

REVIEW
on the competition for the academic position
"Associate Professor"
in professional field 1.3. Pedagogy of teaching in ...
(Informatics and Information Technologies)
for the needs of Sofia University "St. Kliment Ohridski" (SU),
Faculty of Mathematics and Informatics (FMI),
announced in State Gazette No. 61 of Aug 02 2022 and on the FMI and SU websites

The review was prepared by: Assoc. Prof. Dimitar Georgiev Dimitrov, PhD — Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski", in my capacity as a member of the scientific jury for conducting a competition for the selection of an Associate Professor in professional field 1.3. Pedagogy of teaching in ... (Informatics and Information Technologies) according to Order No. RD 38-564/30.09.2022 of the Rector of Sofia University.

Only one candidate submitted documents for participation in the announced competition:

Assist. Prof. Philip Petrov Petrov, PhD, Faculty of Mathematics and Informatics at Sofia University "St. Kliment Ohridski".

I. General description of the presented materials

1. Application data

To participate in the competition, the candidate Assist. Prof. Philip Petrov Petrov, PhD, presented a list of a total of 17 publications, including 15 publications in Bulgarian and foreign scientific issues and scientific forums, and 2 monographs. A total of 17 other documents supporting the applicant's achievements are also presented. These include: resume; diplomas for Bachelor's degree and Master's degree; diploma and reference from NACID for PhD degree; employment contracts from SU "St. Kliment Ohridski" and TU-Sofia; certificate of work experience in the specialty; occupational license; medical certificate; criminal record certificate; list of all publications of the candidate; a list of publications, conferences, projects and scientific supervisor activities generated by the "Authors" system; certificate of fulfillment of the minimum national requirements; list of citations and evidence for each of them; a reference to the original scientific

contributions; declarations of participation in scientific projects; official note from the Union of Bulgarian Mathematicians; copies of the scientific publications submitted for participation in the competition; summaries of peer-reviewed publications submitted for participation in the competition; a copy of the announcement in the State Gazette.

The documents submitted by the candidate in the competition meet the requirements of the ZRASRB, PPZRASRB and the Regulations for the terms and conditions for acquiring scientific degrees and occupying academic positions at SU "St. Kliment Ohridski" (PURPNSZADSU).

2. Applicant data

Assist. Prof. Philip Petrov Petrov, PhD, graduated in 2006 with a bachelor's degree in Applied mathematics at FMI of SU "St. Kliment Ohridski". In 2008, he obtained a master's degree in the "Teaching Technologies in Mathematics and Informatics" program, again at the FMI of SU. In 2014, he defended his doctoral degree in 1.3. Methodology of teaching mathematics at the Southwest University "Neofit Rilski" with a dissertation on the topic "Organizational model for the application of interactive methods in the teaching of linear algebra".

Assist. Prof. Philip Petrov, PhD, began his teaching career in 2009 as an assistant at the Faculty of Computer Systems and Management at the Technical University of Sofia. In the same year, he was also a Mathematics and Information technology teacher at the Private Profiled High School "Educational Technologies", and in 2012 he was a part-time assistant at the Southwest University "Neofit Rilski". Since 2015, he has been a chief assistant professor at the Faculty of Mathematics and Informatics at the "St. Kliment Ohridski" SU.

Since 2016, he has been a member of the program committee and secretary of section B for the Spring Conference of the Union of Bulgarian Mathematicians. Since the same year, he has also been an academic mentor for the "Student Practices - Phase 1" project of the Ministry of Education and Science. In 2019-2020, he is a mentor in the "Copernicus Hackathon Sofia" competition.

In parallel with his teaching activity, since 2004, Philip Petrov has also been developing a small private business in the field of information technology, and he was also the head of a technical support team in a web hosting company.

3. General characteristics of the candidate's scientific works and achievements

Most of the scientific works of the Assist. Prof. Philip Petrov, PhD, are in the professional field in which the competition has been announced. A substantial part of the publications presented for the competition describe successfully introduced new methods in education on various topics -

the SQL language, object-oriented programming, hardware, teaching young children, etc. Two monographs are presented - one is dedicated to the problems of teaching informatics in Bulgarian schools, and the other - to educational dialogue computer programs.

The scientific works fully meet and exceed the minimum national requirements (according to Art. 2b, paras. 2 and 3 of ZRASRB) and also the additional requirements of SU "St. Kliment Ohridski" for occupying the academic position of "associate professor" in the scientific field and professional direction of the competition:

- group A – 50 points (with a minimum of 50 points) - dissertation for the PhD degree;
- group B – 100 points (with a minimum of 100 points) - monograph;
- group G – 225 items (with a minimum of 200 items) - second monograph, 3 articles in refereed and indexed issues and 12 articles in non-refereed issues.

- group D – 55 items (with a minimum of 50 items) - 6 citations of 5 of the candidate's publications.

According to NACID data, it can be confirmed that the scientific works presented by the candidate do not repeat those from previous procedures for acquiring a scientific title and academic position.

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

4. Characteristics and assessment of the candidate's teaching activity

The teaching experience of Assist. Prof. Philip Petrov, PhD, at FMI of SU is closely related to the topic of the competition. It includes: lectures and exercises on "School Course in Informatics" and "School Course in Information Technology", "Fundamentals of Secure Web Programming" elective course, "Programmed Learning" course for Master's degree and courses in web design, databases and introduction to programming for students in a post-graduate teacher training program in informatics and information technology.

The applicant's previous teaching activity includes courses in informatics and IT. At the Technical University in Sofia, he led exercises in courses such as Databases, Programming and using computers - 3, Programming technologies for secure code, etc., and in a private high school he briefly taught lessons in mathematical logic for the 8th grade and programming Java for 10th grade.

Assist. Prof. Philip Petrov, PhD, also has a short teaching experience in mathematics at "Neofit Rilski" SWU - exercises in "Linear Algebra" and "Analytic Geometry".

The candidate has advised 9 Master's students who have successfully defended their theses - 7 at TU-Sofia and two at SU. He was the thesis supervisor of 79 bachelors at TU-Sofia.

Assist. Prof. Philip Petrov, PhD, is also an academic supervisor of the "Mathematics and Informatics" major and the "Teaching Technologies in Mathematics and Informatics" Master's program at the FMI of SU. He is also leading student internships.

I think the teaching experience of Assist. Prof. Philip Petrov, PhD, is completely suitable for an associate professorship in the field in which he is applying. University experience is complemented by school experience, which is important for the training of future teachers.

5. Analysis of the applicant's scientific and applied scientific achievements

The scientific and applied scientific contributions of Assist. Prof. Philip Petrov, PhD, can be grouped into the following five areas:

1. Challenges facing informatics education in Bulgarian schools;
2. Programmed training;
3. Informatics and IT training methods;
4. Technological means to support learning in mathematics and informatics;
5. Others - mostly unrelated to the direction of the competition.

For #1, after a thorough analysis, the candidate has made a proposal for an easy-to-implement restructuring of the existing curricula in order to increase accessibility to basic knowledge. The curricula at the universities for the majors preparing informatics teachers were reviewed, and practical experience was shared from the candidate's department at the Sofia University "St. Kliment Ohridski". The subject "Computer Modeling" is also commented.

For #2, a literature review and summary of all scientific works related to educational dialogue computer programs has been made. The author's contributions of the candidate in the field are highlighted and part of the experience of working on student projects is presented.

For #3, new methods in many different areas of learning are introduced: linear algebra (five experimental organizational models), SQL SELECT queries, introducing elements of parallel and network programming into an object-oriented programming course, pedagogical practices, and teaching young children. The results of their introduction are analyzed.

For #4, various technological aids supporting mathematics learning, anti-copying, exam material creation, hardware course teaching, and hybrid learning are presented.

For #5, a new method for solving a classic problem in mathematics is proposed, a system for controlling various electronic components of cars through voice commands is presented, an analogy

is presented between the written works required of students and doctoral students and the main stages in the development of software applications, a method for measuring a zone of inhibition of microbial growth using a non-professional digital photograph is described.

The citation report lists a total of 6 non-IF and non-SJR citations to 5 of the applicant's publications. Two of the citations are made by foreign authors.

In a large part of the scientific publications presented for the competition, the Assist. Prof. Philip Petrov, PhD, is either first author or sole author.

6. Critical notes and recommendations

It is not clear enough what the candidate's personal contribution is to the co-authored publications.

In article G3 ("System for voice control of car modules with communication through CAN network"), a sufficiently in-depth analysis is not carried out. The implementation is also presented briefly.

As a minor note to the otherwise well-formed documentation, I would mention that the scientific publications are listed inconsistently in different formats, and some references lack page numbers.

I would recommend the candidate to publish more articles in English.

7. Personal impressions of the candidate

I know Assist. Prof. Philip Petrov, PhD, from our brief work together as exam curators. My personal impressions of him are very good.

8. Conclusion on the application

After having familiarized myself with the documents presented in the competition and based on the analysis of their significance and the scientific and applied scientific contributions contained in them, I confirm that the scientific achievements meet the requirements of ZRASRB, the Regulations for its application and the relevant Regulations of SU "St. Kliment Ohridski" for the candidate to occupy the academic position of "associate professor" in the scientific field and professional direction of the competition. In particular, the candidate satisfies the minimum national requirements in the professional direction and no plagiarism has been found in the scientific works submitted for the competition.

I give my **positive** assessment to the application.

II. General Conclusion

Based on the above, I hereby **recommend** to the scientific jury to propose to the competent authority of the Faculty of Mathematics and Informatics at SU "St. Kliment Ohridski" to elect Assist. Prof. Philip Petrov Petrov, PhD, to the academic position of "associate professor" in professional field 1.3. Pedagogy of training in ... (Informatics and Information Technologies).

November 21st, 2022

Sofia

Prepared by:

/Assoc. Prof. Dimitar Dimitrov/