

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	Associate Professor	PhD	Valentin	Raynov	SLAVOV	University of Chemical Technology and Metallurgy - UCTM
№	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:

Elements of constructions and devices with German teaching language

The competition has been announced:

67	04.08.2023	Applied Mechanics	of Metallurgy and Material Sciences
in SG issue	date	for the needs of the Department	Faculty

The report was written by:

Prof	PhD	Dimitar	Petrov	DONTCHEV	UCTM
academic position	scientific degree	name	middle name	last name	workplace

1. Report for the candidate:

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	
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.

Assoc. Prof. Dr. Valentin Slavov has submitted all the necessary documents for participation in the competition, in accordance with the requirements of the Academic Staff Development Act in the Republic of Bulgaria and the Regulations of the RB and the UCTM-Sofia for its implementation. The requirements of the LDASRB with regard to the decisions of the governing bodies announcing the competition have been complied with.

Assoc. Prof. Valentin Slavov submitted 53 scientific papers for participation in the competition.

The scientific works submitted for the competition have been published as follows:

- 1 monograph;
- 6 scientific articles have been published in journals with IF and/or SJR impact rank (Scopus or Web of Sciences);
- 46 scientific publications are in journals that are not refereed and indexed in world-known databases, but are peer-reviewed.
- Assoc. Prof. Valentin Slavov has a total of 16 citations of the presented scientific works/publications.

The candidate Assoc. Valentin Slavov has fulfilled the minimum national quantitative requirements as well as those of UCTM-Sofia for the academic position of "Professor" in the scientific field 5. Technical sciences, Professional field 5.1. Mechanical Engineering, meeting the criteria of the required 600 points, as follows by sections:

Group indicators	Minimum points	Points of candidate
A	50	50
B	–	–
V	100	100
G	200	397,89

D	100	104
E	150	195,73
TOTAL	600	847,62

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	
B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	6 points	X
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.
<p>The kinematics, dynamics and oscillations of machines and structures represented as multi-scale mechanical systems or as mechanical systems with distributed parameters are studied.</p> <p>The objects of study are: transport machines, woodworking machines, agricultural machines, road-building machines, robots, fans, sewing machines, mechanical modules and individual structures - railway tracks and woodworking tools.</p> <p>Physical-mechanical property studies of machines and structures are used in vibrodiagnostics to determine the condition of machines and structures under operating conditions. The developed mechanical-mathematical 3D models allow to obtain preliminary information about the condition of machines and structures in different modes of working conditions. Investigations have been carried out to determine damping elements for vibration damping. The themes of the works of Assoc. Valentin Slavov is focused on the control and diagnosis of the condition of machines and structures in accordance with evaluation criteria from technical specifications in order to prevent and avoid emergency situations.</p>

The application of the conducted studies of machines and structures, components of mechatronic systems, for the determination of their technical condition in working conditions for the purpose of conformity assessment gives me the reason to conclude that the developed mechatematical 3D models as a result of the conducted studies of Assoc. Prof. Valentin Slavov are up-to-date (modern).

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 aim of the research is mechanical-mathematical modelling in 3D space and the development of formulas and algorithms for analysis and synthesis, which are used in the design and research of machines and other structures. The geometrical, mass, inertia, elastic, damping and force characteristics of mechanical systems are considered.

The objectives are well formulated and achievable, as well as substantiated by a thorough literature review and the candidate's considerable scientific and practical experience in the field.

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	
C) They are of scientific and / or applied interest	12 points	X
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>The most significant contributions of the candidate's research can be formulated as follows:</p> <ol style="list-style-type: none"> 1. A mechanical-mathematical matrix modelling in 3D space of the oscillations of mechanical systems has been performed, taking into account their geometrical, mass, inertial, elastic, damping and force characteristics. On the basis of the obtained formulas, algorithms for computation with a computer and a mathematical program product have been compiled; 2. A methodology has been developed and finite element modeling in 3D space of the vibroacoustics of different structures with consideration of the geometric shape and different types of materials has been implemented; 3. For specific parameters of different mechanical systems the following have been determined: <ul style="list-style-type: none"> - geometrical, mass, inertia and elastic characteristics. - Eigenfrequencies and eigenmodes at small oscillations. - characteristics of damping elements and numerical calculations of spatial free damping oscillations have been performed. - the generalized disturbing forces and numerical calculations of the spatial forced oscillations have been performed. 4. The vibroacoustic parameters have been obtained for specific structures and specific materials of parts and assemblies. <p>The development of the mechano-mathematical 3D model and the obtaining with it of the vibroacoustic characteristics under specific working conditions of machines and structures is a topical problem of scientific and applied value.</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"

<p>Critical notes must be provided if one of the items C or D is marked.</p> <p>Of the 53 papers submitted by Assoc. Prof. Valentin Slavov :</p> <ul style="list-style-type: none"> - 1 issue is a monograph, - 3 are independent articles (No. 8.7, 8.14 and 8.33), - in 8 issues the candidate is in the first place (№ 7.5, 7.6, 8.2, 8.22, 8.23, 8.25, 8.26, 8.31), - and the contribution in the other publications submitted to the competition is equivalent.
--

The candidate has conducted his/her research with a team under 12 contracts under the management of the Research Sector at the UCTM. In the 12 contracts he was the project leader.

All of this leads me to conclude that the research papers submitted to the competition and the contributions therein are at least of equal standing to the applicant.

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	
B) The candidate has sufficient pedagogical activity at the university. The textbooks issued satisfy the requirements of the Regulations.	6 points	X
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.

It can be concluded from the submitted reference that the candidate Assoc. Prof. Dr. Valentin Slavov has teaching experience from 1987 to the present at the UCTM - Sofia as a lecturer of students at Bachelor and Master level, full-time studies;
Assoc. Prof. Valentin Slavov has published one university textbook and 5 textbooks.

The subjects taught correspond thematically to the published textbooks and textbook and are related to the candidate's scientific activity.

All this gives me grounds to state that the candidate has sufficient pedagogical activity at the UCTM-Sofia. The published teaching aids satisfy the requirements of the Regulations

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	66
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
<p>Based on the presented scientific works, their significance, quality, scientific, scientific, and applied contributions contained in them, and the results achieved, I give a positive assessment of his activity. I propose the esteemed scientific jury evaluate positively and recommend to the Academic Council of the UCTM to approve the candidature of Assoc. Professor PhD Valentin SLAVOV for the academic position "Professor" in the professional direction 5.1. „Mechanical Engineering“, in the field of higher education 5. Technical sciences for the needs of department of Applied Mechanics of UCTM.</p> <p>The candidate has fulfilled the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria (LDASRB) and the corresponding regulations of the UCTM, for holding the academic position of Professor.</p>

21/10/2023	The report was written by: Prof. Dimitar Petrov DONTCHEV	
date		signature