. Hilendarski', which shows the ability of the teacher to adapt the educational content of her lectures to the interests of students in different specialties.

She organizes and manages the pedagogical practice of students from natural sciences. She is the supervisor of 7 graduates from the specialties ‚Physics and Mathematics' and from the master's program ‚Teacher of Physics'.

The pedagogical activities listed above are not fragmentary, but are **interconnected in the unified cycle of the educational-cognitive process for the preparation of students**: fundamental

disciplines; psychological-pedagogical, methodological disciplines and pedagogical practice in its three forms. This gives me reason to make a summary assessment of the proven competencies and responsibilities of PhD Hristina Petrova for effective implementation of the cycle in her educational and pedagogical activity.

2.2. Evaluation of the scientific and scientific-applied activity of the candidate

Scientific works can be classified as follows:

By type: monography 1; educational appliances - 3; articles - 27; reports - 6

By importance: articles included in the world system for referencing, indexing and evaluation with impact rank and impact factor - 7

By place of publication: articles in reviewed journals abroad - 2; articles in national journals 25; reports at a conference with international participation -1; reports in works at national scientific conferences-5

By number of co-authors: individual - 31; with two co-authors - 5; with three - 1

In the language in which they are written: in English - 5; in Bulgarian - 32

By thematic content: In my opinion, the candidate's works **can be grouped in three thematic areas according to the priority focus in their content,** but of course there is a mutual penetration of one work in two or three areas.

The first thematic area is focused on a set of didactic technologies for use of the graphical method.

The main concept of this thematic area is in the habilitation work - the monography ‚Graphical modeling in physics education', around which 7 works of the author herself gravitate, correctly cited in the bibliography and theoretically interpreted in the conceptual content of the habilitation work, without overlapping.

The monography is a broad and up-to-date summary of the pedagogical research and the great experience of PhD Hristina Petrova. In a practical-applied context in the same thematic area are the book with graphical tasks and methodological manuals for use of the graphical method, covering kinematics, dynamics, statics and thermal phenomena.

The second thematic area focuses on the key competence 'Learning Skills' and its place among the 9 key competences. This is sought in the reflexive approach to learning through metacognitive processes; in the meta-subject approach in education through a technological model applicable to all areas of physics knowledge. The experimental sets of capillary phenomena and of experimental verification of Bernoulli's law, which are available for research work of students and pupils, are with a strong cognitive and innovative perspective.

The third thematic area focuses on the integration of ICT in physics education and has some actual didactic reflections: distance learning in secondary school, simulations in physics distance learning, computer graphical modeling of elements of knowledge in the field of physics sciences, developing of educational computer presentations and the teacher's functions during use of ICT.

2.3. Contributions / scientific, scientific-applied, applied / and citations

I accept the author's verification for the contributions of the candidate, developed professionally and competently and specified with the scientific works. Based on the analysis of publications on thematic areas made in the previous paragraph of the standpoint, I only **supplement** the author's verification with some **key contributions** in my reading of scientific production.

Contribution in scientific aspect: **developed a new multi-layered scientific approach for the formation of graphical skills in the study of natural science content**. I consider this contribution to be a key one, because it enriches the methodological basis, psychological and pedagogical practice and methodological applications for the formation of a metacognitive element of the key competence 'Learning Skills' with a sustainable transfer from physics knowledge to knowledge in other natural sciences. /publications № 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16, 18, 19, 21, 22, 23, 27, 29, 30, 31, 33/

Contribution in scientific-applied aspect: **developed innovative laboratory exercises for capillary phenomena and methods for experimental verification of Bernoulli's law, as well as exercises for a virtual physical laboratory. They have different levels of theoretical and experimental complexity and are therefore applicable to both physics students and secondary school students.** *I consider this contribution to be a key one, because the nature of innovations implies that they are used in project-oriented learning, which is a modern trend for education. /publications № 8, 9, 23, 24/*

Contribution in applied aspect: **Use of the technology for formation of graphic literacy through the physics educational content of 'Man and Nature' -5th and 6th grade**. I consider this contribution as a key one, because it supports the development of the methodology for the formation of graphical skills from primary to secondary school. /17, 20,25/

A complete list of citations is presented. According to it, there are 15 citations of 4 articles of the candidate in foreign publications, referenced and indexed in world-famous databases with scientific information, or in monographies and collective volumes, as 6 of the citations are in publications with Impact Factor. Two of the cited articles are co-authored. There are 4 more citations of 4 publications of the candidate in Bulgarian reviewed journals and scientific works. In her verification on indicator 'D', she has presented only some of the citations and collected 90 points, which is significantly more than the required minimum for the indicator. These facts mean recognition of the scientific production of the candidate and her recognition among the scientific circles at home and abroad.

2.4. Evaluation of the personal contribution of the candidate

Based on the fact that 31 of the scientific works are independent and 6 are co-authored with one or two co-authors, as well as the content of scientific papers and their correlation with the specific educational and pedagogical activity, the observed citations, I believe that there is **personal** publishing activity of PhD Hristina Petrova and ability to integrate into authoritative research teams as an **equal participant**. I believe that the contributions from the author's verification and the key contributions I have supplemented are personal.

3. Critical remarks and recommendations

- In the monography it is appropriate to achieve a greater balance in the volume of the three chapters. The logical connection between the content of the three chapters would benefit if at the end of each chapter there is a brief summary of it in the context of the overall concept of habilitation work.

Recommendation: I appreciate that all three key contributions have great prospects for development in the future research work of PhD Hristina Petrova, for which she convincingly proves capacity in the current procedure.

CONCLUSION

The documents and materials submitted by PhD Hristina Georgieva Petrova **meet all** the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for implementation of the Law on the Development of Academic Staff in the Republic of Bulgaria and the relevant Regulations of PU 'Paisii Hilendarski'.

The candidate in the competition has submitted a **significant** number of scientific works published after the materials used in the defense of educational and scientific degree 'PhD'. In the works of the candidate there are original scientific and applied contributions, which have received national and international recognition. Most of them are published in journals and books, published by international and national academic publishers. Her theoretical developments have methodological applicability and most of them are directly oriented to the educational work. The scientific and teaching qualification of chief assistant PhD Hristina Petrova **is unquestionable**.

The results achieved by PhD Hristina Petrova in the teaching and research activities **fully** comply with the specific requirements of the Faculty of Physics and Technology of PU 'Paisii Hilendarski', accepted in connection with the Rules of Plovdiv University for application of Law on the Development of Academic Staff in the Republic of Bulgaria.

After getting acquainted with the materials and scientific works presented in the competition, analysis of their significance and the containing scientific, scientific-applied and applied contributions, I **definitely give my positive assessment and strongly recommend** the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Physics and Technology for the election of PhD Hristina Georgieva Petrova for the academic position 'Associate Professor' at the University of Plovdiv 'P. Hilendarski' by professional field 1.3. Pedagogy of teaching .. (Methodology of teaching physics).

17th August 2021

Prepared the standpoint:

(Professor PhD Todorka Stefanova)