

OPINION

on the competition for the academic position "Associate Professor"

Field of Higher Education: 1. Pedagogical Sciences

Professional Field: 1.3. Pedagogy of Education in... (Methodology of Chemistry Education and Environmental Protection)

Candidate(s): Assist. Prof. Dr. Eng. Khristivelina Kostadinova Zhecheva

Author of the Opinion: Assoc. Prof. Dr. Krasimira Atanasova Dimitrova,
"Prof. Dr. Asen Zlatarov" University - Burgas

(Order No. RD-341 of 22.10.2024 by the Rector of "Prof. Dr. Asen Zlatarov"
University)

1. Description of the Competition Procedure

- Type and Parameters of the Competition
- Number of Candidates
- Compliance of the Submitted Materials with Regulatory Requirements

In the announced competition for the academic position "Associate Professor" in the professional field 1.3. Pedagogy of Education in... (Methodology of Chemistry Education and Environmental Protection), for the needs of the Chemistry Department, announced in the "State Gazette", issue 70 of 20.09.2024, there is one candidate: Assist. Prof. Dr. Eng. Khristivelina Kostadinova Zhecheva.

The documents of Assist. Prof. Dr. Eng. Khristivelina Kostadinova Zhecheva, submitted for participation in the competition, show that the procedure for its disclosure and announcement has been observed and they comply with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and its Implementing Regulations, as well as with the Regulations on the Conditions and Order for Acquiring Academic Degrees and Occupying Academic Positions at "Prof. Dr. Asen Zlatarov" University, Burgas.

2. Bibliometric Indicators

According to the Regulations for the conditions and order for obtaining scientific degrees and for occupying academic positions at "Prof. Dr. Asen Zlatarov" University, Burgas, the bibliometric indicators for candidate Assoc. Prof. Dr. Eng. Hristivelina Kostadinova Zhecheva for the academic position "Associate Professor" are as follows: The indicator from group "A" – 50 pts. (achieved) The indicator from group "B" is not required for this position. The indicator from group "C" – monograph presented as a habilitation thesis – 100 pts. (achieved) Total number of points for indicator "D": 401.6, with a requirement of 400 pts. Total number of points for indicator "E": 100, with a requirement of 100 pts. Total number of points for indicator "F": 55, with a requirement of 50 pts. The scientific output presented by Assoc. Prof. Dr. Eng. Hristivelina Kostadinova Zhecheva meets the bibliometric standards set in the Regulations for obtaining scientific degrees and occupying academic positions at "Prof. Dr. Asen Zlatarov" University, Burgas.

3. Main Research Directions and Most Significant Scientific Contributions

The scientific works of Assoc. Prof. Dr. Eng. Hristivlina Kostadinova Zhecheva are in the field of chemistry education methodology and environmental conservation, aligning with the requirements of the announced competition. The themes of the publications cover chemistry education design, methods for developing competency-oriented experimental activities in chemistry, health-environmental aspects, and the role of chemical experiments in real and digital environments in developing key competencies in students. The publications also explore how students, future chemistry teachers, can develop instructional design skills during their practical training. The research is presented in four main directions:

Chemistry Education Design (monograph, publications #24, 25, 27, 28, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44).

Methodological and Motivational Aspects of Competency-Oriented Experimental Activities in Chemistry (textbook, publications #1, 2, 5, 7, 8, 9, 10, 12, 13, 14, 16, 17, 26, 31).

Health-Environmental Aspects of Chemical Experimentation in Real and Digital Environments (publications #3, 4, 6, 29, 30, 32, 33, 34).

Potential of Experiments for Personal-Professional Development and Mental Health Preservation of the Experiment Subjects (publications #11, 15, 18, 19, 20, 21, 22, 23, 45).

In the monographic work "Design of Education - from General Models to Specific Pedagogical Practices in Chemistry," an experimental study was conducted on the effectiveness of two widely accepted models applied in the real educational process. A comprehensive literature review on educational design was presented, analyzing a vast array of scientific literature (163 in English and 29 in Bulgarian), reviewing over 20 general models of educational design documented in the English-speaking scientific literature up to 2021. Based on this literature review, a theoretical framework for educational design was proposed for planning various lessons in schools (particularly in chemistry) and for conducting sessions with students. The practical applications are linked to the specification and adaptation of two educational design models (by R. Gagné and M. Merrill). The proposed theoretical framework enables personalized, competency-based education applicable in various contexts. Based on the developed theoretical model, 14 articles have been published on the subject.

For the second thematic direction, the textbook "Methodology of the Educational Experiment in Chemistry and Environmental Conservation. Module General and Inorganic Chemistry" (200 pages) was presented. Theoretical contributions can be outlined as follows: description of experiments – classic and modernized, development of a risk assessment plan for conducting a chemical educational experiment. Each described experiment includes: method principle, reagents, laboratory equipment, safety protocols, duration, methodology and technique of the experiment (preparation, demonstration), observed signs of reaction, theoretical foundations (at various cognitive levels), expansion of experiment possibilities, methodological notes, and digital environment experimentation. The practical applications are related to methodological guidelines for the described experiments. Fourteen articles have been published on the topic of the second direction, offering methodological variants for applying constructivism, competency-oriented, and problem-research approaches to form scientific literacy and key competencies in students. For the third direction of the candidate's research interests - Health-Environmental Aspects of the Chemical Experiment in Real and Digital Environments, 15 steps for exposure control and risk assessment during chemical experimentation are described, issues facing science teachers regarding the use of digital technologies are examined, and methodological guidelines for using various digital tools and resources - e-books, virtual labs, interactive simulators, multimedia products, educational platforms are proposed. For the fourth direction of the candidate's research interests - Potential of Experiments for Personal-Professional Development and Mental Health Preservation of the Experiment Subjects, 9 publications are presented. The main contributions can be found in the proposed methodological guidelines for the possibilities for full self-realization and realization of the experiment subjects.

4. Critical Notes, Recommendations, Questions

I recommend that the candidate continue her research and expand it in the direction of exploring opportunities for developing individual personality qualities, as well as team competencies among students and pupils during the preparation and realization of chemical experiments, projects, extracurricular or after-school activities related to chemistry education.

The scientific contributions of Assoc. Prof. Dr. Eng. Hristivelina Zhecheva demonstrate significant expertise in innovative pedagogical strategies, particularly in the context of chemistry education. My question regarding this topic is how does the candidate's activity contribute to the modernization of the methodology of chemistry education, including through the use of digital and virtual tools?

5. Conclusion

Based on the materials submitted for the competition, I believe that the candidate Assoc. Prof. Dr. Eng. Hristivelina Kostadinova Zhecheva meets the criteria for the academic position of "Associate Professor," as defined by the Law on the Development of Academic Staff in Bulgaria and its implementing regulations, as well as with the Regulations for the conditions and order for obtaining scientific degrees and for occupying academic positions at the "Prof. Dr. Asen Zlatarov" University, Burgas.

I propose to the esteemed members of the Scientific Jury to vote affirmatively and to suggest to the Faculty Council of the Faculty of Social Sciences at the "Prof. Dr. Asen Zlatarov" University, Burgas, to appoint Assoc. Prof. Dr. Eng. Hristivelina Kostadinova Zhecheva to the academic position of "Associate Professor" in the professional direction 1.3. Pedagogy of Education... (Methodology of Chemistry Education and Environmental Conservation).

Date: December 27, 2024

City: Burgas

Member of the Scientific Jury:

Assoc. Prof. Dr. Krasimira Dimitrova