

REPORT

to occupy the academic position:

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

Candidates to occupy the position:

1	Assoc. Prof.	PhD	Dimitar	Petkov	Donchev	UCTM – Sofia
№	academic position	scientific degree	name	middle name	last name	workplace

Scientific area:

5.	Technical Sciences
code	name

Professional area:

5.1.	Mechanical Engineering
code	name

Scientific specialty:

“Applied Mechanics” (with French Language Teaching)

The competition has been announced:

67	13.08.2021	“Applied Mechanics”	of Metallurgy and Materials Science
in SG issue	date	for the needs of the Department	Faculty

The report was written by:

Professor	PhD	Rayko	Danailov	Stanev	UCTM
academic position	scientific degree	name	middle name	last name	academic position

1. Report for the candidate:

Assoc. Prof.	PhD	Dimitar	Petkov	Donchev
academic	scientific	name	middle name	last name

position	degree			
----------	--------	--	--	--

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 Assoc. Prof. Eng. Dimitar Donchev PhD presents publications in refereed and indexed specialized editions, as well as in prestigious international and national conferences and other forums, enabling wide coverage by scientists and specialists from the interested branches. These scientific papers, as well as their citations, by their quantity and especially according to the number of corresponding points, meet and significantly exceed the minimum requirements according to the Regulations for Acquiring Scientific Degrees and Holding Academic Positions at UCTM.

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.

The good knowledge of the behavior of structural materials and structures, and in particular – of their elasticity, viscoelasticity, plasticity, reinforcement, external reinforcement (strengthening), defects and destruction, has a significant impact on solving a wide range of

specific industrial problems. Their correct scientific interpretation guarantees the creation of structures without resizing, providing both high technical-economical efficiency and optimal safety during operation.

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 candidate's research work focuses on setting and successfully achieving the following scientific and applied objectives:

- identification and mastering of the mechanisms limiting the use, reliability and durability of the materials: experimental characterization and modeling of the damage and the mechanisms related to this process; calculation of constructions in the presence of damage; analysis of the phenomena of fracture;
- characterization and modeling of materials with complex architecture (polyphase, multimaterials and composite materials, etc.);
- research and application of theoretical and experimental procedures in order to connect the parameters of the microstructure with the characteristics at the macro level of small materials: nanotubes, threads and nanoparticles, taking into account the transfer processes of different nature;
- development of approaches and methodologies for technological restoration of the bearing capacity of constructions.

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.
<p>Among the most significant scientific contributions of the candidate can be mentioned:</p> <ul style="list-style-type: none"> - the systematization, research, critical analysis and further development of basic theoretical formulations, such as substantiation of the reason for the violation of durability, prediction of durability based on the criterion of critical concentration of defects (cracks) and precise determination of the structure of a composite material with an arbitrary distribution of inclusions during subsequent homogenization; - the creation of new classifications, methods, constructions, a summary of theoretical models, etc., and also - the obtaining and proving new facts, expressed in supplementing and summarizing definitions of basic concepts, principles and approaches in these areas of research. <p>The applied contributions, described in the works of Assoc. Prof. Donchev, are reduced to the development of usable methods, constructions, schemes et al., namely studying the behavior of reinforced concrete structures and structures reinforced / repaired through the application of various systems of composite materials and creating of means for predicting behavior based on modeling and experimental validation.</p> <p>In the field of industrial application – the creation of structures without resizing, providing optimal security and increasing the transmitted force by improving their crack resistance; determining the load in a way that excludes the appearance of macrocracks or slows down/prevents cracking by means of the composite effect of the structure.</p>

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	
B) The candidate has at least an equal participation in most of the submitted papers	7 points	x
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.
<p>The extensive and high-quality publishing activity of Assoc. Prof. Donchev is obviously founded and is a result of teamwork with a number of Bulgarian and foreign scientists, as evidenced by his participation as a leader of 4 research projects and as a member of the team in other 11 ones. However, in the opinion of the writer of this report, it would be appropriate to have some single-authored publications on topics developed without the</p>

participation of his collaborators.

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	
B) Critical notes of a technical nature	7 points	x
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 (74 points)
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 presented documents for the competition, the already emphasized significant exceeding of the requirements of the Regulations for Acquiring Scientific Degrees and Holding Academic Positions at UCTM for taking the academic position "professor", as well as my personal impressions from the long-term work of the candidate at UCTM, show his high qualification and authority as a scientist and lecturer. Apart from the opinions expressed on the individual points of my report, several other facts from his diverse activities deserve to be mentioned. Five of the six lecture courses he teaches are taught in French. The research projects, of which Assoc. Prof. Donchev is a leader, are worth a total of over 55000 euros. In addition, he has led 6 international scientific or educational programs, participated in another 6, as well as in 4 national ones. He has prepared 17 reviews of scientific papers and developments. 4 PhD theses are defended under the supervision of him at the collaboration of one more scientist each from the University of Reims, France or from UCTM.

The listed circumstances give me grounds to conclude that the candidature satisfies the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for Acquiring Scientific Degrees and Holding Academic Positions at UCTM for awarding the academic position "professor", which argues my already marked positive assessment of the activity of Assoc. Prof. Donchev.

17.11.2021	The report was written by:	
date		signature