



OPINION

By Assoc. Prof. Iva Rumenova Dokuzova, a member of the scientific panel for this procedure according to order No. RD-16-1018 from October 8, 2025 of the Rector of the Agricultural University – Plovdiv

On a competition for occupying the academic position **Professor**

Area of Higher Education: **4. Natural Sciences, Mathematics and Informatics.**

Professional field: **4.5. Mathematics.**

Scientific specialty: **Mathematical modeling and application of mathematics.**

In the competition for occupying the academic position **Professor**, announced in the **State Gazette No. 65 of October 08, 2025** and the website of Agricultural University – Plovdiv, for the needs of Department “Mathematics and Informatics” at the Faculty of Economics, documents are submitted only by **Assoc. Prof. Velika Nikolaeva Kuneva**, member of Department “Mathematics and Informatics”, Faculty of Economics, AU.

1. Brief information of the candidate.

Assoc. Prof. Dr. Velika Kuneva graduated as a Master of Mathematics and Informatics at Plovdiv University Paisii Hilendarski in 2001. She defended her dissertation for the award of the scientific and educational degree "Doctor" in "Algebra and Number Theory" at the Department "Algebra and Geometry" of the Faculty of Mathematics and Informatics, Plovdiv University Paisii Hilendarski in 2013.

She is a long-time lecturer in Mathematics at the Agricultural University - Plovdiv, as from 2008 to 2013 she was an assistant professor, from 2013 to 2016 she was a chief assistant professor, and from 2016 to the present she is an associate professor at the Department of Mathematics and Informatics, Faculty of Economics of the Agricultural University - Plovdiv.

She has given lectures on Higher Mathematics I and II parts, Applied Mathematics, Mathematical Analysis, Optimization Methods, Economic Statistics and Quantitative Methods in Economics, as well as lectures on Statistical Data Processing to PhD students from the Agricultural University. She has taught classes in the disciplines: Higher Mathematics, Applied Mathematics, Mathematical Programming for foreign students under the Erasmus program.

Assoc. Prof. Kuneva also has extensive administrative experience at the Agricultural University. She was the Faculty Coordinator under the Erasmus+ program from 2016 to 2020, Head of the Department of Mathematics and Informatics at 2017, Vice Dean of the Faculty of Economics from 2017 to 2018, also from 2020 to 2024, and Dean of the Faculty of Economics from 2024 to the present.

2. General description of the scientific production.

In the competition for the academic position "Professor" Assoc. Prof. Dr. Velika Kuneva participated with a total production of 113 scientific papers, grouped as follows:

- Scientific publications in the nomenclature specialty - 110 works, of which:
 - Publications related to the doctoral dissertation - 6 scientific papers, which are not subject to consideration;
 - Publications related to acquiring the position "Associate Professor" - 46 scientific papers, which are not subject to consideration;
 - Publications related to acquiring the position "Professor" - 33 scientific papers, which are subject to consideration. These papers are classified as follows:
 - Publications with impact factor - 12 papers;
 - Publications in Web of Science and Scopus – 33 papers;
 - Publications in peer-reviewed and refereed scientific journals - 32 papers;
 - Publications in conference proceedings - 1 paper;

The personal participation of Assoc. Prof. Dr. Kuneva in the mentioned 33 works is illustrated by the fact that in 12 of them she is the first, in 13 - the second, and in the remaining 7 - the third and subsequent author.

She also presented the following teaching books:

- Textbook - 1 issue.
- Handbooks - 2 issues.

A total of **36 papers** are subject to analysis for the preparation of the opinion.

3. Teaching activities.

Assoc. Prof. Kuneva has 16 years and 11 months of teaching experience at the Agricultural University. In the period 2020-2025, she gave lectures and exercises, and also had extracurricular employment equivalent to 4498.3 hours of exercises at the Bachelor's and Master's degree programs.

The teaching activity is complemented by the supervision of 5 successfully defended graduates at the Bachelor's degree programs and two successfully defended doctoral students in 2023 and 2025. At the moment, the candidate supervises two doctoral students, one of whom is about to defend his thesis.

Assoc. Prof. Kuneva has 1 independent textbook and 2 handbook for the needs of the education of students at the Agricultural University - Plovdiv:

- Kuneva, V. Textbook of Higher Mathematics, 2024. Intel Entrans OOD. ISBN:978-619-7703-69-6.
- Ivanova, Ir., M. Milanova, V. Kuneva, 2011. Handbook of Applied Mathematics for Students Majoring in Tourism, Academic Publishing House of the Bulgarian University - Plovdiv, ISBN - 978-954-517-101-7.

- Ivanova, Ir., V. Kuneva, 2018. Handbook of Optimization Methods for Students Majoring in Agricultural Economics, Business Economics, Agricultural Engineering, Academic Publishing House of the Bulgarian University - Plovdiv, ISBN - 978-954-517-273-1.

Assoc. Prof. Kuneva has developed 11 curricula, of which 7 for full-time and part-time bachelors, 3 for masters and 1 for doctoral students. These are the programs: **"Mathematical Analysis"**, mandatory for the specialty *Agricultural Engineering*; **"Linear Algebra and Analytical Geometry"**, elective for the specialty *Agricultural Engineering*; **"Optimization Methods"**, elective for the specialty *Agricultural Engineering, Business Economics, Economics and Management of Regional Development*; **"Higher Mathematics"**, mandatory for specialties: *Business Economics, Economics and Management of Regional Development*; **"Applied Mathematics"**, mandatory for specialties: *Business Economics, Economics and Management of Regional Development, Plant Protection, Ecology and Environmental Protection, Animal Breeding and Reproduction*; **"Economic Statistics"**, elective for the specialty *Economics and Management of European Agriculture and Rural Areas*; **"Quantitative Methods in Economics"**, elective for the specialty *Financial Management and Accounting*; **"Statistical Data Processing"**, elective for doctoral students from the University of Agriculture.

4. Scientific research activities.

Areas of publication. Scientific works are in the field of applied mathematics in agricultural sciences. Statistical models and methods (cluster, correlation and factor analysis) are used to assess and study fertilization regimes, the action of bio-stimulants and various protective preparations, as well as the study of various clusters for the study of ecological changes in different bio-environments. Through correlation, dispersion, regression or variation analysis, estimates are made of the yield, quality and cultivation of various crops -- rapeseed, coriander, carrots, oil-bearing rose, wheat, alfalfa, cotton, tomatoes, rye, etc. The similarity and distance between different varieties of the same crop are also compared.

Work has also been done in the field of mathematical optimization, the transport problem has been applied to reduce the costs of delivering ornamental plants to nurseries.

A kinetic model describing the development of autoimmune diseases is also presented. The proposed model is a nonlinear system of differential equations that takes into account the biological activity of interacting populations.

Citation and referencing of scientific production. There are 26 citations noted, of which 22 are in Web of Science or Scopus.

Participation in scientific projects. The candidate has participated in 2 scientific research projects – International Project “European Green University, 2023 - 2026, ERASMUS+” and National Project “Intelligent Plant Production” at the Agricultural University. In the

national project, Assoc. Prof. Kuneva has participated in 4 work packages, and in 1 work package she was the leader.

5. Comments and recommendations.

I have no comments or recommendations.

6. Conclusion.

Based on the analysis of the candidate's pedagogical, scientific and applied scientific activities, I believe that Assoc. Prof. Dr. Velika Nikolaeva Kuneva meets the requirements of the Law on the Development of Academic Staff of the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of Academic Staff of the Republic of Bulgaria and the Regulations of the Agricultural University for its implementation. The activities of Assoc. Prof. Dr. Velika Kuneva as a lecturer include, in addition to the mandatory teaching hours and the creation of numerous teaching materials – programs, textbooks and manuals, the training of graduate and doctoral students of the Agricultural University – Plovdiv. Her scientific publications are convincingly present in prestigious international journals, which are refereed and indexed in global databases, such as Web of Science and Scopus. Her administrative commitments have been very active over the years, as head of the Department, vice dean and dean she contributes to the development and prestige of the Department of Mathematics and Informatics, the Faculty of Economics and the Agricultural University - Plovdiv.

All this gives me reason to evaluate the overall activity **POSITIVELY**.

I would also like to propose that the esteemed Scientific Jury also vote positively, and that the Faculty Council of the Faculty of Economics at the Agricultural University - Plovdiv elect Assoc. Prof. Dr. Velika Nikolaeva Kuneva as "**Professor**" in the scientific specialty "Mathematical Modeling and Application of Mathematics".

10.11.2025

Plovdiv

Prepared the Opinion: Iva Dokuzova

Sign:

