

## **OPINION**

**on a competition for the occupation of an academic position “Associate Professor”,  
in professional field 4.6 Informatics and computer sciences  
(Programming)  
for the needs of the Sofia University "St. Kliment Ohridski" (SU),  
Faculty of Mathematics and Informatics (FMI),  
announced in State Gazette No. 61/ 02.08.2022 and on the FMI and SU websites**

The opinion was prepared by **Prof. Daniela Ananieva Orozova, PhD** - Trakia University, in my capacity as a member of the scientific jury for competition in professional field 4.6 Informatics and computer sciences (Programming), according to Order No. ПД – 38-561/ 28.09.2022 of the Rector of Sofia University "St. Kliment Ohridski".

Only one candidate submitted documents to participate in the announced competition: **Chief Chief Asst. Prof. Dafina Yordanova Petkova, PhD**, Department of "Computer informatics", Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski".

### **I. General description of the presented materials**

#### **1. Application data**

The documents submitted by the candidate in the competition correspond to the requirements of the Development of Academic Staff Act in the Republic of Bulgaria (ADASRB) and the Regulation for application of ADASRB (Decree No. 26 of February 13, 2019) and regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in Sofia University "St. Kliment Ohridski".

I have received all the documents included in the Application form to the Rector of the Sofia University "St. Kliment Ohridski" for participation in the competition from 28.09.2022.

According to ADASRB, the Rules for the Implementation of the ADASRB, and and regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in Sofia University "St. Kliment Ohridski", the candidates for Associate Professors must meet the following conditions:

1. To have acquired the educational and scientific degree of “Doctor”;
2. For not less than two academic years:
  - a. To have occupied the academic position of “Assistant Professor” and “Chief Assistant Professor”;

3. To have presented a published monograph or equivalent publications in specialized scientific issues ..., which do not reproduce those presented for awarding the educational and scientific degree of “Doctor” and for the scientific degree of “Doctor of Science”;

4. To meet the minimum national requirements under Art. 2b, Paras. 2 and 3, and the requirements under Art. 2b, Para. 5, respectively;

5. To have no plagiarism proven as per the legally established order in the scientific works.

Art. 26 (1) The candidates shall submit a reference on the fulfillment of the minimum national requirements under Art. 2b, Paras. 2 and 3, the requirements under Art. 2b, Para. 5, respectively, and a reference of the original scientific contributions to which shall be attached the relevant evidence laid down in this Act, in the Regulations for its implementation, and the Regulations of the higher schools and of the scientific organizations.

Chief Asst. Prof. Dafina Petkova, PhD meets the conditions of Art. 24 (1).1 as she presented a Diploma for the educational and scientific degree of “Doctor” № 001324, issued on 29.01.2021.

Chief Asst. Prof. Dafina Petkova, PhD meets the conditions of Art. 24 (1).2 according to the presented document № 243/02.09.2022, signed by I. Bicheva - Head of the Human Resources Department of SU "St. Kliment Ohridski", she works as an "Assistant" and " Chief Asst. Prof." from 15.06.2006 in FMI at SU.

Chief Asst. Prof. Dafina Petkova, PhD meets the conditions of Art. 24 (1).3 as she has submitted 3 equivalent publications in specialized scientific issues (as a monograph thesis), which do not reproduce those presented for awarding the educational and scientific degree of “Doctor” and for awarding the scientific degree “Doctor of Science”.

Chief Asst. Prof. Dafina Petkova, PhD has submitted a “Complete list of scientific publications”, in which 37 publications are included, and a “List of scientific publications for participation in a competition for acquiring the academic position “Associate Professor”.

## **2. General characteristics of the candidate's scientific works and achievements**

For the purposes of the competition, Chief Asst. Prof. Dafina Petkova, PhD presents three publications as a monograph thesis:

- O. Roeva, D. Zoteva, V. Lyubenova, Escherichia coli Cultivation Process Modelling Using ABC-GA Hybrid Algorithm, Processes, vol: 9, issue: 8: 1418, 2021, pages: 1-15, Electronic ISSN: 2227-9717, doi: <https://doi.org/10.3390/pr9081418>, Ref, Web of Science, IF (3.352 - 2021), Web of Science Quartile: Q2 (2021), <https://www.mdpi.com/2227-9717/9/8/1418>;

- O. Roeva, M. Angelova, D. Zoteva, T. Pencheva, Water Cycle Algorithm for Modelling of Fermentation Processes, Processes, vol: 8, issue: 920, 2020, Electronic ISSN: 2227-9717, doi: <https://doi.org/10.3390/pr8080920>, Ref, Web of Science, IF (2.847 - 2020), Web of Science Quartile: Q3 (2020), <https://www.mdpi.com/2227-9717/8/8/920>;

- D. Zoteva, V. Atanassova, O. Roeva, E. Szmidt, Generalized net model of Artificial Bee Colony optimization algorithm, ANNA'18; Advances in Neural Networks and Applications 2018, Publisher: VDE VERLAG GMBH · Berlin · Offenbach, 2018, pages: 53-58, ISBN: 978-3-8007-4756-6, Ref, SCOPUS, IEEE Xplore, International, <https://ieeexplore.ieee.org/document/8576709>.

Chief Asst. Prof. Dafina Petkova, PhD has a complete list of 37 publications, of which 19 publications, indexed in the scientific databases Scopus/Web of Science. He participated in the competition with: 9 publications, all are in English and all co-authored.

The presented "List of observed citations" includes a total of 7 citations, indexed in Scopus.

Chief Asst. Prof. Dafina Petkova, PhD meets the minimum national requirements for the occupation of an academic position "Associate Professor" in professional field 4.6 Informatics and computer sciences. According to the submitted documents, the candidate for the competition covers: 50 points by group of indicators A; 123 points by group of indicators B; 210 points by group of indicators G; 56 points by group of indicators D. Therefore, the minimum national requirements and the additional requirements from RIADAPRB for occupying the academic position "Associate Professor" in professional direction 4.6. Informatics and computer science are covered.

After a detailed review of the presented scientific works, I found that:

a) The scientific works meet the minimum national requirements (according to Article 2b, paragraphs 2 and 3 of the Development of Academic Staff Act in the Republic of Bulgaria) and respectively of the regulations on the terms and conditions for acquiring scientific degrees and occupying academic positions in Sofia University "St. Kliment Ohridski", for the academic position of "Associate Professor" in the scientific field and professional direction of the competition.

b) The scientific works presented by the candidate do not repeat those from previous procedures for acquiring a scientific title and academic position.

c) There is no evidence of plagiarism in the scientific works submitted for the competition.

### **3. Characteristics and assessment of the candidate's teaching activity**

Chief Asst. Prof. Dafina Petkova, PhD presented a report on the indicators under Art. 112, para.

2. She led exercises in the following disciplines:

- Object-oriented programming (majors: Informatics and Computer Science);
- Object-oriented programming – practicum (majors: Computer Science and Information Systems);
- Introduction to Programming (majors: Computer Science, Applied Mathematics and Mathematics);
- Data structures and programming (majors: Applied Mathematics and Mathematics).

She participated in the publication of study aid for students:

Magdalina Todorova, Petar Armyanov, Dafina Zoteva, Kalin Georgiev, Collection of C++ programming tasks. Part One. Introduction to programming, 357 pages, ISBN: 978-954-9334-06-7, TechnoLogika EOOD 2008, Sofia.

Reissued in 2021:

Magdalina Todorova, Petar Armyanov, Dafina Petkova, Kalin Georgiev, Collection of C++ programming tasks. Part One. Introduction to Programming, 403 pages, ISBN: 978-954-07-5352-2, University Publishing House "St. Kliment Ohridski" 2021, Sofia.

### **4. Analysis of the scientific and applied scientific achievements contained in the materials for participation in the competition**

The main contributions in the scientific publications presented by the candidate for participation in the competition stem from the search for practical applications of InterCriteria Analysis, Metaheuristic methods and Generalized Nets for solving optimization tasks in various research and industrial fields. Contributions can be grouped into the following three thematic areas:

- Metaheuristic methods;
- Generalized Nets;
- InterCriteria Analysis.

The results have a scientific and applied nature.

### **5. Notes and recommendations**

The documents show a successful and productive research activity of Chief Asst. Prof. Dafina Petkova. I would recommend the candidate further independent publication activity.

## 6. Conclusion on the application

Having become acquainted with the materials and scientific works presented in the competition and on the basis of the analysis of their importance and the scientific and applied contributions contained therein, I confirm that the scientific achievements meet the requirements of the Development of Academic Staff Act in the Republic of Bulgaria, the Regulations for its implementation and the corresponding Regulations of Sofia University "St. Kliment Ohridski" for the position of the candidate in the academic position of "Associate Professor" in the scientific field and professional direction of the competition.

I hereby state my **positive** assessment of the application of Chief Asst. Prof. Dafina Yordanova Petkova, PhD.

## II. GENERAL CONCLUSION

Based on the above, I recommend the scientific jury to propose to the competent authority for the selection in FMI at Sofia University "St. Kliment Ohridski", to choose **Dafina Yordanova Petkova** to occupy the academic position of "**Associate Professor**" in the professional field 4.6. Informatics and Computer Science (Programming), scientific field 4. Natural Sciences, Mathematics and Informatics.

22.11.2022

Opinion prepared by: .....

(Prof. Daniela Orozova, PhD)