REPORT
to occupy the academic position:

''Professor''	
''Associate Professor''	X
	one of the academic positions indicated shall be marked with the sign "X"

Candidates to occupy the position:

№	academic position	scientific degree	name	middle name	last name	workplace
1	Chief Assist. Prof.	PhD	Dimitar	Borisov	Borisov	University of Chemical Technology and Metallurgy

Scientific area:

5	TECHNICAL SCIENCES
code	name

Professional area:

5.13	GENERAL ENGINEERING
code	name

Scientific specialty:

Environmental protection technologies and systems

The competition has been announced:

104	**5.12.2025**	**Environmental engineering**	**Faculty of Chemical and System Engineering**
in SG issue	date	for the needs of the Department	Faculty

The report was written by:

Associate Professor	PhD		Manol	Angelov	Dallev	Agriculture University - Plovdiv

academic position	scientific degree	name	middle name	last name	workplace

1. Report for the candidate:

Chief Assist. Prof.	PhD	Dimitar	Borisov	Borisov
academic position	scientific degree	name	middle name	last name

1.1. Meeting the minimum requirements under the Regulations:

A) The candidate meets the minimum requirements	20 points	X
B) The candidate doesn't meet the minimum requirements	0 points	
		one of the answers given is marked with the sign "X"

It must be filled in if answer B is marked. The publication activity of the candidate is analyzed. The response of the results achieved (quoted) is analyzed.
The candidate fully satisfies and, in some indicators (from 5 to 11), exceeds the minimum requirements according to the Regulations for the Implementation of the Law On The Development Of The Academic Staff Of The Republic Of Bulgaria, with the presented points being 553.3.

1.2. Relevance of scientific and / or applied research:

A) The research is relevant. Part of the research is pioneering (no results are known on the topic by other authors)	8 points	X
B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	6 points	
C) Most of the research is relevant, but also some results are presented that have no scientific and / or applied value	4 points	
D) The smaller part of the research is relevant	2 points	
E) Research is not relevant	0 points	
		one of the answers given is marked with the sign "X"

The evaluation of the relevance of the research must be substantiated.

I believe that the areas in which CHIEF Assistant Professor Dr. Eng. Dimitar Borisov works and has presented research - Optimization of technological objects and systems, Multi-criteria optimization and optimal decision-making in environmental protection, Application of neural networks and deep learning in environmental protection, Energy efficiency and sustainable development are contemporary and relevant.

1.3. Objectives of the research:

A) Realistic and of scientific and / or applied interest	8 points	X
B) Realistic, but not of scientific and / or applied interest	4 points	
C) Unattainable (unrealistic)	0 points	
		one of the answers given is marked with the sign "X"

Objectives must be specified. The type of the set objectives must be justified
The research objectives are realistic, clearly formulated and achievable. They have scientific value, contributing to the development of knowledge, and can be used to solve practical problems.

1.4. Candidate research contributions:

A) With lasting scientific and / or applied response, they form the basis for new research and applications	20 points	
B) They are of significant scientific and / or applied interest, complete and / or summarize previous research	16 points	X
C) They are of scientific and / or applied interest	12 points	
D) Lack of significant contributions	8 points	
E) Lack of contributions	0 points	
		one of the answers given is marked with the sign "X"

Contributions must be specified. The type of results achieved must be justified.
The scientific and applied scientific contributions can be summarized as follows:

1. New combined methods for one-dimensional optimization with accelerated convergence have been developed, based on the integration of the classical approaches of the dichotomy method, the Kiefer–Johnson method and higher-order functional power series. Six new algorithmic modifications have been proposed, which significantly increase the efficiency of the optimization process by reducing the number of calculations of the objective function and provide significantly faster convergence compared to classical methods.

2. A new heuristic algorithm for one-dimensional optimization in unbounded space has been proposed, based on the combined use of the first numbers of the Fibonacci series and higher-order numerical series. Through comparative studies, it has been proven that the proposed algorithm demonstrates better convergence speed and higher computational efficiency compared to established one-dimensional optimization algorithms.

3. A new stochastic approach for multidimensional optimization has been developed, based on a random search strategy with sequential generation and analysis of multiple random directions. Several modifications of the algorithm have been proposed, which provide faster convergence compared to classical random search methods and extend the applicability of the method to tasks of varying complexity, including in the presence of constraints.

4. A new accelerated algorithm for optimization of complex multidimensional objective functions of the ravine type has been proposed, which combines the advantages of the random directions method and the Gelfand-Zetlin method. The comparative analysis shows that the proposed algorithm provides a significant improvement in the convergence rate when finding an optimal solution.

5. A new algorithm for global optimization of multimodal objective functions has been developed, based on a modified principle of group analysis of points, arising from the Price method. Four variations of the algorithm have been proposed, in which new points are generated by analyzing pairs of points. Experimental results on a set of complex multi-extreme test functions prove higher efficiency and faster convergence compared to the classical Price method.

6. New approaches for multi-criteria optimization and rational decision making based on generalized utility functions and fractional-rational generalized functions have been developed. Eight new strategies for forming generalized objective functions have been proposed, the sensitivity of various transformations of the objective indicators has been studied, and the effectiveness of the double exponential Harrington transformation in evaluating compromise solutions has been proven. The developed methods have been successfully applied in the optimization of real technological processes.

1.5. Participation of the candidate in the achievement of the presented results:

A) The candidate has at least an equal participation in the submitted papers	8 points	X
B) The candidate has at least an equal participation in most of the submitted papers	7 points	
C) The candidate has a secondary participation in most of the submitted papers	4 points	
D) The candidate participation is unnoticeable	0 points	
		one of the answers given is marked with

		the sign "X"

Critical notes must be provided if one of the items C or D is marked.
It is very impressive that in most articles the associate professor candidate is the lead author.

1.6 Pedagogical activity:

A) The candidate has effective and sufficient pedagogical activity at the university. The textbooks issued are modern and useful (they meet the requirements of the Regulations). The work with undergraduate and doctoral students is at a high professional level.	8 points	X
B) The candidate has sufficient pedagogical activity at the university. The textbooks issued satisfy the requirements of the Regulations.	6 points	
C) The pedagogical activity and / or textbooks issued are insufficient (do not meet the requirements of the Regulations)	0 points	
		one of the answers given is marked with the sign "X"

Critical notes must be provided if one of the items B or C is marked.

1.7. Critical notes:

A) Lack of critical notes	8 points	X
B) Critical notes of a technical nature	7 points	
C) Critical notes that would partially improve the results achieved in a small part of the research	5 points	
D) Critical notes that would partially improve the results achieved in most of the research	3 points	
E) Significant critical notes	0 points	
		one of the answers given is marked with the sign "X"

Critical notes must be provided if one of the answers C, D or E is marked.

1.8. Conclusion

A) The evaluation of the candidate's activity is **POSITIVE**	This evaluation is assigned to a total number of at least 50 points	X
B) The evaluation of the candidate's activity is **NEGATIVE**	This evaluation is assigned to a total number below 50 points	
		one of the answers given is marked with the sign "X"

To be filled in if requested by the member of the scientific jury
The review and analysis of the documents and materials submitted by Senior Asst. Prof. Dr. Eng. Dimitar Borisov under the announced competition show that they meet and exceed the legal requirements for acquiring the academic position of "Associate Professor". Based on the above, I give my POSITIVE assessment and propose to the Scientific Jury to award Senior Asst. Prof. Dr. Eng. Dimitar Borisov the academic position of "Associate Professor" in the professional field 5.13 General Engineering.

09.03.2026	The report was written by:	
date		signature