

## OPINION

by competition for the academic position of " Associate Professor " professional field **5.13. General engineering**.

subject "**Engineering methods for modeling and analysis**"

announced in SG no 53/ 20-06-2023

with candidate Assist. Prof. **Mariya Ivanova Konsulova - Bakalova**, PhD

Member of the scientific jury: prof. **Georgi Yordanov Vukov**, PhD



### 1. General characteristics of the candidate's scientific research and applied scientific activity

The candidate's scientific research and applied scientific activity are at the required level and correspond to all the requirements of the competition.

The presented works outline the directions in the scientific work of the candidate.

As a result of the candidate's scientific-research and scientific-applied activities, works with significant scientific-applied and applied contributions are realized and presented.

### 2. Evaluation of the candidate's pedagogical preparation and activity.

The provided reference indicates that Assist. Prof. Eng. Mariya Konsulova-Bakalova is giving lectures and exercises in the following subjects.

- Bachelor's degree: 'Fundamentals of Automated Design in Mechanical Engineering', '3D Modeling', 'Technical Documentation', 'Computer Systems for Mechanical Engineering', 'Information Technologies and Systems', 'Engineering Methods for Modeling and Analysis', 'Modeling of Injection Molding Process Elements',

- Master's degree: "3D modeling", "Three-dimensional modeling", "Visualization modeling of technological objects", "Computer-aided engineering analysis", "Design automation in mechanical engineering".

- auditory education activities in English

The auditor employment of Assist. Prof. Mariya Bakalova has significantly exceeded the requirements for announcing a competition for the academic position of "Associate Professor" for the last three years.

A reference for the participation of the Assist. prof. Maria Bakalova in the development of a lot of curricula, lecture courses and laboratory exercises. She has supervised the thesis projects of 29 students.

Assist. Prof. Mariya Bakalova is the author of two published textbooks and co-author of another three textbooks on the disciplines she leads.

### 3. Basic scientific and applied scientific contributions

Assist. Prof. Mariya Ivanova Konsulova-Bakalova has presented one monograph and 44 scientific publications for participation in the competition. 10 of them are in refereed and indexed editions in the world-renowned database of scientific information (Scopus, WoS); 34 are published in non-refereed peer-reviewed journals.

The contributions in the scientific works of the assistant prof. Bakalova are in the field of computer technology in engineering. These contributions have a scientific and applied character and are grouped in the following areas:

- Development of methods and technologies demonstrating the feasibility of CAD/CAE systems for design in a wide range of fields;
- Conduct tests on engineering products and technologies in practice or laboratory conditions;
- use of the author's program for processing and recognition of univariate and multivariate signals;
- application of modern teaching methods in engineering specialties.

The monograph proposes a joint approach for data preparation procedures - clustering and dimensionality reduction tasks with known design and simulation analysis software.

#### **4. Significance of the contributions for science and practice**

The presented works testify to the significance of the contributions of Assist. prof. Mariya Ivanova Konsulova-Bakalova for the scientific research work in the field in which she works. She has proven her ability to work in a team on scientific research projects. The references provided show that the applicant has been a member of teams that have been contracted in 10 research projects, 4 of which were national. Assistant Professor Bakalova freely uses various software products for her teaching work and research processes. All this, with her in-depth scientific knowledge, makes her a highly erudite and established university lecturer.

The minimum national requirements are met for indicators A and B, and for all other indicators the candidate repeatedly fulfils these requirements.

#### **5. Critical remarks and recommendations**

I do not have any significant critical remarks that would affect my overall assessment. My recommendations are aimed at continuing and increasing the scientific research activity of the candidate.

#### **CONCLUSION**

The presented scientific papers and the received scientific-applied and applied contributions are at the level required for the competition. Based on the acquaintance with the presented scientific works, their significance, the scientific, scientific-applied and applied contributions contained in them, *I consider it reasonable to propose* Assist. prof. Mariya Ivanova Konsulova - Bakalova *take the academic position of "Associate Professor" in professional field 5.13. General engineering and subject "Engineering methods for modeling and analysis"*.

DATE: 23.10.2023

MEMBER OF THE SCIENTIFIC JUI

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2016/679**