OPINION

by Dr. Eng. Nedyalko Todorov Katrandzhiev, Professor at UFT-Plovdiv

of the materials submitted for participation in the competition

for the academic position of "Associate Professor"

of Plovdiv University "Paisii Hilendarski"

in the field of higher education 5. Technical sciences

professional field 5.2. Electrical engineering, electronics and automation

(Theory of electronic circuits and electronic circuits design)

Ch. Assistant Professor Dr. Eng. Daniela Antonova Shehova from Plovdiv University "Paisii Hilendarski" participates as a candidate in the competition for "associate professor", announced in the State Gazette, issue 40 of 14.05.2021 and in the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of "Electric power Engineering and Communication" at the "Faculty of Physics and Technology".

1. **General presentation of the procedure and the candidate**
   Ch. Assistant Professor Daniela Antonova Shehova, PhD, in regard to the procedure, presented a full set of required documents in accordance with the Regulations for the development of the academic staff of the University of Plovdiv, which I accept unconditionally. The candidate participates in the competition with 39 scientific publications, 13 of which are referenced and indexed in world databases with scientific information Scopus / Web of Science (ten of which are included in the habilitation thesis) and a published book based on a defended dissertation for awarding of the scientific degree "Doctor". Ch. Assistant Professor Daniela Antonova Shehova, PhD, has over 32 years of pedagogical experience and 11 years of experience as a "chief assistant". She acquired PhD degree in 2016.

2. **General characteristics of the candidate's activity**
   Auditory employment of Ch. Assis. Prof. Dr. Eng. Daniela Antonova Shehova for 2020/2021 is 774 hours, which includes classes in: Analog circuits , Digital circuits, Electronic circuits I and II, Electronics, Electronic semiconductor devices and integrated circuits, Power supply devices, Computer modeling and engineering design, Software products for engineering solutions, Technical and computer documentation, Practicum with software products for engineering solutions and Training practice.

In addition, the candidate has an extracurricular activity of 100 hours.

Ch. Assis. Prof. Dr. Eng. Daniela Antonova Shehova has prepared eight curricula for Bachelor's degree (one co-authored) and four for Master's degree.

The candidate has been a research supervisor of seven graduates and has participated as an academic mentor in all phases of the Student Internship project, which proves the successful work with students.

She has participated in eight research projects.

Ch. Assistant Professor Daniela Antonova Shehova, PhD, is a co-author in the publication of several manuals and books, namely: Exercise manual for MATLAB Part I, Computer Peripherals - Part One, Computer Simulations in Electrical and Electronics Training, Mobile Programming, Microprocessor Manual.

The distribution of the candidate's publications is presented in tabular form below.

Author	SCOPUS, Web of Science	Scientific review	Total
first author	4	9	13
second author	7	10	17
third author	-	5	5
fourth author	2	2	4
General	13	26	39
	39		

The table shows that in 1/3 of the publications Ch. Assistant Professor Daniela Antonova Shehova, PhD, is first author, and in over 2/3 she is first or second author. This leads me to conclude that she has a leading role and personal contribution in conducting the research described in the publications.

Some of the main contributions from the candidate's scientific production are:
Scientifically applied contributions
- An approach has been developed for studying types of electronic circuits using integrated design and simulation systems, and subsequent verification of the results using open source platforms and experimental modules [B4.1], [B4.7] and [B4.8].
- Methodological instructions for experimental confirmation of a simulation demonstration of the principles of operation and the basic characteristics of electronic circuits have been created and applied. [B4.1], [B4.7] and [B4.8].
- Simulation circuits for testing electronic devices (programmable functional generator; digital-to-analog converters; motion, fire, humidity and temperature sensors; linear operating circuits and digital communication systems with linear coding) have been developed, using integrated design and analysis environments – Proteus, TINA TI, NI Multisim и OrCad [B4.1], [B4.2], [B4.5], [B4.7] and [B4.8].
- Computer-based methods in MATLAB Simulink for the research and description of the basics of digital communication systems have been proposed [G7.2], [G8.6], [G8.10] и [G7.11].
- Simulation models for e-learning have been created in the Multisim, FilterProTM and TI-NA-TI environments for the examination of: radio communication devices [G8.2], active filters [G8.5], electronic circuits with operational amplifiers [G7.3], [G8.3], [G8.13] and [G8.14], quadripole [G8.15], mixed signal circuits [G8.20], programmable amplifiers [G8.18] and voltage converters [G8.26].

Applied contributions
- The NextCloud cloud technology, allowing sharing of educational resources, modernization of the teaching process and accessibility for a large number of remote users has been developed and applied in the organization of the teaching process [B4.6].
- A meteorological station, applicable in the educational process, has been designed and built using the Arduino Mega microprocessor system, including a temperature and humidity sensor, a fire detector and visualization of the data [G8.16] and [G8.19].
- A LabView based virtual tool for statistical data processing, built into a real-time software system, has been developed. The virtual tool can also be embedded in other more complex data processing systems [G8.25]. Laboratory modules have been developed using open source platforms [G8.18], [G8.21].
A total of 23 citations of scientific papers have been noted, 11 of which are in referenced and indexed publications in world-famous databases. The most cited publication is B4.2.

3. Critical remarks and recommendations

The extended habilitation report on scientific contributions could be made better. Presented in this way, article after article, it is a bit torn and does not look like a whole document. It is good for the report to have a title, for the introduction to be related to its topic - the problems in this area. I recommend the location of the tests performed (although implied) to be described. References in the text (foreign and personal) should be inserted to support what is written. Table 2 is missing in the report, but there are tables 1 and 3.

CONCLUSION

The documents and the materials submitted by Ch. Assis. Prof. Dr. Eng. Daniela Antonova Shehova meet the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for implementation of LDASRB and the respective Regulations of PU "Paisii Hilendarski".

The candidate in the competition has submitted a sufficient number of scientific papers published after the materials used in the defense of PhD degree. There are original scientific-applied and applied contributions in the works of the candidate, which have received international recognition as a representative part of them are published in scientific journals by international academic publishers. Her theoretical developments have practical applicability, as some of them are directly oriented to the educational work. The scientific and teaching qualification of Ch. Assistant Professor Dr. Eng. Daniela Antonova Shehova is undoubted.

After getting acquainted with the materials and scientific papers presented in the competition, analysis of their significance and the scientific-applied and applied contributions contained in them, I find it reasonable to give my POSITIVE assessment and recommend to the Scientific Jury to prepare a report-proposal to the Faculty Council. "Faculty of Physics and Technology" for the election of Ch. Assistant Professor Dr. Eng. Daniela Antonova Shehova at the academic position of "Associate Professor" at the University of Plovdiv "P. Hilendarski" by professional field 5.2. Electrical engineering, electronics and automation (Theory of electronic circuits and electronic circuits design).

06.09.2021 г.   **Prepared the opinion**:......................................

(Prof. Dr. Eng. Nedyalko Katrandzhiev)