

REVIEW

by **Academician D. Sc. Ivan Petkov Popchev**

Bulgarian Academy of Sciences

professional field 4.6 Informatics and Computer Science

On the academic works presented for participation in the competition for academic position of
"Professor"

professional field 4.6 Informatics and Computer Science, published in the State Gazette, Issue
65 of 12.08.2022, with applicant

Associate Professor Velina Todorova Slavova, PhD

With Order №3-PK-20 from 05.10.2022 of the Rector of New Bulgarian University prof. D. Sc. Plamen Doynov, issued on the basis of the Decision of the Academic Council of 01/27.09.2022, I have been appointed as a member of the Scientific Panel on the announced competition for the academic position "Professor" in professional field 4.6 Informatics and Computer Science.

According to ADASRB, RAADASRB and the Requirement of New Bulgarian University for the academic position of "professor", the applicants must meet certain conditions.

Art. 29 (1) Candidates to take academic position "Professor" shall meet the following conditions:

1. To have acquired the educational and scientific degree of Doctor ... ;
2. To have occupied the academic position of Associate Professor in the same or in another higher school or scientific organization for not less than two academic years ... ;
3. To have presented a published monograph or equivalent publications in specialized scientific issued or evidenced of equivalent artistic and creative achievements in the field of arts, which do not reproduce those presented for awarding of the educational and scientific degree of Doctor, and for awarding of the scientific degree of Doctor of Science and for occupying the academic position of Associate Professor;
4. To have presented other original scientific-research works, publications, inventions, and other scientific and scientific-applicable works or artistic creative achievements, to be assessed together;
5. To meet the minimum national requirements and the requirements under Art. 2b Para. 2 and 3 and Art. 2b Para. 5;

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

(3) The candidates shall submit a reference on the fulfillment of the minimum national requirements under Art. 2b Para. 2 and 3 and, respectively the requirements under Art. 2b Para. 5, 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 higher schools and the scientific organizations.

The requirements of the New Bulgarian University (Annex 2 to the Ordinance on Development of the Academic Staff of New Bulgarian University), in accordance with the Regulations for Application of the Act on Development of Academic Staff of the Republic of Bulgaria, are:

Set of indicators	Content	Professor
A	Indicator 1	50
C	Indicators 3 or 4	100
D	Sum of Indicators from 5 to 9	200
E	Sum of Indicators from 10 to 12	100
F	Sum of Indicators from 13 to 20	150
G	Sum of Indicators from 21 to the last	70
H	indicator (obligatory for the New Bulgarian university)	70
I		70

In the requirements of the New Bulgarian University for the Development of the Academic Staff, the conditions for the academic position of "professor" under Art. 64 (2) correspond to Art. 29 (1) but do not mention Art. 29 (3) of the Act on Development of Academic Staff of the Republic of Bulgaria.

I. Assessment of compliance with the minimum national requirements and the requirements of New Bulgarian University

Assoc. Prof. Velina Slavova, PhD **meets the requirements of Article 29 (1).1**, as she has obtained the educational and scientific degree "Doctor" (Candidate of Technical Sciences) - SAC, diploma № 19458/03.11.1989 approved by protocol № 15.05/06.10.1989.

Assoc. Prof. Velina Slavova, PhD **meets the requirements of Art. 29 (1).2**, as she has taken the academic position of "Associate Professor" at NBU by the act of appointment 286 / 07.10.2003.

Assoc. Prof. Velina Slavova, PhD **fulfills the requirements of Art. 29 (1).3**, as she has submitted a published monograph "**Language, concept formation and child language acquisition -**

an information modeling approach", Professor Marin Drinov Academic Publishing House of the Bulgarian Academy of Sciences, Sofia, 2022, pp. 158. ISBN-978-619-245-221-6. Referees: Krassimir Atanasov, Encho Gerganov, Vassil Vassilev, Vitalii Velychko, [Irina Blinnikova], English editing and proofreading Dessislava Petkova. Available in full text at:

https://www.researchgate.net/publication/360101299_LANGUAGE_CONCEPT_FORMATION_AND_CHILD_LANGUAGE_ACQUISITION_-_An_information_modeling_approach

Assoc. Prof. Velina Slavova, PhD **meets the requirements of Article 29 (1).4**, as she also submitted 8 other research publications.

Assoc. Prof. Velina Slavova, PhD **meets the requirements of Art. 29 (1).5**, for the minimum national requirements of Art. 2b (2) and (3), respectively the requirements of Art. 2b (5) and the requirements in Annex 2 to the NBU Regulation on the Development of Academic Staff (Table 2, pp. 9-10).

Assoc. Prof. Velina Slavova, PhD **meets the requirements of Art. 29 (1).6**, as there is no plagiarism in scientific works proven according to the statutory procedure.

II. Research (creative) activities and results

Appendix 10 contains a complete list of 60 publications since 2003 in the field of Artificial Intelligence - modeling of cognitive functions, divided by topics: Models of cognition – 44, Speech and text processing – 6, Education and E-Learning – 6, Mathematical models – 4.

Correspondingly, Table 3 (page 12) lists the submitted publications: 6 publications in journals with SJR (no. 2, 3, 4, 5, 6, and 7) one journal publication (no. 1), and 1 publication in proceedings of an international symposium (no. 8).

The competition documents do not contain the "**Statement of Original Scientific Contributions, accompanied by relevant evidence...**" according to Article 29 (3) of the Law on Academic Staff Development, which is not in Article 64 of the Regulation on Academic Staff Development of the NBU. The lack of the candidate's self-assessment of scientific contributions creates certain incompleteness.

In brief, the **contributions** can be systematized as follows:

A. Monograph

A1. A Generalized Net model of information flows of the process of understanding a language message,

- A2. A model of the basic syntactic structure of the sentence,
- A3. A model of the cognitive complexity of classes of concepts.

B. Publications

- B1. Study of the operation Semantic merge using the Generalized Net Model [No. 1],
- B2. A model of classes of meaning with an analysis of the differences in the acquisition of English and French by children [No. 2],
- B3. A model of the creation of biological information unit and a model of the cognitive complexity of classes of concepts with an investigation of the adequacy of the model [No. 3],
- B4. A model of establishment of mental image of verbs and model of cognitive complexity of classes of concepts on the Fibonacci tree [No. 4],
- B5. Vowel-consonant pairs have been statistically shown to correlate with subjects' ratings of the emotional valence of text using phonetic transcriptions of words [No. 5],
- B6. A corpus of 10,000 sentences, each rated for emotional valence by five independent raters, is processed locally to a composition of biphones as pairs of vowels and consonants in either order [No. 6],
- B7. A factor analysis of the statistical space of biphones' frequencies from the emotionally rated corpus was performed and the analysis proved that the second principle component of the phonemic space shows a correlation of 0.96 with emotional valence [No. 7],
- B8. For two samples of Internet news, it has been statistically shown that the biphonic composition of the text predicts its emotional tone [No. 8].

The submitted publications meet the requirement for **peer-reviewed** publications.

According to Table 4 (pages 13-14), **15 citations are given for 8 publications.**

Assoc. Prof. Velina Slavova, PhD has participated in international educational projects MASTER-FOAD "Virtual University of Pays de la Loire (UVPL)" and "EU-FP7 (Vrije Universiteit Brussel)". She has been the coordinator of an international ERASMUS-PROG1 project and of a Doctoral College "Collège doctoral francophone régional ès sciences de gestion", for Central and Eastern European countries.

In the period 2001-2006, Assoc. Prof. Velina Slavova, PhD was a member of the Scientific Council of the AUF Francophone University Agency and in the period 2001-2012, she was a member, and expert in the field of engineering sciences and informatics in the AUF Regional Committee of Experts (for the countries of Central and Eastern Europe).

III. Learning and Teaching Activities

The candidate has been a tenured lecturer since 1989 at the higher school for engineering, Sofia, in numerical methods, programming, and in technology of machine building. Since 1996 she has been a senior assistant professor at the NBU Department of Computer Science, where she is still working. She has prepared 31 courses, including 3 in French, included in the e-learning module "MOODLE-NBU". Since 1998 she has been a lecturer in Information Technologies and Statistics at the Francophone Institute of Administration and Management in Sofia. From 1999 to 2017, he was an invited lecturer for one-month courses on database design at the University of Nantes - France, from 2006 to 2011 she was an invited lecturer at the French University of Egypt on database design, algorithms, and data structures and algorithm analysis.

From 2001 to 2010, she taught Erasmus courses at the University of Bordeaux and the Vrije Universiteit Brussel. She has taught courses organized by the Francophone University Agency at the University of Economics in Bucharest and the Teacher Training Centre in Varna.

She has implemented 6 software and multimedia products in education. There are 4 textbooks published in electronic and paper formats. In the last 5 years, 10 diploma works have been successfully defended and 10 reviews have been written.

IV. Administrative and public activities

Assoc. Prof. Velina Slavova, PhD has been the Director of the B.Sc. Program in Informatics (1996-2000), head of the Department of Informatics (1999-2003), member of the Program Council of the Bachelor Informatics Program, member of the Faculty Council and the Academic Council of the NBU, as well as a member of the committees of the Bachelor and Master faculties for the defense of theses and state exams.

On p. 13, under Indicator 48, it is written "no penalties under the code of employment (10 pts.)".

V. Personal impressions of the candidate

I have known the candidate personally since 1994 as a tenured lecturer at the NBU from her participation in the TEMPUS project to establish a computer science program. From 1996 until now, I have had the pleasure to find that Assoc. Prof. Velina Slavova, PhD is a major and active figure in computer science with Moodle courses in algorithms and data structures, databases, numerical methods, and natural language processing. Multiple citations, participation in programs, projects, conferences, NBU governing bodies, and collaborative work with students and faculty from many universities.

VI. Comments, recommendations, and observations on the applicant's activities

The scientific metric image of Assoc. Prof. Velina Slavova, PhD can be constructed from the world scientific databases as follows:

Web of Science: 5 publications, 4 sum of times cited, h-index 1;

SCOPUS: 11 documents, 28 citations, h-index 3;

Google Scholar: 166 citations, h-index 7, i10 h-index 3;

Research Gate: Research Interest Score 405.1, citations 179, h-index 7;

zbMATH Open: 1 document;

ACM Digital Library: 3 documents, 0 citations;

IEEE Xplore: 3 documents, 2 citations (paper 1, patent 1).

The "scientific metric image" requires a categorical self-analysis and independent publication activity in journals with IF.

The reviewer has many years of personal impressions of the entire work of Assoc. Prof. Velina Slavova, PhD, which makes me thoroughly convinced in her ability to present "**Doctor of Science**" as a work with theoretical summaries and solutions of major scientific and applied problems which correspond to modern achievements and represent a significant and original contribution to science.

CONCLUSION

All conditions according to ADASRB, the Regulations for application of ADASRB and the Requirements for the academic position of "Professor" of New Bulgarian University are met and I give a definite **positive** conclusion for the election of Assoc. Prof. Velina Slavova, Ph.D. in a competition for the academic position "Professor" in professional field 4.6 Informatics and Computer Science.

I propose that the Scientific Panel unanimously votes on a proposal to the Academic Council of New Bulgarian University to elect Assoc. Prof. Velina Todorova Slavova, PhD for the academic position of "Professor" in professional field 4.6 Informatics and Computer Science.

Date: 17.11.2022

Reviewer:.....

Acad. Ivan Popchev