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THE DOCTORAL SCHOOL OF ENGINEERING SCIENCES
THE DOCTORAL STUDY DOMAIN: MECHANICAL ENGINEERING

INTERNAL EVALUATION REPORT

July 2021

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No. institution registration ..... No. ARACIS registration .....

Doctoral study domain: MECHANICAL ENGINEERING

INTERNAL EVALUATION REPORT

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Director,
Prof. Dinu COLTUC

Stamp

The data contained in this Report are complete, correct and in accordance with the principles of professional ethics

LIST OF ABBREVIATIONS

ARACIS	Romanian Agency for Quality Assurance in Higher Education
CNATDCU	National Council for the Recognition of University Degrees, Diplomas and Certificates
CSD	Doctoral School Board
CSUD	Board of Doctoral Studies
FIMM	Faculty of Materials Engineering and Mechanics
ICSTM	The Scientific and Technological Multidisciplinary Research Institute
CC-NANOMEC	Nanomaterials Research Centre for Mechanical Microsystems
CC-SASM	Materials Science Academic School Research Centre
INCDMTM	The National Institute of Research and Development in Mechatronics and Measurement Technique
POSDRU	The Sectoral Operational Programme for Human Capital Development
SDSEU	Doctoral School of Economics and Humanities Studies
SDSI	Doctoral School of Engineering Sciences
SDSI – IMec	Doctoral School of Engineering Sciences - Mechanical Engineering field
UVT	Valahia University of Târgoviște
UEFISCDI	The Executive Agency for Higher Education, Research, Development and Innovation Funding

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1. GENERAL INFORMATION

1.1. ABOUT THE DOCTORAL SCHOOL

The Doctoral School of Engineering Sciences (SDSI) was established in 2012 based on the UVT Senate Decision no. 105D / 09.03.2012 regarding the reorganization of the Doctoral School of UVT into an Institution Organizing University Doctoral Studies (IOSUD) comprising two doctoral schools, each covering three doctoral fields. SDSI organizes doctorates in the fields of **electrical engineering, materials engineering and mechanical engineering.** The Doctoral School Board (CSD), established in accordance with *The Methodology for Electing the Doctoral School Board Members and Appointing the Manager of the Doctoral School*, is made up by: Professor Dinu COLȚUC, Doctor of Engineering (UVT), Professor Rodica Mariana ION, Doctor of Engineering (UVT), Corneliu Gabriel BUICA, PhD student (UVT), Professor Gheorghe BREZEANU, Doctor of Engineering (UPB), and Professor Corneliu RUSU, Doctor of Engineering (UTC). The manager of SDSI is Dinu COLȚUC. SDSI's mission is to organize doctoral programmes in the fields of electrical engineering, materials engineering and mechanical engineering within IOSUD-UVT and to train specialists who will fill the needs of the highly qualified-labor market: higher education, research and development.

On a yearly basis, IOSUD draws up and implements a quality assurance programme, defining objectives that contribute to achieving the goals set by UVT for the entire institution. The quality objectives are aimed primarily at: the quality management, education / continuous training, scientific research and academic production, national and international cooperation. Actions, deadlines, responsibilities, performance indicators, and resources are stipulated for each specific objective. The quality objectives set by IOSUD are reviewed annually. The evaluation of the achievement level for the objectives set is performed every year and the Report on the Analysis of the Quality Management System (SMC)implemented by IOSUD is prepared. The achievement level of the objectives set is evaluated based on the analysis of the performance indicators. The internal auditing of the quality management system within IOSUD is carried out annually by internal auditors, under the coordination of the Evaluation and Quality Assurance Department, and the results are recorded in the form of a Report. The internal audit is performed based on the annual program approved by the University Senate and the audit plan. The quality management system at UVT level is certified in accordance with ISO 9001: 2015. The external supervision audit of SMC is performed by AEROQ Bucharest.

SDSI abides by the provisions of UVT Code of Ethics and Professional Deontology apply to SDSI. The *Ethics Commission* established within UVT monitors compliance with the code of ethics and investigates breaches of professional ethics, proposing the necessary measures to be taken by UVT management. The reports of the

Ethics Commission are made public on the university's website - http://www.valahia.ro/ro/comisia-de-etica.

In SDSI has 12 PhD supervisors , 4 specialising in electrical engineering, 5 in materials engineering and 3 in mechanical engineering. Of the 12 PhD supervisors, 6 are professors at UVT, and 6 are associates. We must mention the national and international visibility of our PhD supervisors and their vast experience in the research activity. We would also like to point out that SDSI has PhD supervisors with notable achievements, recognized by the international community, in each of the above-mentioned fields**.** SDSI has 40 PhD students, of whom 16 specialise in electrical engineering, 14 in materials engineering, and 10 in mechanical engineering.

The PhD students enrolled at SDSI-IMec have unrestricted access to the research and documentation infrastructure of UVT, is est the facilities offered by IOSUD, The Scientific and Technological Multidisciplinary Research Institute (ICSTM), the Faculty of Materials Engineering and Mechanics, and the Faculty of Electrical Engineering, Electronics and Information Technology. ICSTM brings together the accredited research centres of the university. The research infrastructure has a total floor area of 6270 sqm and a building footprint area of 2220 sqm, comprising 33 laboratories, 1 amphitheatre, and technological rooms. ICSTM is equipped with modern computing technology and modeling and design software. Among the most representative equipment ICSTM laboratories are equipped with are the experimental photovoltaic platform, the experimental windmill platform, the experimental solar thermal platform, a PV module-developing and prototyping system, inductively coupled plasma mass spectrometry (ICP-MS) technology, a sputtering vacuum coating system, a focused ion beam-equipped scanning electron microscope (FIB-SEM), an atomic force microscope (AFM), a LASER ablation system, a nanoindenter, an MTS Bionix system for tensile and compression, torsion, and bending tests, a vertical CNC machining centre equipped with an ultrasonic module which enables processing a wide range of samples, including brittle materials. The specialists in our laboratories perform structural analyzes, phase identification determinations, quantitative and qualitative elemental analyses, morphological determinations, surface topography evaluations, electrical characterizations, characterizations of mechanical properties (rigidity, hardness, resistance to mechanical stress - tension, compression, torsion, bending) and carry out CNC designing, prototyping and manufacturing.

1.2. ABOUT THE MECHANICAL ENGINEERING FIELD OF STUDY

The field of Mechanical Engineering was established in 2010 at Valahia University of Târgoviste by O.M. no. 4966 / 31.08.2010 issued by the Ministry of Education, Research, Youth and Sports (MECTS). At the time of its founding, it had three PhD supervisors: Prof. Gheorghe GHEORGHE, Prof. Cornel MARIN, Doctor of Engineering, and Prof. Viviana FILIP, Doctor of Engineering. All three received the title of PhD supervisor by O.M. no. 5679/19.11.2010. The *Mechanical Engineering* field is one of the three fields of study covered by the *Doctoral School of Engineering Sciences* (SDSI), a school that was established in 2012 following the reorganization of UVT Doctoral School, which became IOSUD, in accordance with Law 1/2011. The aforementioned professors were joined recently by two more PhD supervisors: Assoc. Prof. Ivona Camelia PETRE, who received the title of PhD supervisor by O.M. no. 4179/05.07.2021 and CS-I Cristinel Ioan ILIE, who received the title of PhD supervisor by O.M. no. 4180/05.07.2021.

The GOALS of SDSI-IMec

- Creating a pole of excellence for education and research in the field of Mechanical Engineering;
- Ensuring the training of specialised human resources for high-level activities, including a strong research component;
- Increasing UVT's national and international visibility;
- Ensuring the necessary conditions for participation in international professional training and research programs in the field**.**

The mechanical engineering doctoral programme has a didactic and research-oriented **MISSION**, aiming to help students deepen the knowledge they acquired during the master cycle and build the specific competencies required by scientific research.

The didactic mission consists in:

- Training the PhD students so they obtain the knowledge and skills required by the mechanical engineering research activities, namely mechanical measurements, industrial research, experimental development, product innovation (thinking out and designing mechanical systems; making the demonstration model and testing it; producing and testing the prototype), modelling methods and techniques used in mechanical engineering, machines and mechanical drives, measurement and data acquisition systems, numerical methods used in mechanical engineering, optimization of products and technological processes, etc.
- Helping the students build the necessary skills for working out and managing scientific research projects in mechanical engineering and other related fields;
- Developing the students' critical thinking required by the objective evaluation of the research results;

- Educating the PhD students in the spirit of scientific research ethics;
- Training specialists able to fill the needs of the highly qualified labour market.

The scientific research mission refers to:

- Participating in national and international contests and research programs;
- Producing new knowledge in the field of mechanical engineering and other related fields;
- Monitoring the dissemination of knowledge;
- Establishing connections and starting scientific collaborations with universities and other research institutions from the country and from abroad so as to work together on scientific papers and joint research projects, etc.

The SDSI-IMec CURRICULUM covers 3 years and includes the advanced study program (30 transferable credits) and the scientific research program (150 transferable credits). The training program based on advanced academic studies includes 3 specialized courses recommended by the PhD supervisor depending on the subject of the thesis and the PhD student's strategy (whether they attend the courses or study individually using a recommended bibliography which contains mandatorily recent articles in the field), and two disciplines of general interest, *Ethics and Academic Integrity and Research Methodology*. Each course ends with a colloquium intended to check the students' knowledge and skill acquisition (how well-acquainted they are to the fields they study, their capacity for synthesis, critical analysis skills, result evaluation ability, etc.). The curriculum also provides three *Research Progress Reports* and the preparation and defence of the doctoral thesis. The SDSI-IMec curriculum is presented in Annex 1 .

PhD SUPERVISORS

The field works with 3 doctoral supervisors, prof. Dr. Eng Gheorghe GHEORGHE, prof. Dr. Eng. Cornel MARIN and prof. Dr. Eng. Viviana FILIP, accredited by O.M. no. 5679 / 19.11.2010, who were recently joined by two more, namely Assoc. Prof. Dr. Eng. Ivona Camelia PETRE who received the title of PhD supervisor by O.M. no. 4179/05.07.2021 and CS-I Dr. Eng. Cristinel Ioan ILIE, who received the title of PhD supervisor by O.M. no. 4180/05.07.2021. CVs and job lists are attached in Annex 2. Although the number is relatively small, the national and international visibility of our PhD supervisors and, last but not least, their experience in research should be emphasized. Below, we present some significant aspects of the activity of doctoral supervisors.

Gheorghe GHEORGHE (Annex 2.1) is an associate professor at the Faculty of Materials Engineering and Mechanics of UVT and is CS-I at the National Research - Development Institute for Mechatronics and Measurement Technique - INCDMTM in Bucharest, specialist in mechatronics, intelligent measurement technique, sensors and transducers. He ended on December 31, 2020 the mandate of General Manager of INCDMTM Bucharest. He is a Corresponding Member of the Romanian Academy of Technical Sciences, President of APROMECA (Romanian Employers Association in the Fine Mechanical, Optical and Mechatronics Industry), Executive President of AMFOR (Romanian Fine and Optical Mechanics Association). He has specializations abroad in

Intelligent Measurement and Dimensional Control Equipment: Germany at ZEISS; Sweden firm JOHANSSON; Italy the firm DEA; Austria the firm R.F.S. Electronics. He has published over 400 scientific papers in recognized national and international journals, of which **28 WoS-ISI publications (7 in the last 5 years)**, 89 BDI indexed publications **(42 in the last 5 years)**, has **23 patents invention (1 in the last 5 years), 5 patent applications (3 in the last 5 years)** has developed **110** monographs, books and book chapters in recognized publishing houses **(15 in the last 5 years)**. He has won numerous awards and medals nationally and internationally: Gold Medal at the International Invention Show INNOVA 2nd Edition, 2017 BARCELONA; Silver medal at the 44th International Exhibition of Inventions, Techniques and New Products 2016 GENEVA. He participated in over 550 research and development projects of human resources, of which 28 research and development grants as director / manager (16 in the last 5 years), 136 design contracts, research and development with economic agents (63 in the last 5 years) He is a founding member of: PMR (Project Management Romania) and SROMECA (Romanian Society of Mechatronics).

Viviana FILIP (Annex 2.2) is a university professor. at the Faculty of Materials Engineering and Mechanics of UVT since 2009, has published over 90 articles in national and international journals and conference volumes, of which 15 in WoS-ISI publications (4 in the last 5 years), 32 BDI indexed publications (7 in the last 5 years), has elaborated 18 monographs, books and book chapters in recognized publishing houses (1 in the last 5 years), 4 of them being in prestigious international publishing houses and has participated in over 15 human resources research and development projects. of which over 14 national and 1 international, 4 of them being director or project manager. She is a member of the management team of the **Horizon 2020** project entitled Integrated multi-vector management system for Energy isLANDs, financing contract no. **824388/2018.** The field of interest is the design, modeling, simulation and analysis of mechanical systems, with industrial and biomedical applications. He is a Member of the Romanian Association for Theory of Machines and Mechanisms - President of the Targoviste branch, associated with IFTOMM (International Federation for the Promotion of Mechanism and Machine Science), member of the scientific committee of the International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical engineering and New High-Tech Products Development - Mecahitech, The Scientific Bulletin of Valahia University - Materials and Mechanics, Romanian Review Precision Mechanics, Optics and Mechatronics, member of the Honorary Committee of the Journal of Mechatronics and Applied Mechanics (IJOMAM) indexed in bases international data. He has been a member of the organizing / scientific committees at over 10 national and international conferences. He has participated in over 25 national and international conferences held in the country and abroad.

Cornel MARIN (Annex 2.3) is a university professor at the *Faculty of Materials Engineering and Mechanics of UVT* since 2004, specialist in technical mechanics and mechanical vibrations. He has published over 100 articles in national and international

journals and conference volumes, of which **5 in WoS-ISI publications**, has written **27 monographs, books and book chapters in recognized publishers (2 in the last 5 years)** and has participated in **12 scientific research projects (5 as director / manager).** Member of the scientific committee of The Scientific Bulletin of Wallachia University - Materials and Mechanics, indexed BDI, member of the scientific committee of the international journal Journal Of Mechatronics And Applied Mechanics - IJOMAM indexed BDI, member of the Scientific Committee of international conferences: 8th International Coference on Inovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development MECAHITECH 16, Bucharest, First International Conference of Mechatronics & Ciber-Ixmechatronics ICOMECYME 17 Bucharest, Romania, 2nd International Conference of Mechatronics and Cyber-MixMecatronics ICOMECYME 18 Bucharest, 3rd International Conference of Mechatronics and Cyber-MixMecatronics ICOMECYME 19 Bucharest, 4th International Conference of Mechatronics and Cyber-MixMecatronics ICOMECYME 20 Bucharest.

Ivona Camelia PETRE (Annex 2.4) is an associate professor at the Faculty of Materials Engineering and Mechanics of UVT since 2001, he is a specialist in modeling, testing and evaluating the tribological behavior of materials. He has published **7 articles in WoS-ISI journals, with impact factor, (all in the last 5 years), 15 BDI indexed articles (7 in the last 5 years), 2 innovation patents, 10 scientific research projects (4 as director / responsible), 25 monographs and specialized books (10 in the last 5 years), 19 participations in international conferences in the field**, editor of *The Scientific Bulletin of Valahia University - Materials and Mechanics*, indexed BDI, member of scientific and organizing committees during the conferences and symposiums organized by the university.

Cristinel Ioan ILIE (Annex 2.5) is a CS-I at the National Research - Development Institute for Electrical Engineering - ICPE-CA, he is a specialist in electromagnetic actuators made by microfabrication technologies, in micromechanics and micromagnets. He has published **24 WoS-ISI indexed articles**, of which **6 in journals with an impact factor, is the author of 8 patents (7 in the last 5 years)** and 8 patent applications (all in the last 5 years), **all registered WoS-ISI**, two monographs, both in the last 5 years, **14 research projects won as director or project manager (4 in the last 5 years), over 20 research-development projects in which he participated as a member (2 in the last 5 years)** and 20 participations in international conferences in the field.

PhD STUDENTS

In the period subject to evaluation (2016-2021), 12 PhD students were admitted at SDSI-Imec. Of these 12 places, 3 were state-funded and 9 were fee-paying. A maximum number of 16 PhD students were in training (a number that was reached in the academic year 2018-2019) and 6 PhD theses were defended in the same period. The situation of the enrolled PhD students and defended theses is presented in Annex 3. Currently (June 2021), there are 10 PhD students in training: 6 are supervised by Prof.

Gheorghe GHEORGHE, 3 are supervised by Prof. Viviana FILIP, and 1 is supervised by Prof. Cornel MARIN.

Until now, from the moment SDSI-IMec was founded, a total of 12 graduates have been awarded the title of doctor in mechanical engineering. The figures regarding the defended theses and the PhD students admitted per year are given in the table below.

	2016	2017	2018	2019	2020
Number of defended theses	-	-	-	3	3
Numbers of admitted PhD students	3	2	4	2	1

One can observe that the graduates' interest in obtaining the title of doctor in mechanical engineering has been continuous during the past 5 years, and has been increasing compared to the previous evaluation period.

We must point out that all 12 doctors in mechanical engineering work currently in the field or in related fields. A significant number of them are engaged in research activities. Thus, six of them are researchers at the National Institute of Research and Development in Mechatronics and Measurement Technique - INCDMTM Bucharest (MĂRCUȚ I. Simona-Elena, PhD, CONSTANTINESCU O. Alexandru, PhD, VOICU I. Adrian-Cătălin, PhD, CONSTANTIN V. Anghel, PhD, CIOBOTA T. Năstase - Dan, PhD, ANGELESCU I. Dorin, PhD), one is a scientific researcher at the Scientific and Technological Multidisciplinary Research Institute of Valahia University of Târgovişte (MIHAI I. Simona, PhD), one is a lecturer at the Faculty of Materials Engineering and Mechanics - Valahia University of Targoviste (DUMITRU M. Veronica (DESPA), PhD, and three others work in the field of mechanical engineering in private companies (KUFNER M. Andreea Georgiana, PhD - SC Erdemir SRL, eng. IANCU L. Andreea-Nicoleta, PhD, designer of hydropneumatic installations, eng. VASILE I. Gheorghe, PhD - VELFINA S.A. Campulung), (eng. BĂLAȘA C.E. Constantin Mihai - Macartney Hydraulics A / S Lenmvig, Denmark). Six of the twelve graduates defended their theses during the evaluation period. In conclusion, eight SDSI-IMec graduates out of twelve, ie 66% of them, work in research / higher-education institutions, and if we refer only to the period under evaluation, five SDSI-IMec graduates out of the total of six, ie 83% of them, work as researchers.

RESEARCH CENTRES / LABORATORIES

The PhD students enrolled at SDSI-IMec have unrestricted access to the research and documentation infrastructure of UVT, id est the facilities offered by IOSUD, the Scientific and Technological Multidisciplinary Research Institute (ICSTM) - https://erris.gov.ro -, and the Faculty of Materials Engineering and Mechanics within Valahia University of Târgovişte (FIMM). The PhD students at SDSI-IMec are members of the two ICSTM centres where the supervisors perform their research activity: the *"Nanomaterials for Micromechanical Microsystems"* Research Centre (CC-NANOMEC) and the *"Academic School of Materials Science"* Research Centre (CC-SASM).

In the research centres belonging to ICSTM, the PhD students of *SDSI-IMec* use mainly the infrastructure available in the following laboratories:

- Room B03 - Hardness and rigidity measurements in superficial nanometric layer
  - ✓ NanoIndenter - NanoScratcher
- Room B05 - 3D testing, scanning and prototyping
  - ✓ MTS Bionix tension, compression, bending and torsion testing system, for testing in static and dynamic regime, equipped with orthopaedic implant testing fixture
  - ✓ 3D prototyping Stereolithography system
  - ✓ 3D scanner for Reverse Engineering
- Room C04 - LASER Ablation Laboratory
  - ✓ LASER ablation system
- Room C13 - Thin layer deposition laboratory
  - ✓ Metallic and dielectric layer vacuum sputtering coating
  - ✓ E-beam-equipped vacuum coating system
  - ✓ Controlled immersion thin layer deposition system
  - ✓ Reactive ion plasma etching installation (RIE)
  - ✓ Spin-On thin layer deposition equipment
- Room C14 - Microscopy Laboratory
  - ✓ Atomic Force Microscope
  - ✓ Optical microscopy
- Room C12 - Physical and structural characterization of materials
  - ✓ X-ray diffractometer
  - ✓ WDXRF Spectrometer
  - ✓ Portable Gamma Spectrometer
- Room B11 - Design, modelling, simulation
  - ✓ Catia, SolidWorks, Adams, Easy 5, AnyBody, MatLab, LabView, Comsol, OriginPro software

- Room B01 - Experimental models and prototypes
  - ✓ 5-axis CNC vertical machining centre
  - ✓ 3-axis CNC turning system
- Room B24 - Heat treatment
  - ✓ Ovens for heat treatments at temperatures up to 1100^{o}C

The PhD students of SDSI-IMec also have full access to the scientific laboratories of the Faculty of Materials Engineering and Mechanics, namely :

- Room A006 - Machines and installations for process industries
  - ✓ Reactive mixture station,
  - ✓ Filament 3D printer: ABS, PLA,
  - ✓ Process industry machines: crusher, ball mill, hammer mill, belt conveyor system
- Room A005 - Fluid mechanics and hydraulic drive systems:
  - ✓ Pneumatic muscle stand

- Room A024 - Physical metallurgy and heat treatments:
  - ✓ MC6 optical microscopes,
  - ✓ Heat treatment electric oven
- Room A023 - Biomaterials, ceramic materials, composite materials
  - ✓ Nabertherm heat treatment furnace, silit melting furnace, oven, thermocouple calibration furnace

We also mention the unrestricted access to the resources of the University Library, including the electronic resources (https://biblioteca.valahia.ro/resurse-online).

Our PhD students also have access to research facilities from other institutions, based on collaboration agreements signed by SDSI. One example is the access to the resources of the National Institute of Research and Development in Mechatronics and Measurement Technique (INCDMTM) *(UVT-INCDMTM collaboration agreement no. 7590/2018)*, as follows:

- Rapid Prototyping laboratory
- Metrology laboratory
- Biomechatronics laboratory
- Cyber-Mix-Mecatronics laboratory

MAIN SCIENTIFIC RESULTS

During the evaluated period, 6 doctoral theses were defended, according to Annex 3. Currently, out of the 6 doctoral students who defended the thesis, 5 are researchers at the National Research-Development Institute for Mechatronics and Measurement Technique in Bucharest (CONSTANTIN V. Anghel, CIOBOTA T. Năstase - Dan, ANGELESCU I. Dorin, GORNOAVĂ V. Valentin, STANCIU F. Dănuț Iulian), and one works at Macartney Hydraulics A / S Lenmvig, Denmark - Romania branch (BĂLAȘA CE Constantin-Mihai). In the evaluated period, the year with the maximum number of doctoral students was 2018-2019, year in which a number of 16 doctoral students were in internships. Currently (June 2021), we have a number of 10 PhD students in internship, as follows: 6 are coordinated by Prof. Gheorghe GHEORGHE, 3 are coordinated by Prof. Viviana FILIP and one is coordinated by Prof. Cornel MARIN.

Out of the 16 doctoral students who carried out their activity during the evaluated period, **8 doctoral students received funding by participating in a total of 35 projects (Anghel Constantin - 8 projects, Ciobota Nastase Dan - 7 projects (one as director), Angelescu Dorin - 3 projects, Stanciu Danuț - 8 projects (one as director), Gornoavă Valentin - 4 projects, Ilie Iulian - 3 projects (one as project director), Soci (Leț) Andreea - Mihaela - 1 project, Badea Sorin-Ionuț - 1 project), presented in** Annex 4.

The scientific production of PhD students in the field of Mechanical Engineering in the evaluated period is presented in Annex 5 and consists of 66 papers. It should be mentioned that in the evaluated period, the doctoral students obtained a number of 6 patents and filed 3 patent applications. They have published **3 books / book chapters, 4 articles in WoS-ISI rated journals (of which two in Q2 journals), 2 articles in WoS-ISI indexed journals, 4 articles in WoS-ISI indexed proceedings, 23 articles in journals indexed BDI and 21 in BDI indexed proceedings (of which 4 abroad).**

We present in the following the main scientific results of the doctoral students:

- **Research projects (grants) won by IMec PhD students during their internship:**

- High precision intelligent mechatronic system for measuring linear micro-displacements in industrial environments, UEFISCDI - Innovation checks, PN-III-P2-2.1-CI-2017-02112017, **ILIE S. Iulian - project manager**
- Modifying the concept of measuring revolution parts in the context of automation and robotization of dimensional control processes, Core Program, ctr. PN 18 37 02 02/2018, **STANCIU Dănuț - project director**

- **Research projects (grants) in which IMec PhD students participated in the internship:**

The PhD students participated in **35 national and international research projects (6 European projects, 12 PN III projects, 7 POC projects, 10 Core projects)**, the complete list of which can be consulted in Annex 4, of which we mention:
- Integrated multi-vector management system for Energy isLANDs, HORIZON 2020, 824388/2018, **Soci (Leț) Andreea - Mihaela**

- Testing Micro-encapsulated phase change materials for high temperature thermal energy storage applications – microHighTemPCM, FP7-INFRA-312643-2017 - **CIOBOTA Nastase-Dan**

- Portable wireless system for real-time monitoring of energy consumption and walking parameters for medical and sports applications - Wi-Shoe- Contract no. 605777 within the European THEME Program [SME-2013-1], 2016, **Anghel CONSTANTIN**

- Water Network Sensors for Widespread Use FP7-SME-2013 „ WIDESENS 605802, 2016, **Anghel CONSTANTIN**

- Advanced air diffusion system of the crew quarters for the iss and deep space habitation systems - quest, Program STAR - Ag. European Space and ROSA, Contract no: 128 / 20.07.2017, **Dorin ANGELESCU**

- Biomaterials and advanced physical techniques for regenerative cardiology and neurology - Bioneca, COST Action Project, 16122/2017, 2017, CIOBOTA Nastase-Dan

- **Articles in WoS-ISI - Q2 listed magazines:**

- Oros Daraban A.E., Negrea C.S., Artimon F.G., **Angelescu Dorin,** Popan G., Gheorghe, Gh., *A Deep Look at Metal Additive Manufacturing Recycling and Use Tools for Sustainability Performance*, Sustainability 2019, 11, Publicat 03.10.2019 online MPI, 5494-5513, DOI: 10.3390/su11195494, WOS: 000493525500353 (Q2), Journal Impact: 2,79, https://www.mdpi.com/2071-1050/11/19/5494

- Piticescu R. M., Cursaru L. M., **Ciobota Dan Năstase**, Istrate S., & Ulieru D. (2018), 3D Bioprinting of Hybrid Materials for Regenerative Medicine: Implementation in Innovative Small and Medium-Sized Enterprises (SMEs, JOM: The journal of the Minerals, Metals & Materials Society (JOM-US), Journal Impact: 1.72, DOI: 10.1007/s11837-018-3252, WOS:000457406800028 (Q2), Journal Impact: 2,62
https://www.researchgate.net/publication/329078570_3D_Bioprinting_of_Hybrid_Materials_for_Regenerative_Medicine_Implementation_in_Innovative_Small_and_Medium-Sized_Enterprises_SMEs

- **Articles in WoS-ISI - Q4 listed magazines:**

- Ancuta Paul-Nicolae, Atanasescu Anca, Sorea Sorin, **Stanciu Dănuț-Iulian**, Lucaciu Irina Eugenia, Stoica Catalina, Nita-Lazar Mihai, Banciu Alina Roxana, *Bacterial Monitoring of Drinking Water Sources Using Immunofluorescence technique*, *Image Processing Software and Web-based Data Visualisatio*n, Control Engineering and Applied Informatics ISSN: 1454-8658 Vol. 21, Issue 2, Pag. 54-63 WOS: 000489234700006 (Q4) https://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=20&SID=D3xFstPWOO3WkvUwGIm&page=1&doc=1

- Anghel Constantin, *Optimal design and modeling of tactile resistive and capacitive sensors interfaces used in modern mechatronics*, Romanian Journal of Information Science and Technology, Volume 20, Number 4, 2017, pp. 400–414, ISSN:14538245, factor impact 0.304, (Q4), WOS: 000433876700008
http://www.romjist.ro/full-texts/paper574.pdf,
http://apps.webofknowledge.com/Search.do?product=WOS&SID=C5Wlv3ltTWQl3Q5t1Wz&search_mode=GeneralSearch&prID=02379868-941c-4da2-bef7-7b90834ad6a8

- **Articles in WoS-ISI indexed journals**

- Dorin Dacian Let, Ioan Alin Bucurica, Ion Valentin Gurgu, Laurentiu Stancu, **Andreea Mihaela Let**, Giorgian Marius Ionita, Assessment of a data center microgrid with storage and photovoltaic generation, Journal of Science and Arts, Year 19, No. 4(49), pp. 1067-1076, 2019, ISSN: 1844–9581, WOS: 000508420400028
https://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=5&SID=D3xFstPWOO3WkvUwGIm&page=1&doc=1

- Cristina Mihaela Nicolescu, Marius Bumbac, Simona Mihai, Anca Irina Gheboianu, **Mihai Constantin Balasa**, Viviana Filip, Stefan Cuculici, Stefan Cristea, Cosmin Pantu, "X-RAY diffraction and nanoindentation characterization of bone tissue affected by severe osteoarthritis", Journal of Science and Arts, ISSN: 1844 – 9581 Physics Section, Year 18, No. 1(42), pp. 265-274, 2018, WOS:000430226600024
https://apps.webofknowledge.com/Search.do?product=WOS&SID=C5Wlv3ltTWQl3Q5t1Wz&search_mode=GeneralSearch&prID=f3254d50-fa4d-4c62-80ff-8728d92a48ea

- **Articles indexed WoS-ISI proceedings:**

- Dorin Let, Bogdan Ionut Tene, Adela-Gabriela Husu, Mihai-Florin Stan, Laurentiu Marian Stancu, **Andreea Let**, Feasibility of a micro grid scale up at campus level - Case study, 2019 11th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), DOI: 10.1109/ECAI46879.2019.9041969, WOS:000569985400020 https://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=10&SID=D3xFstPWOO3WkvUwGIm&page=1&doc=1

- Dumitru Sergiu; Comeaga Daniel; **Anghel Constantin**; Morega Alexandru Mihail, Modelling and simulation of MEMS electromagnetic scanner control, 2017 International Conference on Mechanical, System and Control Engineering (ICMSC), St. Petersburg, Russia, May 19-21, 2017 Pages: 170 - 174, DOI: 10.1109/ICMSC.2017.7, WOS:000405221400035
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- Anghel Constantin, Gheorghe I. Gheorghe, Study of piezoresistive and capacitive tactile sensors modeling and simulation for the best linearity with applications in modern
microelectronics and walking analysis, Proceedings of IEEE-Explore The 40th edition of the International Semiconductor Conference CAS-2017, WOS:000425844500052
https://ieeexplore.ieee.org/document/8101212/authors#authors
http://apps.webofknowledge.com/Search.do?product=WOS&SID=F6gSXTWzf2EsOI3ICj5&search_mode=GeneralSearch&prID=989f5e19-3f59-4f0b-921b-604e7f325b8b

- Anghel Constantin, Gheorghe Ion Gheorghe, Simulations of basics topologies and method for practical determination of the output impedance for Howland current sources used for chemical microsensors and biomedical application, 2016 International Semiconductor Conference (CAS), Proceedings of IEEE-Explore, WOS: 000391323300037
https://ieeexplore.ieee.org/document/7783080
http://apps.webofknowledge.com/Search.do?product=WOS&SID=F6gSXTWzf2EsOI3ICj5&search_mode=GeneralSearch&prID=97335ca0-4739-4d49-adec-fec91c0efad7

- **Awards and medals obtained by doctoral students in internships:**

1. Gold Medal & Diploma for Innovation, Sistem Mecatronic-Mixmecatronic de control 4D în Laborator și Industrie, University POLITEHNICA of Bucharest, Gheorghe GHEORGHE, **Iulian ILIE**, **Anghel CONSTANTIN**, 2018

2. Diploma of GOLD MEDAL, Mechatronic-Mixmechatronic System for 4D Control in Laboratory and Industry Euroinvent European Exhibition of Creativity and Innovation Gheorghe GHEORGHE, **Iulian ILIE**, **Anghel CONSTANTIN,** 2018

3. Diploma of Excellence and Gold Medal Mechatronic-Mixmecatronic 4D control system in Laboratory and Industry State University of Medicine and Pharmacy "Nicolae Testemitanu" of the Republic of MOLDOVA, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018

4. Gold Medal, 4D Mechatronic-Mixmechatronic Control System in Laboratory and Industry International Exhibition of Inventions Innovations "Traian Vuia" Timișoara, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018

5. Gold Medal, Mechatronic-Mixmechatronic, System for 4D Control in Laboratory and INVENTICA Institutul Național de Inventică Iași și Universitatea Tehnică "Gheorghe Gheorghe GHEORGHE, **Iulian ILIE**, **Anghel CONSTANTIN**, 2018

6. Gold Medal, 4D Mechatronic-Mixmechatronic Control System in Laboratory and Industry Technical University of Moldova - Iași, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018

7. A Special Prize as a Sign of Honor, Recognition and Appreciation of Scientific Creativity and Originality, Mechatronic-Mixmechatronic System for 4D Control in Laboratory and Industry, "Lucian Blaga" University of Sibiu – Romania, Gheorghe GHEORGHE, **Iulian ILIE**, **Anghel CONSTANTIN**, 2018

8. Special Award, Mechatronic-Mixmechatronic 4D control system in Laboratory and Industry National Institute for Research-Development in Welding and Materials Testing-ISIM Timisoara, Romania, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018

9. Silver Medal, Micromechanical Equipment for the Calibration of Pneumoelectronic Transducers ("SISTETAL TP"), International Exhibition of Inventions GENEVA, ZAPCIU Aurel, MUNTEANU Iulian Sorin, **Anghel CONSTANTIN**, 2018

10. Silver Medal, Interface Circuit for Tensor Resistive Sensors International Exhibition of Inventions Innovations "Traian Vuia" Timișoara, **Anghel CONSTANTIN**, DUMITRU Sergiu, 2017.

11. Silver Medal, Portable Electronic Equipment and Method for Assessing Energy Consumption During Human Walking, International Exhibition of Inventions Innovations "Traian Vuia" Timisoara CAPRIS Georgeta, MIU Silvia Nicoleta, **Anghel CONSTANTIN**, OLARU Mircea, CONSTANTIN Steluța, 2017

12. Diploma of Excellence PROINVENT Anti-Error Dressing Bag with Unique Identification - SMARTGUARD Technical University of Cluj-Napoca International Invention Show **Anghel CONSTANTIN**, DUMITRU Sergiu, 2016

13. Diploma of Excellence and GOLD MEDAL WITH SPECIAL MENTION Interface Circuit for Tensor Resistive Sensors, Technical University of Cluj-Napoca, International Invention Show, **Anghel CONSTANTIN**, Sergiu DUMITRU, 2016

14. Silver Medal, Clothing Used to Protect Workers Working on Assembly Lines, International Exhibition of Inventions GENEVA, **Anghel CONSTANTIN**, Sergiu DUMITRU, 2016

15. PATENT PREMIERE, PN-III-P11.1-PRECBVT2017-0648, UEFISCDI, Comsa Stanca, Adrian Pacioga, **Ciobota Nastase-Dan**, 2017

16. 16. PATENT PREMIERE, PN-III-P11.1-PRECBVT2017-085, UEFISCDI, Comsa Stanca, Adrian Pacioga, **Ciobota Nastase-Dan**, 2017

- **Patents obtained by doctoral students in the internship:**

1. Aurel Ionel, Abalaru Daniela Doina Cioboata, **Dănuț Iulian Stanciu**, Cristian Constantin Logofatu, Florin Traistaru, Device for measuring open circular profiles, OSIM 128235 / 30.01.2018

2. Stanca Comsa, Adrian Pacioga, Maria Stefan, **Dan Năstase Ciobota**, Ion Mihail, Stanciu Matei Stefan, Tipodont device for simulating dental and orthodontic treatments, OSIM 129503 / 29.09.2017

3. Stanca Comsa, Adrian Pacioga, Maria Stefan, **Dan Nastase Ciobota**, Florica Moldoveanu, Anatomical femoral stem - adaptive, OSIM 128084 / 29.11.2017

4. Aurel Ionel Abalaru, **Danut Iulian Stanciu**, Daniela Doina Cioboata, Cristian Constantin Logofatu, Florin Traistaru, External diameter monitoring module during the grinding process, OSIM 128424 / 29.11.2017

5. Comsa Stanca, Adrian Pacioga, **Ciobota Nastase-Dan**, Dental model support for the simulation of dental and orthodontic treatments, Patent No. 129503, Year of obtaining patent 2017

6. Capris Georgeta, Miu Silvia, Olaru Mircea, **Constantin Anghel,** Constantin Steluta Portable electronic equipment for assessing energy consumption while walking, EN 12507 B1 / 29.11.2016

- **Patent applications filed by interns:**

1. GHEORGHE Gheorghe, **CONSTANTIN Anghel**, CONSTANTINESCU Alexandru, ILIE Iulian, ISTRITEANU Simona, "Cyber-mix-mecatronic cobotic system with series

structure - parallel of ultra-precise measurement and intelligent control in laboratory and digitalized industry 4.0", no. application a00610 / 2020

2. **STANCIU Dănuț - Iulian**, CIOBOATA Daniela Doina, ABALARU Aurel Ionel, LOGOFATU Cristian Constantin, SOARE Adrian, Installation for measuring revolution surfaces with rotary probes, no. application A 2020/00023/2020

3. GHEORGHE Gheorghe, ILIE Iulian , **CONSTANTIN Anghel**, Mechatronic system – mix-mecatronic 4D control in laboratory and in industry, no. application A0132678 / 2017

- **POST-DOC results - Participation of SDSI-IMec graduates with the title of doctor in projects with the economic environment and research-development-innovation grants in the period subject to evaluation (Annex 6):**

- **Dr. eng. Mihai Simona**, member of the research team at contract no. 208 / 17.01.2018, 3D Modeling. Realization of CNC machine program, beneficiary S.C. Europe Design Process Engineering S.R.L.;
- **Dr. ing. Mihai Simona**, member of the research team at contract no. 273 / 16.08.2016, Study for the determination of the microhardness and the Young modulus of elasticity of the surfaces of stainless steel strips, beneficiary S.C. OTELINOX S.A.
- **Dr. ing. Mihai Simona**, member of the research team at contract no. 1961 / 19.05.2020, Study for the determination of the microhardness and the modulus of elasticity of the low density polyethylene material by nanoindentation, beneficiary Nimet S.R.L.
- **Dr. ing. Istrițeanu Simona-Elena**, Increasing the competitiveness of companies in the South-West Oltenia region, in the field of intelligent specialization Eco-nano-technologies and advanced materials, through the innovative MECHATREC Cluster, PNCDI III / Ministry of Research and Innovation, Ctr. No. 7CLS / 31.05.2018
- **Dr. ing. Istrițeanu Simona-Elena**, Institutional development of INCDMTM to increase capacity and performance in order to support excellence in research and development-innovation in the short and medium term, PNCDI III / Ministry of Research and Innovation, Contract no. 5PFE from 16.10.2018
- **Dr. ing. Istrițeanu Simona-Elena**, Strengthening the institutional capacity of the Ministry of Research and Innovation by optimizing the decision-making processes in the field of research-development and innovation, POCA / MDRAP, POCA Contract no. 307 / 19.12.2018, SIPOCA Code / SMIS2014 +: 393/116103

We specify that before defending the thesis, the doctoral students were verified regarding the fulfillment of the minimum standards imposed by OM 5110/2018 for conferring the title of Doctor Engineer, Annex 7.

We end the section with some considerations on the existence of special results of SDSI-IMec PhD students. The analysis of the scientific papers in Annex 5 shows that out of 54 published articles, 10 are listed / indexed WoS-ISI (2 in Q2 journals and 2 in Q4 journals).

The doctoral students obtained **11 national / international awards, 7 gold medals, 4 silver medals, 2 special awards and two award-winning patents,** participated in **35 scientific research projects (2 as project director),** as well as in **6 patents and 3 patent applications.** Those in post-doc internship continued the research activity and were involved in **6 grant projects or with economic agents in the evaluated period.** Obtaining such results is a proof that the doctoral school fulfills its mission and manages to prepare specialists for high-level research in the field of mechanical engineering. Such results are also explained by the effort of the school and the leaders to integrate doctoral students in research teams and of course, by the continuous interaction between doctoral supervisors, guidance committees and doctoral students.

1.3 The functioning of the internal quality assurance system at the doctoral study domain level:

- **the objectives and the overall structure of the internal quality assurance system;**
- **the quality assurance policies and the definition of procedures, of the beneficiaries and their responsibilities;**
- **the participation of staff, doctoral students and external stakeholders in the quality assurance process;**
- **the interaction between the quality assurance system and the University management;**
- **the transparency and the access to specific information related to the internal quality assurance system for internal and external beneficiaries;**
- **the efficiency of the internal quality assurance procedures and structures and their impact on the activities carried out during the doctoral studies;**
- **the use of information produced by the internal quality assurance system as a tool for quality management and for improving the education and other activities;**
- **monitoring, reviewing and continuously developing the internal quality assurance system**

The objectives in the field of quality are established at the level of IOSUD and target with priority the fields: quality management, education / continuous training, scientific research and university creation, national and international cooperation. For each objective, actions, deadlines, responsibilities, performance indicators and resources

are specified. The system of quality objectives set at the IOSUD level is reviewed annually (Annex 8.1-1). Also, at the level of IOSUD, the Risk Register is established (Annex 8.1-2).

In order to evaluate the degree of achievement of the proposed objectives, in each academic year, the Report on SMC analysis at IOSUD level is prepared. The degree of achievement of the proposed objectives is evaluated based on the analysis of performance indicators. Also, the document specifies the outstanding achievements and the promotion of the IOSUD image (Annex 8.2).

At the IOSUD level, the annual training program in the field of quality is established. The document highlights the topics to be covered by the training provided, the period, the participants and those responsible (Annex 8.3).

The internal audit of the quality management system within IOSUD is carried out annually and is performed by the internal auditors, under the coordination of the Quality Assessment and Assurance Bureau, the results being recorded in the form of a Report (Annex 8.4). The internal audit is carried out on the basis of the annual program approved by the University Senate and the audit plan (Annex 8.5)

The quality management system within the Doctoral School includes M04-*Methodology for self-evaluation of IOSUD activity* (Annex 8.6), developed by CSUD and evaluation procedures for doctoral students and doctoral supervisors, which are available on the university website and are applied systematically. The quality management system in UVT was evaluated in 2013 by EUA with a positive report (Annex 8.7).

The quality management system at UVT level is ISO 9001: 2015 certified.

The external supervision audit of SMC took place on November 17, 2020, being performed by AEROQ Bucharest, as a certification body, with nationally and internationally recognized experts (Annex 8.8).

2. DEGREE OF PERFORMANCE CRITERIA, STANDARDS AND PERFORMANCE INDICATORS

Domain A. INSTITUTIONAL CAPACITY

Criterion A.1. The administrative, managerial institutional structures and the financial resources

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

Performance Indicator A.1.1.1. The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:

(a) the internal regulations of the Doctoral School;

(b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;

c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);

d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;

e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;

f) the contract for doctoral studies;

g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.

The indicator is met.

IOSUD-UVT has developed and implemented the regulations, methodologies and procedures necessary for its functioning in accordance with the legislation on the organization of doctoral studies (the documents are displayed on the website https://www.scoaladoctorala.valahia.ro/ and in Annex 9). Detail the required subpoints:

a) REG 01 - SDSI - Regulation of the Doctoral School of Engineering Sciences of UVT, Edition 3, approved by the Senate of the University of Wallachia in Târgoviște through HSU No. 61 E / 29.01.2020, entered into force on: 29.01.2020.

b) M08 - Methodology for electing the members of the Doctoral School Council and for appointing the director of the doctoral school, approved by HS 22Q / 27.04.2017.

- The director of SDSI is appointed by CSUD for a term of 5 years (art. 2, M08) and in accordance with art. 14.9 GD 681. The director of SDSI is Dinu COLȚUC.
- The elections for the appointment of the doctoral student member CSD-SDSI took place in two rounds, respectively on 7.07.2017 and 14.07.2017, the elected representative being Mr. Eng. Corneliu Gabriel BUICA. A new row of elections were in 2021, they being validated by the UVT Senate, through HSU no. 26C from 22.04.2021.

c) methodologies for organizing and carrying out doctoral studies: (for admitting doctoral students, for completing doctoral studies):

- *REG 10 - The institutional regulation for the organization and development of doctoral university study programs at the University of Wallachia in Târgovişte* revised and approved by the Senate of the University of Wallachia in Târgovişte on 31.01.2019.
- *M11 - Methodology for organizing the admission to doctoral studies,* approved by the Senate of the University of Wallachia in Târgoviște on 26.04.2018 (HS 10B), entered into force on: 26.04.2018.
- PO 07.28 Organization and conduct of admission to the cycle of doctoral studies, approved by the Monitoring Commission on: April 2, 2018, approved by the Senate of the University of Wallachia in Targoviste on April 26, 2018.
- *OP 07.26 Completion of doctoral studies*, approved by the Monitoring Commission on: April 2, 2018, approved by the Senate of the University of Wallachia in Targoviste on April 26, 2018.
- *OP 07.43 Completion of doctoral studies using alternative* methods approved by the Monitoring Commission on: 11.05.2020, approved by the Senate of the University of Wallachia in Targoviste on 14.05.2020.

d) the existence of the mechanisms for recognizing the quality of doctoral supervisor and for equivalence of the doctorate obtained in other states;

- OP 07.37 Recognition of the doctoral degree obtained abroad, approved at the meeting of the Monitoring Commission on 06.12.2018, approved at the meeting of the University Senate on 19.12.2018.
- OP 07.38 Recognition of the quality of doctoral supervisor obtained abroad, approved in the meeting of the Monitoring Commission on 06.12.2018, approved in the meeting of the University Senate on 19.12.2018.

e) functional management structures (Doctoral School Council), proving also the regularity of convening meetings:

- CSD - SDSI is constituted according to the Methodology for electing the members of the Doctoral School Council and appointing the director of the doctoral school and has the following composition: Dinu COLȚUC (director, UVT), Rodica Mariana ION (UVT), Corneliu Gabriel BUICA (SDSI doctoral student). The management structures, CSD meet as many times as needed (at least twice a year).

  The minutes of the evaluated period are presented in Annex 10.

f) The doctoral studies contract is presented in Annex 11

g) The training program based on advanced university studies is regulated in Art. 8-Art. 10 of REG 01 - SDSI.

Performance Indicator A.1.1.2. The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.

The indicator is met. The SDSI regulation addresses the aspects from art. (5) of GD 681/2011 with subsequent amendments and completions. So:

a. the acceptance of new leading members of the doctorate is regulated in Art. 7.1, and the withdrawal of the quality of member of the doctoral school in Art. 7.2;
b. the training program based on advanced university studies is regulated in Art. 8-Art.
c. the change of the doctoral supervisor is discussed in Art.13.7-13.9, and the mediation of conflicts in Art. 13.5-13.6;
d. the interruption of the doctoral program is established at Art.14.3-14.6;
e. the prevention of fraud in scientific research, including plagiarism is discussed in Art. 13.10-13.12, Art. 20.17;
f. the access of doctoral students to research and documentation resources is provided in Art. 11.3; Article 15.g;
g. in Art. 17. 2 it is specified that the doctorate at SDSI is full-time or part-time, and in Art. 15.2.b it is specified that the doctoral student must carry out the activities provided in the individual plan of doctoral university studies under the conditions of frequency set by the doctoral supervisor.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

Performance Indicator A.1.2.1. The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.

The indicator is met. IOSUD uses UMS (University Management System), an integrated software product developed by Red Point Software Solutions (https://rpss.ro/ro_RO/products/university-management-system/). The product allows the management of schooling for the entire cycle, from admission to the completion of studies and allows the integration of both aspects related to the academic-didactic organization, list of positions, as well as tools dedicated to process and document management.

Currently, UMS is used in 24 Romanian universities. UVT has been using UMS since 2011. In IOSUD, UMS has been used since 2018.

Performance Indicator A.1.2.2. The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.

The indicator is met - all doctoral theses are verified, since 2016, with www.sistemantiplagiat.ro. Sistemantiplagiat.ro is a program for detecting the similarity of texts created in 2002 by the Polish company Plagiat.pl, launched in Romania in 2012.

Sistemantiplagiat.ro is in the list of programs recognized by CNATDCU for establishing the degree of similarity for scientific papers, published in the MENCS Order no. 3485 of March 24, 2016. Currently, the program is used by 54 universities (ASE, Univ. Bucharest, UMF, ATM, etc.). The program calculates two similarity coefficients: for the calculation of the similarity coefficient 1, all the phrases discovered by the system in other documents are taken into account; for the calculation of the similarity coefficient 2, only the sentences whose length exceeds the imposed limit are taken into account.

UVT has developed a procedure (PO 07.27), Annex 9, for anti-plagiarism verification of bachelor's, dissertation and doctoral theses which establishes the working method and the limits for the two coefficients. The similarity ratio provided by the program is validated by the doctoral supervisor who analyzes, in addition to the values of the coefficients, the relevance of the fragments that have been discovered by the system in other texts.

In fact, since 2016, the similarity report is one of the pieces in the doctoral file that is submitted in electronic format, with electronic signature, on the platform for thesis validation by CNATDCU.

Standard A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

Performance Indicator A.1.3.1. Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development /human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.

The indicator is met. There are currently 4 ongoing research grants:
- **Horizon 2020** project, entitled Integrated multi-vector management system for Energy isLANDs, contract no. **824388/2018**, in which the doctoral student SOCI (LEȚ) Andreea-Mihaela is involved and financed

- COST Action project, entitled Biomaterials and advanced physical techniques for regenerative cardiology and neurology - Bioneca, contract no. 16122/2017, in which the doctoral student CIOBOTA Nastase-Dan is involved and financed
-NUCLEU project, entitled Research on the identification and implementation of modern and efficient solutions to ensure the functional autonomy of mechatronic measurement and control equipment and their integration in industrial and non-industrial cyberspace, contract 17N / 2019, in which he is involvedand funded doctoral student Anghel CONSTANTIN
- NUCLEU project, entitled Interdisciplinary research on the design and implementation of a multi-application intelligent robotic platform type "COBOT" of ultra-precise telemetry and remote control for Digital Industry 4.0, contract PN 19 24 02 01/2019, in which is involved and funded PhD student Anghel CONSTANTIN
As it appears from Annex 2, in the last 5 years, the PhD supervisors of the IMec field have led as project director 16 research - development projects, in which they involved PhD students in internship (STANCIU Dănuț, ANGELESCU Dorin, ILIE Iulian, GORNOAVĂ Valentin).

Performance Indicator *A.1.3.2. The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.

The indicator is met. Of the 10 doctoral students existing at the time of the evaluation, 3 (ie 33.33%) benefit from funding through research grants:
- partners (Leț) Andreea - Mihaela, member of the HORIZON 2020 project team with the title *Integrated multi-vector management system for Energy*, *isLANDs*, contract no. 824388/2018, per. 2018 - 2022
- ILIE S. Iulian, member of the POC project team, with the title Support Center for international RDI projects in the field of Mechatronics and Cyber-MixMecronics, contract no. 323/340002 dated 22/09/2020, per. 2020 - 2023
- BADEA Sorin - Ionuț, member of the Nucleu PN 19 24 04 01 project team, with the title Complex researches for the realization, characterization and evaluation of the applicative capability of the deposits of micro-nanostructured layers destined for biocompatible components, contract no. 17N / 2019, per. 2019 – 2022

Performance Indicator *A.1.3.3.2 At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).

The indicator is not met - the percentage is 0%. We consider the budget allocation for engineering fields of RON 25.3 th and an average fee of RON 4.5 th (the UVT fee varied between RON 4-5 th). During the evaluation period, 3 PhD students were admitted to

SDSI-IMec on budget positions and 9 on fee-paying positions. The budget allowance is paid for a period of 3 years. Considering the duration of 3 years and for the doctorates in fee regime, we obtain an amount of 3 x 25.3 x 3 x + 3 x 4.5 x 9 = RON 349.2 th SDSI-IMec PhD students did not receive funding from these sources for training, Annex 12.
We mention that SDSI supplemented the aspect of financing from UVT allowances / fees by financing from other sources, respectively from research contracts and various projects, an aspect that can be observed by examining the participations in scientific events (* B.3.1.2) and the financing of doctoral students from other sources (* A.1.3.2).

Criterion A.2. Research infrastructure

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

Performance Indicator A.2.1.1. The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.

The indicator is met. The PhD students enrolled at SDSI-IMec have unrestricted access to the research and documentation infrastructure of UVT, id est the facilities offered by IOSUD, the Scientific and Technological Multidisciplinary Research Institute (ICSTM) - https://erris.gov.ro -, and the Faculty of Materials Engineering and Mechanics within Valahia University of Târgovişte (FIMM). The PhD students at SDSI-IMec are members of the two ICSTM centres where the supervisors perform their research activity: the *"Nanomaterials for Micromechanical Microsystems"* Research Centre (CC-NANOMEC) and the *"Academic School of Materials Science"* Research Centre (CC-SASM).

In the research centres belonging to ICSTM, the PhD students of *SDSI-IMec* use mainly the infrastructure available in the following laboratories:

- Room B03 - Hardness and rigidity measurements in superficial nanometric layer
  - ✓ NanoIndenter - NanoScratcher
- Room B05 - 3D testing, scanning and prototyping
  - ✓ MTS Bionix tension, compression, bending and torsion testing system, for testing in static and dynamic regime, equipped with orthopaedic implant testing fixture
  - ✓ 3D prototyping Stereolithography system
  - ✓ 3D scanner for Reverse Engineering
- Room C04 - LASER Ablation Laboratory
  - ✓ LASER ablation system

- Room C13 - Thin layer deposition laboratory
  - ✓ Metallic and dielectric layer vacuum sputtering coating
  - ✓ E-beam-equipped vacuum coating system
  - ✓ Controlled immersion thin layer deposition system
  - ✓ Reactive ion plasma etching installation (RIE)
  - ✓ Spin-On thin layer deposition equipment
- Room C14 - Microscopy Laboratory
  - ✓ Atomic Force Microscope
  - ✓ Optical microscopy
- Room C12 - Physical and structural characterization of materials
  - ✓ X-ray diffractometer
  - ✓ WDXRF Spectrometer
  - ✓ Portable Gamma Spectrometer
- Room B11 - Design, modelling, simulation
  - ✓ Catia, SolidWorks, Adams, Easy 5, AnyBody, MatLab, LabView, Comsol, OriginPro software

- Room B01 - Experimental models and prototypes
  - ✓ 5-axis CNC vertical machining centre
  - ✓ 3-axis CNC turning system
- Room B24 - Heat treatment
  - ✓ Ovens for heat treatments at temperatures up to 1100^{o}C

The PhD students of SDSI-IMec also have full access to the scientific laboratories of the Faculty of Materials Engineering and Mechanics, namely :

- Room A006 - Machines and installations for process industries
  - ✓ Reactive mixture station,
  - ✓ Filament 3D printer: ABS, PLA,
  - ✓ Process industry machines: crusher, ball mill, hammer mill, belt conveyor system
- Room A005 - Fluid mechanics and hydraulic drive systems:
  - ✓ Pneumatic muscle stand
- Room A024 - Physical metallurgy and heat treatments:
  - ✓ MC6 optical microscopes,
  - ✓ Heat treatment electric oven
- Room A023 - Biomaterials, ceramic materials, composite materials
  - ✓ Nabertherm heat treatment furnace, silit melting furnace, oven, thermocouple calibration furnace

We also mention the unrestricted access to the resources of the University Library, including the electronic resources (https://biblioteca.valahia.ro/resurse-online).

Our PhD students also have access to research facilities from other institutions, based on collaboration agreements signed by SDSI. One example is the access to the resources of the National Institute of Research and Development in Mechatronics and

Measurement Technique (INCDMTM) *(UVT-INCDMTM collaboration agreement no. 7590/2018)*, as follows:

- Rapid Prototyping laboratory
- Metrology laboratory
- Biomechatronics laboratory
- Cyber-Mix-Mecatronics laboratory

We also mention the unrestricted access to the documentary resources of the UVT Library, including electronic resources (https://biblioteca.valahia.ro/resurse-online).

UVT equipment and service offer is also presented on the ERIS platform https://erris.gov.ro – Valahia. Among the equipment purchased in the last 5 years, we mention the ***SMART Flexible Assembly System, ROKIDAIR Cyber Particle Monitoring Infrastructure, DustTrak DRX 8533 Aerosol Monitor.***

Criterion A.3. Quality of Human Resources

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

Performance Indicator A.3.1.1. Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.

The indicator is met. Out of the 5 doctoral supervisors (3 accredited supervisors in 2010 and 2 new supervisors, accredited in July 2021), 4 meet all the criteria (V. FILIP, Gh. GHEORGHE, IC PETRE, CI ILIE), and the 5th (C. MARIN) does not yet meet criterion A.2.1 (WoS-ISI articles) and criterion A.3.3 (Scopus or ISI indexed citations). The criteria sheets are presented in Annex 13. We emphasize that the scores of the 5 leaders are significantly higher than the minimum score (2 to 56 times) and all 5 leaders are recognized researchers in the field.

Minimum criteria: Prof.dr.ing. Gheorghe GHEORGHE (all criteria met, **Annex 13.1**)

A1.1 = N1 - Course support manuals (min. 2 for the teacher) - completed 29 (criterion met)
N1.1 (min. 1 for the teacher) - achieved 27 (criterion met)
N1.3 (min. 1 for the teacher) - achieved 2 (criterion met)
A1.2 = N2– Teaching material / Laboratory development, applications (min. 4 for teacher) - completed 32 (criterion met)
N2.1 (min. 2 for the teacher) - achieved 11 (criterion met)
A2.1 + A2.3 = P1 + P2 - Scientific articles and publications Web of Science Thomson Reuters (WOS), where n is the number of authors and FI the impact factor (min. 10 for the teacher) - achieved 49.36 (criterion fulfilled)

P1 (min. 6 for the teacher) - achieved 16.56 (criterion met)
A2.2 = N3 - BDI scientific articles and publications (Scopus / ISI only) not included in A2.1 (min. 10 for the teacher) - achieved 25 (criterion met)
N3.1 (min. 5 for the teacher) - achieved 19 (criterion met)
A2.4 + A2.5 = N4 - Monographs / specialized books in printed / electronic format (min. 2 for the teacher) - completed 196 (criterion met)
N4.3 (min. 1 for the teacher) - achieved 55 (criterion met)
A3.1 = S1 + S2 - Attracting financial resources through grants / projects / third party contracts (min. 50 for the teacher) - achieved 5972.29 (criterion met)
A3.2 = N5 - Presentation / Dissemination of results: presence at scientific events as author / co-author of papers, guest lecturer (min. 10 for teacher) - achieved 46 (criterion met)
A3.3 = C - Citations in BDI publications (only Scopus / ISI, self-citations are excluded) (min. 25 for the teacher) - achieved 61 (criterion met)

Prof.dr.ing. Gheorghe GHEORGHE *Annex 13.1*				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	6	61	10
2	Research activity (A2)	22	270,36	88,02
3	Activity impact recognition (A3)	85	6079,30	3048,75
	TOTAL	**113**	**6410,66**	**3146,77**

Minimum criteria**: Prof. Dr. Eng. Viviana FILIP (all criteria met,** Annex 13.2)
A1.1 = N1 - Course support manuals (min. 2 for the teacher) - completed 5 (criterion met)
N1.1 (min. 1 for the teacher) - achieved 3 (criterion met)
N1.3 (min. 1 for the teacher) - achieved 2 (criterion met)
A1.2 = N2 - Teaching material / Development of laboratories, applications (min. 4 for the teacher) - completed 30 (criterion met)
N2.1 (min. 2 for the teacher) - achieved 27 (criterion met)
A2.1 + A2.3 = P1 + P2 - Scientific articles and publications Web of Science Thomson Reuters (WOS), where n is the number of authors and FI the impact factor (min. 10 for the teacher) - achieved 11.03 (criterion fulfilled)
P1 (min. 6 for the teacher) - achieved 11.03 (criterion met)
A2.2 = N3 - BDI scientific articles and publications (Scopus / ISI only) not included in A2.1 (min. 10 for the teacher) - achieved 13 (criterion met)
N3.1 (min. 5 for the teacher) - achieved 5 (criterion met)
A2.4 + A2.5 = N4 - Monographs / specialty books in printed / electronic format (min. 2 for the teacher) - completed 9 (criterion met)
N4.3 (min. 1 for the teacher) - achieved 5 (criterion met)
A3.1 = S1 + S2 - Attracting financial resources through grants / projects / third party contracts (min. 50 for the teacher) - achieved 174 (criterion met)

A3.2 = N5 - Presentation / Dissemination of results: presence at scientific events as author / co-author of papers, guest professor (min. 10 for teacher) - achieved 15 (criterion met)
A3.3 = C - Citations in BDI publications (only Scopus / ISI, self-citations are excluded) (min. 25 for the teacher) - achieved 26 (criterion met)

Prof.dr.ing. Viviana FILIP *Annex 13.2*				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	6	35	12
2	Research activity (A2)	22	33,03	4,89
3	Activity impact recognition (A3)	85	215	26
	TOTAL	**113**	**283,03**	**42,89**

Minimum criteria: Assoc. Prof. Dr. Eng. Ivona Camelia PETRE (all criteria met, **Annex 13.3**)
A1.1 = N1 - Course support manuals (min. 2 for the teacher) - completed 12 (criterion met)
N1.1 (min. 1 for the teacher) - achieved 7 (criterion met)
N1.3 (min. 1 for the teacher) - achieved 1 (criterion met)
A1.2 = N2 - Teaching material / Laboratory development, applications (min. 4 for teacher) - completed 18 (criterion met)
N2.1 (min. 2 for the teacher) - achieved 10 (criterion met)
A2.1 + A2.3 = P1 + P2 - Scientific articles and publications Web of Science Thomson Reuters (WOS), where n is the number of authors and FI the impact factor (min. 10 for the teacher) - achieved 18.88 (criterion fulfilled)
P1 (min. 6 for the teacher) - achieved 18.88 (criterion met)
A2.2 = N3 - BDI scientific articles and publications (Scopus / ISI only) not included in A2.1 (min. 10 for the teacher) - achieved 15 (criterion met)
N3.1 (min. 5 for the teacher) - achieved 9 (criterion met)
A2.4 + A2.5 = N4 - Monographs / specialized books in printed / electronic format (min. 2 for the teacher) - completed 4 (criterion met)
N4.3 (min. 1 for the teacher) - achieved 2 (criterion met)
A3.1 = S1 + S2 - Attracting financial resources through grants / projects / third party contracts (min. 50 for the teacher) - achieved 131.33 (criterion met)
A3.2 = N5 - Presentation / Dissemination of results: presence at scientific events as author / co-author of papers, guest lecturer (min. 10 for teacher) - achieved 16 (criterion met)
A3.3 = C - Citations in BDI publications (only Scopus / ISI, self-citations are excluded) (min. 25 for the teacher) - achieved 44.2 (criterion met)

Conf.dr.ing. Ivona Camelia PETRE, Annex 13.3				
No	*Field of activity*	*Minimum*	*Achieved throughout*	*Achieved 2016-2020*

		score achieved by Professor	*the entire activity*	
1	Teaching / professional activity (A1)	6	30	This is not the case, as she was not a PhD supervisor during 2016-2020
2	Research activity (A2)	22	37,88	
3	Activity impact recognition (A3)	85	191,53	
	TOTAL	**113**	**259,41**	

Minimum criteria: CS-I. dr. eng. Cristinel Ioan ILIE (all criteria met, Annex 13.4)
A1.1 = N1 - Course support manuals (min. 2 for the teacher) - not applicable
N1.1 (min. 1 for the teacher) - does not apply
N1.3 (min. 1 for the teacher) - does not apply
A1.2 = N2 - Teaching material / Laboratory development, applications (min. 4 for teacher) - not applicable
N2.1 (min. 2 for the teacher) - does not apply
A2.1 + A2.3 = P1 + P2 - Scientific articles and publications Web of Science Thomson Reuters (WOS), where n is the number of authors and FI the impact factor (min. 10 for the teacher) - achieved 28.94 (criterion unfulfilled)
P1 (min. 6 for the teacher) - achieved 7.47 (criterion met)
A2.2 = N3 - BDI scientific articles and publications (Scopus / ISI only) not included in A2.1 (min. 10 for the teacher) - achieved 12 (criterion met)
N3.1 (min. 5 for the teacher) - achieved 6 (criterion met)
A2.4 + A2.5 = N4 - Monographs / specialized books in printed / electronic format (min. 2 for the teacher) - completed 2 (criterion met)
N4.3 (min. 1 for the teacher) - achieved 2 (criterion met)
A3.1 = S1 + S2 - Attracting financial resources through grants / projects / third party contracts (min. 50 for the teacher) - achieved 1180.6 (criterion met)
A3.2 = N5 - Presentation / Dissemination of results: attendance at scientific events as author / co-author of papers, guest lecturer (min. 10 for teacher) - achieved 35 (criterion met)
A3.3 = C - Citations in BDI publications (only Scopus / ISI, self-citations are excluded) (min. 25 for the teacher) - achieved 55.75 (criterion met)

CS-I dr.ing. Cristinel Ioan ILIE, Annex 13.4				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	N/A	Nu se aplică	This is not the case, as she was not a PhD supervisor during 2016-2020
2	Research activity (A2)	22	73,62	
3	Activity impact recognition (A3)	85	1271,352	
	TOTAL	**107**	**1.344,97**	

Minimum criteria: **Prof. Dr. Eng. Cornel MARIN** (two criteria partially met: WoS-ISI articles and citations; all other criteria are met, Annex 13.5)
A1.1 = N1 - Course support manuals (min. 2 for the teacher) - completed 41 (criterion met)
N1.1 (min. 1 for the teacher) - achieved 10 (criterion met)
N1.3 (min. 1 for the teacher) - achieved 5 (criterion met)
A1.2 = N2 - Teaching material / Laboratory development, applications (min. 4 for teacher) - completed 19 (criterion met)
N2.1 (min. 2 for the teacher) - achieved 11 (criterion met)
A2.1 + A2.3 = P1 + P2 - Scientific articles and publications Web of Science Thomson Reuters (WOS), where n is the number of authors and FI the impact factor (min. 10 for the teacher) - achieved 2 (criterion not met)
P1 (min. 6 for the teacher) - achieved 2 (partially fulfilled criterion)
A2.2 = N3 - BDI scientific articles and publications (Scopus / ISI only) not included in A2.1 (min. 10 for the teacher) - achieved 22 (criterion met)
N3.1 (min. 5 for the teacher) - achieved 22 (criterion met)
A2.4 + A2.5 = N4 - Monographs / specialized books in printed / electronic format (min. 2 for the teacher) - completed 16 (criterion met)
N4.3 (min. 1 for the teacher) - achieved 6 (criterion met)
A3.1 = S1 + S2 - Attracting financial resources through grants / projects / third party contracts (min. 50 for the teacher) - achieved 280.29 (criterion met)
A3.2 = N5 - Presentation / Dissemination of results: presence at scientific events as author / co-author of papers, guest professor (min. 10 for teacher) - achieved 18 (criterion met)
A3.3 = C - Citations in BDI publications (only Scopus / ISI, self-citations are excluded) (min. 25 for the teacher) - made 7 (partially fulfilled criterion)

Prof.dr.ing. Cornel MARIN *Annex 13.5*				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	6	41	19
2	Research activity (A2)	22	30	13,4
3	Activity impact recognition (A3)	85	305,29	7
	TOTAL	**113**	**376,29**	**39,4**

Performance Indicator *A.3.1.2. At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.

The indicator is met. Two (prof. Dr. Eng. Cornel MARIN and prof. Dr. Eng. Viviana FILIP) among the 3 leaders (accredited by O.M. no. 5679 / 19.11.2010) are holders of IOSUD employed with a basic norm at UVT. We present in Annex 14 the

function status of SDSI. Taking into account the two new leaders, with the habilitation received in July 2021, by OM no 4179/05.07.2021, respectively OM no 4180/05.07.2021, the criterion is still met, because 3 of the 5 leaders are holders of IOSUD employed on a part-time basis at UVT (the 2 holders mentioned above to them is added Assoc. Prof. Dr. Eng. Ivona Camelia PETRE).

Performance Indicator A.3.1.3. The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.

The indicator is met. The 3 specialized courses mentioned in the Curriculum (Annex 1) are recommended by the doctoral supervisor depending on the subject of the thesis and the course of the doctoral student. Courses from the Master's programs supported by the doctoral supervisors of SDSI-IMec can be recommended, and for doctoral students who have already attended the master's courses at UVT, an individual study is usually specified based on a recommended bibliography, which must include recent articles from that field. Regarding the two support courses, namely the Ethics and Academic Integrity course and the Research Methodology course, things are as follows:

The *Ethics and Academic Integrity* course was held until 2019 by Assoc. Prof. Gh. Gheorghiu (CV in Annex 15.1), from the Faculty of Law of UVT where he teaches courses in Intellectual Property Law, Private International Law, Commercial Law. Mister. Gheorghiu is a full member of the Romanian Academy of Legal Sciences (since 2015). We also mention that, in addition to the didactic activity, Mr. Gheorghiu is an industrial property advisor, intellectual property arbitrator, member of the scientific council of the Romanian Journal of Intellectual Property Law and member of the editorial board of the magazine Dreptul. From the academic year 2020-2021, the course of Ethics and academic integrity is held by prof. Univ. dr. Marius Petrescu at the doctoral study program, at all specializations, respectively as a university lecturer. dr. Steluța Ionescu, in the master's program, field of Mechanical Engineering. Prof. Petrescu is a PhD supervisor at SDSEU, specialist in the field of Information Management, Security Management, Risk Management, author or co-author of over 50 books, collections and guidance and over 115 scientific articles and communications, PhD supervisor with over 25 doctoral theses successfully completed (CV in Annex 15.2). Mrs. University Lecturer dr. Steluța Ionescu holds the Faculty of Legal and Administrative Sciences of UVT, a specialist in national and international justice (field disciplines: *Organization of the judiciary, Court proceedings, Organization and ethics of legal professions, Organization of international jurisdictions),* co-author of the paper *Ethics and academic integrity* (2018 - coordinator associate professor Dr. Gheorghe Gheorghiu), training expert in CNFIS FDI projects (Development Fund institutional) implemented

in the University of Wallachia in Târgoviște (*Ethics, professionalism and performance - guarantors of the culture of academic quality* - CNFIS-FDI-2020-0462 code), 2020; *ProSucces: Communication, quality, ethics - pillars of academic success* - CNFIS-FDI-2019-02252 code, 2019; OptimAcademic: Quality, ethics and academic integrity - fundamentals for optimizing teaching - CNFIS-FDI-2018-0069, 2018), author or co-author of 13 books with ISBN and course notes and over 70 articles and scientific communications member of 15 human resources research and development projects (CV in Annex 15.3).

The Research Methodology course is taught by Prof. V. Bratu, PhD supervisor in the field of materials engineering at SDSI, former dean of the Faculty of Materials Engineering and Mechanics (CV in Annex 15.4) or by Prof. N. Vasile, PhD supervisor at electrical engineering. Both have extensive research experience. Prof. V. Bratu participated in 18 research contracts financed from the National Research - Development Programs or by industrial enterprises and design institutes (of which 2 as manager) an international research contract as director, a national contract as scientific director. It should also be mentioned that Prof. N. Vasile was for 13 years (1992-2005) General Director of the Research Institute for Electrical Engineering (ICPE) Bucharest.

Performance Indicator *A.3.1.4. The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs3 does not exceed 20%.

The indicator is met, no doctoral supervisor guides more than 8 doctoral students. The coordination situation of the doctoral students is the following: Gh. Gheorghe 6 doctoral students, V. Filip 3 doctoral students, C. Marin 1 doctoral student.

Performance Indicator A.3.2.1. At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.

The indicator is met. All 3 PhD supervisors have representative publications indexed Web of Science and international visibility. We present a selective list of WoS-ISI publications and elements regarding the international visibility of doctoral supervisors from the last 5 years.

RATED / INDEXED PUBLICATIONS Web of Science and international visibility:

Prof. Dr. Gheorghe GHEORGHE (selective list)

1. Liliana-Laura Badita**, Gheorghe Gheorghe,** „Physical characterization of nanostructured thin films used to improve hip prostheses", Journal of Optoelectronics and Advanced Materials, vol. 16, no. 7-8, pp. 945-950, July - August 2014, ISSN: 1454-4146, **IF=0,419,** WOS:000340578000029
2. **Gheorghe I. Gheorghe,** Liliana-Laura Badita, Nastase-Dan Ciobota, Veronica Despa – "Micro-nanometrologically and topographic characterization of metallic pieces surfaces obtained by laser sintering", Digest Journal of Nanomaterials and Biostructures, 2013, ISSN: 1842-3582, **IF= 1,123;** WOS:000327816300012
3. Liliana-Laura Badita, **Gheorghe I. Gheorghe** – „Modern methods for increasing wear resistance of hip prostheses surfaces", Digest Journal of Nanomaterials and Biostructures, Vol. 8 No 1, January- March 2013, pp.53 – 60, ISSN: 1842-3582, **IF=1.123;** WOS:000316441200006
4. **Gheorghe, Gheorghe;** Badita, Liliana-Laura**, "**Tribological improvement and characterization of hip prostheses with nanostructured surfaces using advanced microtechnologies and atomic force microscopy", Digest Journal of Nanomaterials and Biostructures**,** Volume 7, Issue 2, Page 529-535, Published 2012, **IF=0,92,** WOS:000306063200014
5. **Gheorghe, Gheorghe Ion;** Badita, Liliana-Laura**, "**Experiments and surfaces characterization of the femoral heads of hip prostheses", Digest Journal of Nanomaterials and Biostructures**,** Vol. 7, Issue 1, Page 279-285, Published 2012, **IF=0,92**, WOS:000303649000031
6. **Gheorghe, Gheorghe;** Badita, Liliana-Laura**, "**Intelligent mechatronic complex system for topographic characterization of nanostructured surfaces", Digest Journal of Nanomaterials and Biostructures**,** Vol. 7, Issue 3, Page 1237-1243, Published 2012**, IF=0,92,** WOS:000312709300042
7. **Gheorghe, Gheorghe Ion**; Badita, Lliana-Laura, "Materials characterization and tribological parameters determination of its worn surfaces" Journal of Optoelectronics and Advanced Materials, Vol. 13, Issue 9-10, Page 1208-1212, Published 2011, **IF=0,419**, WOS:000297562600030
8. **Gheorghe, Gh.**; Badita, L. L.; Istriteanu, S., Despa, V., "Nanorobotic systems for nanomanipulation and nanopositioning" Optoelectronics and Advanced Materials-Rapid Communications, Vol. 5, Issue 7, Page 764-768, Published 2011, **IF=0,381,** WOS:000294903200016
9. Tanasescu, I. ; Ganatsios, S. ; Abalaru, A. ; **Gheorghe, Gh.** ; Dontu, O. ; Besnea, D., "Autonomous System of Vibro-Acoustic Monitoring of the Grinding Process to Increase the Quality of the Processed Parts", Control Engineering and Applied Informatics, Vol.13, Issue 2, Page 14-19, Published 2011, **IF=0.772**, WOS:000291119400003
10. **Gheorghe Gheorghe,** „Original Concepts and Achievements for Designing of Smart Mechatronics and Cyber-MixMechatronics Systems Used in Laboratories and in the Industry", IFAC PAPERSONLINE - Proceedings Paper, Vol. 51, Issue: 30, Pag. 598-603, DOI: 10.1016/j.ifacol.2018.11.219, la 18th International-Federation-of-Automatic-Control (IFAC) Conference on Technology, Culture and International Stability (TECIS), SEP 13-15, **2018**, Baku, Azerbaijan, WOS:000451096700114

11. Popescu Stefan-Catalin, **Gheorghe Gheorghe,** Dontu Octavian, „Research on Implementation Orthopedic Prostheses Ankle by the Process Rapid Prototyping", Lecture notes in networks and systems, Vol. 20/**2018**, Page 88-96, WOS:000540747400011
12. Popescu Stefan-Catalin, **Gheorghe Gheorghe**, Dontu Octavian, Daniel Besnea, „Some Problems Biocompatible Materials Used for Making Endoprostheses Ankle", Lecture notes in networks and systems, Vol. 20/**2018**, Page 97-108, WOS:000540747400012
13. Anghel Constantin, **Gh. Gheorghe**, „Study of piezoresistive and capacitive tactile sensors modeling and simulation for the best linearity with applications in modern microelectronics and walking analysis", CAS 2017, 11-14 Oct. **2017**, Proceedings of the IEEE Explore_SUA, pp.183-186/ Doi: 10.1109/Smicnd.2017.8101212, WOS:000425844500052
14. Adrian Voicu, **Gheorghe Gheorghe**, „Complex 3D Measuring by multiple laser scaning of automotive parts", *Advanced Materials Research,* Vol. 837, pp.511-516, 2014; WOS:000337000500089
15. Popan Gheorghe, **Gheorghe Gheorghe**, Todoran Gabriel, „Testing Command and Control of the Satellites in Formation Flight", 11th International Conference of Numerical Analysis and Applied Mathematics - ICNAAM 2013, 21-27 September 2013, Rhode, Greece, WOS:000331472800331

✓ **President of the International Conference "International Conference of Mechatronics and Cyber-MixMechatronics ICOMECYME"; Member of the International Program Committee and the National Organizing Committee**

✓ Editor of the Volume of the International Conference "ICOMECYME'18 (Proceedings of the International Conference of Mechatronics and Cyber-MixMechatronics - 2018), Springer Publishing House, Springer Nature collection as part of the Lecture Notes in Networks and Systems series, with no. 48/2018; ISSN 2367-3370; ISBN 978-3-319-96357-0.

✓ Editor of the Conference Volume «ICOMECYME'17 (Proceedings of the International Conference of Mechatronics and Cyber- MixMechatronics - 2017) Springer publishing house, Springer Nature collection as part of the Lecture Notes in Networks and Systems series, with no. 20/2017

✓ Starting with 2017, Editor in Chief of the journal "International Journal of Mechatronics and Applied Mechanics IJOMAM" indexed in the International Databases SCOPUS, EBSCO and ProQuest.

✓ 2009 - 2016: President of the International Conference: International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical engineering and New High-Tech Products Development - MECAHITECH. Member of the International Committee of the Conference and of the International Organizing Committee.

✓ Editor-in-chief of the Romanian Rewiew Precision Mechanics, Optics and Mechatronics magazine (ISSN 1584 - 5982) indexed in the SCOPUS, EBSCO and ProQuest International Databases.

- Participated in over 35 international Congresses / conferences / workshops and participated as a visiting professor at universities / institutes abroad, of which, relevant in the last 5 years are the following:

Hungarian International Cluster Conference 2018. Bridging Countries Reaching Europe
20-22 November, 2018 | Debrecen, Hungary
Papers presented:
"Increasing the competitiveness of SME's from Soth-West Oltenia, in the smart specialization

field Eco-nanotechnologies and advanced materials, through Innovative MECHATREC Cluster" "Towards employment, through practice"
Conference "TECIS 2018 - Technology Culture and International Stability", as Vice-President of the "Mechatronic Systems and Robotics II" Session Presentation of the scientific paper: "Original Concepts and Achievements for Designing of Smart Mechatronics and Cyber-MixMechatronics Systems Used in Laboratories and in the Industry" **Sept 13-15, 2018, Baku, Azerbaidschan**
International Mechatronics Forum / The 12th edition of "International Forum Mechatronics" Bolzano, Italy, on 19th and 20th of September 2018.(www.mechatronikforum.net), 19 - 20.09.2018, **Bolzano, Italia**
Participation in the 4th edition of Add + it 2018 - Symposium for additional production and innovative technologies /4th edition of Add+it 2018 - Symposium on ADDitive Manufacturing and Innovative Technologies (https://www.profactor.at/events/addit-2018/), in perioada 27 - 28.09.2018, la Steyr, **Austria**
Regional HELIX 2018 - **International Conference on Innovation, Engineering and Entrepreneurship, Guimarães, Portugal**, June 27-29, 2018 and published in Springer Lecture Notes in Electrical Engineering;
1st European Mechatronics Alliance Kick-Off Meeting, 16-17 Mai 2018, **Linz, Austria**;
The 12th Portuguese Conference on Automatic Control – CONTROLO 2016, **Guimarães, Portugal**, September 14-16th, 2016

- **He has won numerous awards and medals at international trade fairs:**

1. Gold Medal & Diploma for Innovation, Sistem Mecatronic-Mixmecatronic de control 4D în Laborator și Industrie, University POLITEHNICA of Bucharest, **Gheorghe GHEORGHE**, Iulian ILIE, Anghel CONSTANTIN, 2018
2. Diploma of GOLD MEDAL, Mechatronic-Mixmechatronic System for 4D Control in Laboratory and Industry Euroinvent European Exhibition of Creativity and Innovation, **Gheorghe GHEORGHE**, Iulian ILIE, Anghel CONSTANTIN**,** 2018
3. Diploma of Excellence and Gold Medal Mechatronic-Mixmecatronic 4D control system in Laboratory and Industry State University of Medicine and Pharmacy "Nicolae Testemitanu" of the Republic of MOLDOVA, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018
4. Gold Medal, 4D Mechatronic-Mixmechatronic Control System in Laboratory and Industry International Exhibition of Inventions Innovations "Traian Vuia" Timișoara, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018
5. Gold Medal, Mechatronic-Mixmechatronic, System for 4D Control in Laboratory and INVENTICA Institutul Național de Inventică Iași și Universitatea Tehnică, **Gheorghe GHEORGHE**, Iulian ILIE, Anghel CONSTANTIN, 2018
6. Gold Medal, 4D Mechatronic-Mixmechatronic Control System in Laboratory and Industry Technical University of Moldova - Iași, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018
7. A Special Prize as a Sign of Honor, Recognition and Appreciation of Scientific Creativity and Originality, Mechatronic-Mixmechatronic System for 4D Control in Laboratory and Industry, "Lucian Blaga" University of Sibiu – Romania, **Gheorghe GHEORGHE**, Iulian ILIE, Anghel CONSTANTIN, 2018

8. Special Award, Mechatronic-Mixmechatronic 4D control system in Laboratory and Industry National Institute for Research-Development in Welding and Materials Testing-ISIM Timisoara, Romania, Gheorghe GHEORGHE, Iulian ILIE, Anghel CONSTANTIN, 2018

Prof. Dr. Eng. Viviana FILIP (selective list)

1. Iaşnicu (Stamate) Iuliana, Tomescu Gheorghița, Vasile Ovidiu, **Filip Viviana**, Mihai Simona**,** 2017, *Analysis on the influence of the use of recovered textiles on the acoustic properties of composite materials*, Revista Industria textilă, ISSN 1222–5347, vol. 68, nr.6/2017, pag.439-445, **IF= 0,387**, WOS:000422819200006
2. C-M Nicolescu, M. Bumbac, S. Mihai, A.I. Gheboianu, M. C-tin Balaşa, **Viviana Filip**, Șt. Cuculici, Şt. Cristea, C. Panțu, X-Ray diffraction and nanoindentation characterisation of bone tissue affected by severe osteoarthritis, Journal of Science and Arts, Year 18, No. 1(42), pp. 265-274, 2018, WOS:000430226600024
3. Alexis Negrea, **Viviana Filip**, Simona Mihai, 2016, *Modeling and simulation of working gas flow through channels configured on the surface of a pem fuel cell's bipolar plate,* Journal of Science and Arts, Year 16, No.4(37), pp. 427-434, ISSN 1844 – 9581, WOS:000396549400016,
4. Simona Mihai, **Viviana Filip**, Mircea Vlădescu, 2016, *Contributions to the improvement of the tribological behaviour of hip implant joints,* Journal of Science and Arts, Year 16, No.2(35), pp. 177-184, ISSN 1844 – 9581, WOS:000381375400009
5. **Viviana Filip**, Ovidiu Antonescu, 2010, Topological geometry and direct kinematics of parallel manipulators – 4 actuators, RSS type, Proceedings of the Romanian Academy, Series A, Volume 11, Number 2/2010, p. 188-194, ISSN 1454-9069, **IF=1,735**, WOS:000280533000012
6. **Viviana Filip**, Ovidiu Antonescu, 2010, Mobility and Direct Kinematics of Parallel Manipulators RSS Type – 3 Actuators, International Conference on Robotics, Cluj-Napoca, volumul Solid State Phenomena Vols. 166-167, p.197-202, ISSN: 1662-9779, WOS:000289532000031
7. **Viviana Filip**, 2008, Dynamic modeling of manipulators with symbolic computational method, Proceedings of the Romanian Academy, Series A, Volume 9, Number 3/2008, p. 237-242, ISSN 1454-9069, **IF=1,735**, WOS:000261604300010

- Member of the Honorary Committee of the Journal Of Mechatronics And Applied Mechanics, Ijomam indexed in international databases, since 2017
http://incdmtm.ro/icomecyme2018/index.php?page=national

- Member of the Scientific Committee of The Scientific Bulletin Of Valahia University. Materials And Mechanics, indexed in international databases, since 2017
http://fimmr.valahia.ro/MIM-MMN/organizare.html

- Member of the Romanian Association of Theory of Mechanisms and Machines, affiliated to the International Federation for the Promotion of Mechanism and Machine Science - IFToMM - president of Târgoviște branch (www.arotmm.ro)

- Member of the management team of the ORIZONT 2020 project, financing contract no. 824388/2018, whose coordinator is the University of Girona, Spain and partners are: Schneider Electric, Borg Havn IKS, Institutt for Energiteknikk, Smart Innovation in Norway, Vaasaett LTD AB OY in Finland, Intracom SA Telecom Solutions in Greece, Reiner Lemoine Institut GGMBH from Germany, Valahia University from Targoviste, Romanian Resource Center for Energy Efficiency Association,

Universitaet ST. Gallen from Switzerland, Instrumentacion Y Componentes from Spain (Appendix 2.6).
https://cordis.europa.eu/project/id/824388

Prof. Dr. Eng. Cornel MARIN (selective list)

1. Ionel RUSA , **Cornel MARIN,** Marius BAIDOC - Case Study Regarding Measurements Implemented With The Repair Entry A Hydrogregate Campela With Vibro Expert Diagnosis System – First International Conference of MECHATRONICS & CIBER-IXMECHATRONICS ICOMECYME *Bucharest, Romania September*, **2017** Proceedings of the International Conference of Mechatronics and Cyber-Mix-Mechatronics - 2017 , Springer ISSN 2367-3370 ISSN 2367-3389 (electronic) Lecture Notes ISBN 978-3-319-63090-8 ISBN 978-3-319-63091-5 (eBook) DOI 10.1007/978-3-319-63091-5, p 229-243, **WOS:000540747400026**
2. **Cornel MARIN** - Transfer Factor, Mechanical Active And Reactive Power Of Vibrations Using Burgers Parametric Model In Active Isolation Of Structures, The 5th International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development MECAHITECH'10 International Conference *Bucharest, Romania September* **2010**, *pp 82-92,* WOS:000406710800012
3. **Cornel Marin**, Viviana Filip, Alexandru Marin, 2008, Alternative Analytical Method Used In Plotting The Shear Force And Bending Moment Diagrams, Translations And Rotations Distributions For Beams Subjected To Bending, International Multiconference Of Engineers And Computer Scientists, 19-21 March 2008, Hong Kong, China, IMECS Proceeding, Volume II, P. 1629-1633, ISBN 978-988-98671-8-8, WOS:000256665701115
4. Viviana Filip, **Cornel Marin**, Alexandru Marin, 2008, Advanced mathematical model of the material point relative motion dynamics, International Multiconference of Engineers and Computer Scientists, 19-21 march 2008, Hong Kong, China, IMECS proceeding, volume II, p. 1634-1637, ISBN 978-988-98671-8-8, WOS:000256665701116
5. **Cornel Marin**, Viviana Filip, Alexandru Marin, 2008, Alternative Analytical Method Used In Plotting The Shear Force And Bending Moment Diagrams, Displacements And Rotations Distributions For Beams Subjected To Bending, International Multiconference Of Engineers And Computer Scientists, 19-21 March 2008, Hong Kong, China, IMECS Proceeding, Volume I, P. 156-160, ISBN 978-988-98671-8-8, WOS:000263875300015

- Member of the Scientific Committee and annual participation in proceedings at international conferences:

1. The 2nd International Conference of MECHATRONICS & CIBER- IXMECHATRONICS **ICOMECYME 18** *Bucharest, Romania September, 2018.* http://incdmtm.ro/icomecyme2018/index.php?page=national
2. First International Conference of MECHATRONICS & CIBER- IXMECHATRONICS **ICOMECYME 17** *Bucharest, Romania September, 2017.*
3. The 8th International Coference on Inovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Developemente **MECAHITECH 16**, Bucuresti, sept 2016. **http://incdmtm.ro/mecahitech2016/comitetul-national-de-oganizare/**
4. The 6th International Conference on Innovations, Recent Trends and Challenges in Mechatronics, Mechanical Engineering and New High-Tech Products Development

MECAHITECH'14 International Conference *Bucharest, Romania September 4th-5th, 2014.* ***http://incdmtm.ro/mecahitech2014/?page_id=26***

- Member of the Scientific Committee of The Scientific Bulletin Of Valahia University. Materials And Mechanics indexed in international databases since 2017 (DEGRUYTER platform)
http://fimmr.valahia.ro/MIM-MMN/organizare.html

- Member of the Scientific Committee of the International Journal of Mechatronics and Applied Mechanics, Ijomam, indexed in international databases, since 2017
http://incdmtm.ro/icomecyme2018/index.php?page=national

Performance Indicator *A.3.2.2. At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.

The indicator is met. All 3 doctoral supervisors exceed, based on the scientific results of the last five years, 25% of the score from the minimum CNATDCU standards. Reporting the scores to 25% of the minimum score for habilitation (113 points), scores higher than 111 times (prof. Gh. Gheorghe), 1.5 times (prof. V. Filip) and 1, are obtained for the three leaders. 3 times (Prof. C. Marin).We present summary tables for the three leaders. The sheets for meeting the criteria for the period 2016-2020 are presented in Annex 13.

Prof.dr.ing. Gheorghe GHEORGHE (Annex 13.1)				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	6	61	10
2	Research activity (A2)	22	270,36	88,02
3	Activity impact recognition of the impact (A3)	85	6079,30	3048,75
	TOTAL	**113**	**6410,66**	**3146,77**

Prof.dr.ing. Viviana FILIP (Annex 13.2)				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	6	35	12
2	Research activity (A2)	22	33,03	4,89
3	Activity impact recognition of the impact (A3)	85	215	26
	TOTAL	**113**	**283,03**	**42,89**

Prof.dr.ing. Cornel MARIN (Annex 13.3)				
No	*Field of activity*	*Minimum score achieved by Professor*	*Achieved throughout the entire activity*	*Achieved 2016-2020*
1	Teaching / professional activity (A1)	6	41	19
2	Research activity (A2)	22	30	13,4
3	Activity impact recognition of the impact (A3)	85	305,29	7
	TOTAL	**113**	**376,29**	**39,4**

Domain B. EDUCATIONAL EFFECTIVENESS

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

Performance Indicator *B.1.1.1. The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.

The indicator is met. Eight of the candidates enrolled in the last 5 years did not graduate from the master's degree at UVT, respectively, Stanciu Dănuț-Iulian (2016), Angelescu Dorin (2016), Popescu (Kurtuhuz) Andreea-Maria (2017), Badea Sorin-Ionuț (2017), Chiriță George-Daniel (2018), Răpan Ionuț-Liviu (2018), Stăetu Gigi-Nelu (2018), Berindei Adelin-Marian (2019). They graduated from university centers in Bucharest and Constanța. **Since there were 3 budget places at SDSI-IMec, the ratio is 8/3 = 2.66> 0.2**

The indicator is also met if we take into account the ratio between the number of candidates and the number of budget places, respectively 12/3 = 4> 1.2. That is, 9 of the 12 candidates were admitted to paid positions, as follows:

2 in 2016: Stanciu Dănuț-Iulian, Angelescu Dorin

2 in 2017: Popescu (Kurtuhuz) Andreea-Maria, Badea Sorin-Ionuț,

4 in 2018: Chiriță George-Daniel, Răpan Ionuț-Liviu, Stăetu Gigi-Nelu, Milian Theodor-Cezar

1 in 2019: Berindei Adelin-Marian

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

Performance Indicator *B.1.2.1. Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.

The indicator is met. According to the procedure PO 07, The organization and development of the admission in the cycle of doctoral university studies, art. 5.3, the admission competition consists of an eliminatory test of linguistic competence for a language of international circulation and a specialized exam, the content of which differs depending on the doctoral field. The specialized exam consists of an interview of the candidate before the examination board, in which the scientific concerns of the candidate, his research skills and the proposed topic for the doctoral thesis are analyzed, based on the research topics established by each doctoral supervisor.

Performance Indicator B.1.2.2. The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission4 does not exceed 30%.

The indicator is met. The dropout rate in the first three years is 8.3%. Of the 12 PhD students enrolled in the last 5 years, one was expelled in the first 3 years of study.

Criterion B.2. The content of doctoral programs

Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

Performance Indicator B.2.1.1. The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing

The indicator is met. The training program based on advanced university studies (Annex 1) comprises five disciplines, namely, Research Methodology (with the subject sheet in Annex 16.1), Ethics and academic integrity (with the subject sheets of the 3 course holders mentioned in Indicator A.3.1.3 in Annex 16.2, Annex 16.3, respectively Annex 16.4) and three other specialized disciplines proposed by the doctoral supervisor (master courses or individual study based on the bibliography indicated by the supervisor, bibliography that includes compulsory and recent articles, relevant for the subject of the thesis doctorate), with the subject sheets in Annex 16.5, Annex 16.6, Annex 16.7, Annex 16.8, Annex 16.9, Annex 16.10.

Performance Indicator B.2.1.2. At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.

The indicator is met. The fifth discipline in the training program based on advanced university studies is Ethics and Academic Integrity, a discipline that ends with a colloquium. The topic of the course includes introductory notions on ethics and morals, research ethics in Romania, the correct writing of an academic paper, plagiarism and autoplagiarism, the use of computer programs to detect plagiarism, the code of ethics and professional ethics of UVT. The discipline sheet is presented in Annex 16.2).

Performance Indicator B.2.1.3. The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities.

The indicator is met. The training program based on advanced university studies includes Ethics and academic integrity, Research Methodology and 3 specialized courses recommended by the doctoral supervisor depending on the subject of the thesis and the course of the doctoral student (master courses or individual study based on a recommended bibliography containing compulsory articles recent in that field). For each discipline, doctoral students hold a colloquium in which the acquisition of skills is verified (knowledge of the fields, synthesis capacity, critical analysis, ability to evaluate results, etc. - the files of specific disciplines are presented in Annex 16). The curriculum also provides three Reports to present the progress of the research which ends with a colloquium before the steering committee. CSD-SDSI recommends the inclusion in doctoral student publications in reports, which allows the guidance committee to analyze the evolution of the doctoral student on how to formulate problems, formulate hypotheses, analysis capacity, handling the mathematical apparatus, writing and presentation.

Performance Indicator B.2.1.4. All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.

The indicator is met. The guidance commissions are made up of specialists in the field, teachers in UVT, with whom the doctoral student meets regularly (face to face or online). We exemplify this by the fact that doctoral students in internships during the evaluated period, have published scientific articles with co-authors from the steering committees:

-Partner (Leț) Andreea-Mihaela, registered in 2019, leader V. Filip, benefited from the guidance of Ms. CS Dr. Eng. Simona Mihai, member of the guidance committee, together with whom she published the article A Review in Biomechanics Modeling, SpringerNature

Switzerland AG 2020, ICOMECYME 2020, LNNS 143, pp. 156–164, 2020, https://doi.org/10.1007/978-3-030-53973-3_17

-Bălașa Constantin-Mihai, registered in 2016, defended his thesis in 2019, leader V. Filip, benefited from the guidance of Mrs. CS dr. Eng. Simona Mihai, member of the guidance commission, together with whom he published the articles:

1. *Modelling the Tibial Bone Using CAD Techniques, Starting From the 3D Scan Model*, International Journal of Mechatronics and Applied Mechanics, 2018, p. 217-223, Issue 3, Springer, DOI 10.1007/978-3-319-96358-7_16
2. *X-Ray diffraction and nanoindentation characterisation of bone tissue affected by severe osteoarthritis*, Journal of Science and Arts, Year 18, No. 1(42), pp. 265-274, 2018, WOS:000430226600024

- **Zdrafcu Mihai Octavian,** PhD student in 2021 during the grace period, leader C. Marin, benefited from the guidance of Prof. Dr. Eng. Viviana Filip, member of the guidance committee, with whom he published the article Using 3D Scanning Techniquesin Orthopedic Systems Modeling, The Scientific Bulletin of VALAHIA University - Materials and Mechanics - Vol.15, no. 13, ISSN: 1844-1076, DOI 10.1515 / bsmm-2017-0016, pp. 41-47

Performance Indicator B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.

The indicator is met. The training of the 12 PhD students enrolled at IMec is provided by 7 teachers and scientific researchers, respectively 3 PhD supervisors, 2 professors in the disciplines Research Methodology, Ethics and Integrity and 2 other teachers in the steering committees (associate professor Dr. Eng. Adriana Cîrstoiu, CS dr. Eng. Simona Mihai), which returns to a ratio of 12: 7 = 1.7: 1.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

Performance Indicator B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.

We further present the list with a representative article of each doctoral student who defended the doctoral thesis during the evaluated period. The works in extenso are grouped in Annex 17.

- Oros Daraban A.E.; Negrea C.S.; Artimon F.G.; **Angelescu Dorin**; Popan G.; Gheorghe, Gheorghe, A Deep Look at Metal Additive Manufacturing Recycling and Use Tools for Sustainability Performance. Sustainability 2019, 11, Publicat 03.10.2019 online MPI, 5494-5513. DOI: 10.3390/su11195494, **WOS:000493525500353 (Q2)**
https://www.mdpi.com/2071-1050/11/19/5494

- Piticescu R. M., Cursaru L. M., **Ciobota Dan Năstase**, Istrate S., Ulieru D. (2018), 3D Bioprinting of Hybrid Materials for Regenerative Medicine: Implementation in Innovative Small and Medium-Sized Enterprises (SMEs). JOM: The journal of the Minerals, Metals & Materials Society (JOM-US), **IF: 1.72**, DOI: 10.1007/s11837-018-3252, **WOS:000457406800028 (Q2)**
https://www.researchgate.net/publication/329078570_3D_Bioprinting_of_Hybrid_Materials_for_Regenerative_Medicine_Implementation_in_Innovative_Small_and_Medium-Sized_Enterprises_SMEs

- Ancuta Paul-Nicolae, Atanasescu Anca, Sore, Sorin, **Stanciu Danut-Iulian,** Lucaciu Irina Eugenia, Stoica Catalina, Nita-Lazar Mihai, Banciu Alina Roxana, Bacterial Monitoring of Drinking Water Sources Using Immunofluorescence technique, Image Processing Software and Web-based Data Visualisation, Control Engineering And Applied Informatics, ISSN: 1454-8658 Vol. 21, Issue 2, Pag. 54 - 63, **WOS:000489234700006,(Q4)**
https://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=20&SID=D3xFstPWOO3WkvUwGIm&page=1&doc=1

- Anghel Constantin, Optimal design and modeling of tactile resistive and capacitive sensors interfaces used in modern mechatronics, Romanian Journal of Information Science and Technology Volume 20, Number 4, 2017, pp. 400–414, ISSN:14538245, IF=0.304, **WOS:000433876700008 (Q4)**
http://www.romjist.ro/full-texts/paper574.pdf,
http://apps.webofknowledge.com/Search.do?product=WOS&SID=C5Wlv3ltTWQl3Q5t1Wz&search_mode=GeneralSearch&prID=02379868-941c-4da2-bef7-7b90834ad6a8

- Cristina Mihaela Nicolescu, Marius Bumbac, Simona Mihai, Anca Irina Gheboianu, **Mihai Constantin Balasa**, Viviana Filip, Stefan Cuculici, Stefan Cristea, Cosmin Pantu, "X-RAY diffraction and nanoindentation characterization of bone tissue affected by severe osteoarthritis", Journal of Science and Arts, ISSN: 1844 – 9581 Physics Section, Year 18, No. 1(42), pp. 265-274, 2018, **WOS:000430226600024**
https://apps.webofknowledge.com/Search.do?product=WOS&SID=C5Wlv3ltTWQl3Q5t1Wz&search_mode=GeneralSearch&prID=f3254d50-fa4d-4c62-80ff-8728d92a48ea

- Aurel Zapciu, Valentin Gornoavă, Liliana Laura Badita, Anton Vieru, Research On The Optimization Of Sintering Metal Carbide Processing Costs Using Diamond Coated Disks With Resins Polyamide Binders, International Journal of Mechatronics and Applied Mechanics, 2019, Issue 5, pp.187-193, indexată Scopus,

https://ijomam.com/wp-content/uploads/2019/07/pag.-187-193_RESEARCH-ON-THE-OPTIMIZATION-OF-SINTERING-METAL-CARBIDE-PROCESSING-COSTS.pdf

Performance Indicator *B.3.1.2. The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.

The indicator is met. During the evaluated period, a number of 6 doctoral students completed their doctoral studies, and the number of participation of doctoral students in prestigious international conferences in the evaluated period is 25 (4 ISI and 21 BDI). See Annex 5 with doctoral students' results.
We further present a participation in a prestigious international conference, for each doctoral student who completed his studies in the evaluated period.

- Mihai Constantin Bălaşa, Viviana Filip, Ştefan Cuculici; Modeling of a tibial bone-knee implant assembly in order to analyse its mechanical behaviour, **The International Joint Conference on Materials Science and Mechanical Engineering (CMSME 2019), Phuket, Thailand**, Jan. 18-20 2019, IOP Conf. Series: Materials Science and Engineering 715 (2020) 012019, IOP Publishing, doi:10.1088/1757-899X/715/1/012019,
https://iopscience.iop.org/article/10.1088/1757-899X/715/1/012019/pdf

- Anghel CONSTANTIN, Gheorghe Ion Gheorghe, CMOS transducer with linear response using negative capacitance for the force measurement in human walking analysis with applications in MEMS and NEMS technologies, Proceedings of **The 12th Portuguese Conference on Automatic Control – CONTROLO 2016, Guimarães, Portugal**, September 14th to 16th
https://books.google.ro/books?id=1Bz4DAAAQBAJ&pg=PA483&lpg=PA483&dq=CMOS+transducer+with+linear+response+using+negative+capacitance+for+the+force&source=bl&ots=I7gbbVOR7Z&sig=ACfU3U3dl4Ik3zEONX6G44Cj4FRZS6e7sA&hl=ro&sa=X&ved=2ahUKEwiIwKicqKbxAhXYhf0HHV7gARsQ6AEwBXoECAsQAw#v=onepage&q=CMOS%20transducer%20with%20linear%20response%20using%20negative%20capacitance%20for%20the%20force&f=false

- Popan Gheorghe, **Angelescu Dorin,** Flexible Control System Used in the Nano-technological Production Flow, Publicat Springer:" **The 5th International Conference on Advanced Manufacturing Engineering and Technologies (NEWTECH), University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia**, 5 - 9 iunie 2017" , DOI 10.1007/978-3-319-56430-2,
https://link.springer.com/chapter/10.1007/978-3-319-56430-2_6

- Robert Radu Piticescu, Laura Madalina Popescu, Roxana Mioara Piticescu, **Dan Nastase Ciobota**, 3D Bioprinting of Hybrid Materials for Regenerative Medicine

Implementations in Innovative SMEs, **1st International Conference on Technological Innovations in Metals Engineering (TIME), Haifa, Israel** 2018
https://www.researchgate.net/publication/329078570_3D_Bioprinting_of_Hybrid_Materials_for_Regenerative_Medicine_Implementation_in_Innovative_Small_and_Medium-Sized_Enterprises_SMEs

- Anca Atanasescu, Paul Nicolae Ancuţa, Sorin Sorea, **Anghel CONSTANTIN** , **Dănut-Iulian Stanciu**, Conceptual model of computerized multiparameter monitoring system for drinking water quality at nationwide scale, Proceedings of **The International Conference of Mechatronics and Cyber-MixMechatronics**, Bucharest - 2017 pp 29-36, ISBN: 978-3-319-63091-5
https://link.springer.com/chapter/10.1007/978-3-319-63091-5_4

- Liliana-Laura Badita, Aurel Zapciu, **Valentin Gornoava**, Marian Vocurek, Iulian-Sorin Munteanu – "Nanostructured Thin Films Used to Improve the Tribological Properties in Mechatronic Actuating Systems", Proceedings of **the 5th International Conference on Advances in Mechanical Engineering ISCAME 2017, Debreţin, Ungaria,** pg. 22-28, ISBN 978-963-473-304-1.
https://konferencia.unideb.hu/sites/default/files/upload_documents/iscame_conference_proceedings5.pdf

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain

Performance Indicator *B.3.2.1. The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.

The indicator is met. Below is the list of theses defended in the evaluated period, from which it can be seen that no leader has allocated more than two theses in a year to the same external referent.

No	Name and surname of the graduate	PhD Supervisor Professor	*Date of publicdefence*	*Non-UVT members of the public defence commission (external reviewers)*
1	CONSTANTIN V. Anghel	GHEORGHE Gheorghe	06.04.2019	Prof.univ.dr. AVRAM Mihai Prof.univ.dr. CRISTEA Luciana
2	BĂLAȘA C.E. Constantin-Mihai	FILIP Viviana	21.09.2019	Prof.univ.dr. ADÎR George Mihail Prof.univ.dr. ALEXANDRU Cătălin
3	CIOBOTA T. Năstase - Dan	GHEORGHE Gheorghe	18.12.2019	Prof.univ.dr. AVRAM Mihai Prof.univ.dr. CRISTEA Luciana
4	ANGELESCU I. Dorin	GHEORGHE Gheorghe	13.11.2020	Prof.univ.dr. CRISTEA Luciana Prof.univ.dr. DONTU Octavian
5	GORNOAVĂ V. Valentin	GHEORGHE Gheorghe	13.11.2020	Prof.univ.dr. CRISTEA Luciana Prof.univ.dr. DONTU Octavian
6	STANCIU F. Dănuț Iulian	GHEORGHE Gheorghe	13.11.2020	Prof.univ.dr. AVRAM Mihai Prof.univ.dr. PAU Valentin

Performance Indicator *B.3.2.2. The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.

The indicator is not analyzed because in the evaluated doctoral field at least ten doctoral theses have not been defended in the last five years (only 6 theses have been defended).

Domain C. QUALITY MANAGEMENT

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

Standard C.1.1. The institutional framework exists and policies and procedures are applied for relevant internal quality assurance.

Performance Indicator C.1.1.1. The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:
(a) the scientific work of Doctoral advisors;
(b) the infrastructure and logistics necessary to carry out the research activity;
(c) the procedures and subsequent rules based on which doctoral studies are organized;
d) the scientific activity of doctoral students;
e) the training program based on advanced academic studies of doctoral students;
f) social and academic services (including for participation at different events, publishing papers
etc.) and counselling made available to doctoral students.

The indicator is met. IOSUD and SDSI follow the education quality assurance policy implemented at the University of Wallachia in Târgoviște. The objectives of IOSUD are aligned with the objectives of the institution, namely, in the field of quality management system, continuing education / training, scientific research activities and in the field of national and international cooperation. Every year, IOSUD doctoral schools are audited and objectives are monitored. We mentioned that IOSUD also has a quality manager, prof. Mihai MEILĂ, who is also a CSUD member.

For the monitoring of the scientific activity of doctoral supervisors, point (a) of the indicator, IOSUD introduced the procedure PO-06-14 which allows a quantification of the annual activity of doctoral supervisors.

The procedure takes into account and scores only the results / activities recognized by CNATDCU (according to Order no. 6129 of December 20, 2016). By standardizing to the minimum score required for habilitation corresponding to each field, the procedure allows a unitary evaluation of doctoral supervisors from different fields.

Performance Indicator *C.1.1.2. Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.

The indicator is met. The SDSI regulation provides the right of doctoral students to freely express their needs and level of satisfaction with the doctoral program in Art. 15.o) and the obligation of SDSI to take into account the feedback of doctoral students in Art. 13.13). In this regard, SDSI developed a questionnaire to highlight the degree of satisfaction with the advanced study program, the research program, the steering committee and the doctoral supervisor (the questionnaire is presented in Annex 18). It should also be mentioned that doctoral students have representatives in CSD and CSUD, through which they can communicate with the management of the doctoral school or IOSUD or they can address directly, for any problem, to the director of SDSI, CSD or CSUD.

Criterion C.2. Transparency of information and accessibility of learning resources

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

Performance Indicator C.2.1.1. The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:
(a) the Doctoral School regulation;
(b) the admission regulation;
(c) the doctoral studies contract;
(d) the study completion regulation including the procedure for the public presentation of the thesis;
(e) the content of training program based on advanced academic studies;
(f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;
(g) the list of doctoral students within the domain with necessary information (year of registration; advisor);
(h) information on the standards for developing the doctoral thesis;

(i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

The indicator is met - all information is available on the IOSUD website, https://www.scoaladoctorala.valahia.ro/

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

Performance Indicator C.2.2.1. All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis

The indicator is met - SDSI doctoral students have access (ANELIS) to the following databases:

- PROQUEST Central
- ScienceDirect Freedom Collection (Elsevier)
- Scopus (Elsevier)
- Web of Science - Core Collection, InCites Journal Citation Reports, Derwent Innovations Index (Clarivate Analytics)

Performance Indicator C.2.2.2. Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.

The indicator is met - doctoral students, through doctoral supervisors, have access to the similarity verification platform www.sistemantiplagiat.ro. The platform is described in indicator A.1.2.

Performance Indicator C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.

The indicator is met - SDSI-IMec doctoral students have free access to the research laboratories of the Multidisciplinary Scientific and Technological Research Institute of the University of Wallachia in Târgoviște - ICSTM, to the laboratories of the Faculty of Materials Engineering and Mechanics of the University of Wallachia in TIM out of hours - license / master) and at the facilities of the Research - Development Institute for Mechatronics and Measurement Technique - INCDMTM (according to the collaboration agreement Annex 19).

Criterion C.3. Internationalization

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

Performance Indicator *C.3.1.1. IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.

The indicator is met. UVT has shown a constant concern for increasing the degree of internationalization, developing in this regard an operational procedure, PO 07.46 - Annex 20, which sets out how to promote UVT abroad, in order to meet the objectives of internationalization assumed by the UVT Charter, Strategic Plan and Internationalization Strategy - Annex 21. UVT implements Erasmus Charter for Higher Education, awarded by the European Commission, Annex 22, under the monitoring of the National Erasmus+ Agency. UVT has concluded institutional cooperation agreements with Ukraine and Belarus, Annex 23 and is to submit the project of the European University Consortium, Annex 24, according to which 50% of UVT students (including PhD students) will perform online, blended and physical mobility within the consortium. The doctoral supervisors of SDSI-IMec have established collaboration relations with universities from the list of prestigious universities (according to Order 5462 of November 12, 2018).

The indicator for mobility abroad is met. Five of the 12 doctoral students enrolled in the evaluated period, ie 41%, carried out mobility abroad in scientific interest, as follows:

POPESCU (KURTUHUZ) Andreea-Maria (PhD) traveled to Tel Aviv, Israel, where she participated in the international conference CyberTech 2020, which took place on January 28-30, 2020, as well as in Munich, Germany, where participated in the international event BAU (World's Leading Trade Fair for Architecture, Materials and Systems) which took place between January 14-19, 2019.

SOCI (LEȚ) Andreea-Mihaela (PhD student), as a doctoral student involved in the Horizon 2020 research project, traveled to Athens, Greece, from November 4 to 7, 2019, where she participated in working meetings on project, within the international consortium

ILIE Iulian (PhD student), as a doctoral student involved in the SIPOCA 393/2019 project, as a public policy expert, was assigned a study visit to the project between 9-14 September 2019, in the Netherlands, in Utrecht , The Hague, Eindhoven, Amsterdam and between 7-12 October 2019, in Germany, in Berlin and Potsdam, for the exchange of experience with key people from relevant organizations

CONSTANTIN Anghel (enrolled in 2014, with a thesis defended in 2019) carried out an internship between 01 and 31 October 2015 at the Mechanical Engineering Technological Institute of Central Macedonia in Serres - Greece, in order to meet the objective "International Scientific Mobility" of the project: „European Quality Doctorate - EURODOC" Nr. contract identification: POSDRU / 187 / 1.5 / S / 155450.

STĂETU Gigi-Nelu (PhD) traveled from March 17 to 27, 2019, in Provins, France, to BBGR - Nikon's representative (one of the world's leaders in the field of progressive lenses), for documentation in order to prepare the research report entitled *Concepts and methods used to minimize lateral aberrations of progressive lenses*

Performance Indicator C.3.1.2. In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students

The indicator is met.

SDSI-Imec doctoral students participate in courses / lectures of top experts, organized in UVT. For the period subject to evaluation, we mention the lectures given at the *Institute of Multidisciplinary Scientific and Technological Research* of UVT:

- Prof. Eng., PhD José Machado, Mech., University of Minho, School of Engineering, Mechanical Engineering Department, PORTUGAL, „Mechatronic System for the Promotion of Physical Activity in People with Motor Limitations"06 septembrie 2018;
- PhD. John Mack - Rhodes University, Grahamstown, South Africa "The rational design of BODIPY dyes for biomedical and optical limiting applications", 06 octombrie 2017, http://www.icstm.ro/content/Invited-Lecturer-PhD-John-Mack
- PhD Eng. Ion Stiharu- Department of Mechanical and Industrial Engineering, Concordia University, Canada „MEMS Application to Life Science" , "A New Approach for the Non-Linear Analysis of the Deflection of Beams Using Lie Symmetry Groups" 07 September 2017

Performance Indicator C.3.1.3. The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).

The indicator is met. The doctoral supervisor, Prof. GHEORGHE Gheorghe participated in educational fairs to attract international doctoral students, as follows:

- ✓ The 12th edition of "International Forum Mechatronics" Bolzano, Italy, on 19th and 20th of September 2018 (www.mechatronikforum.net)
- ✓ 1st European Mechatronics Alliance Kick-Off Meeting, 16-17 Mai 2018, Linz, Austria
- ✓ The 18th IFAC (International Federation of Automatic Control), TECIS 2018, 13-15 september, Baku, Azerbaijan

- ✓ International Conference on Innovation, Engineering and Entrepreneurship Regional HELIX 2018, Guimarães, Portugal, June 27-29
- ✓ The 12th Portuguese Conference on Automatic Control – Guimarães, Portugal, September 14-16th, 2016

International experts with experience in the thesis (Ion Stiharu- Department of Mechanical and Industrial Engineering, Concordia University, Canada) were included in the guidance commissions of doctoral students. We will intensify the efforts for the internationalization of the activities within the doctoral studies and we will consider the inclusion of an international expert in the guidance / defense commission of each doctoral thesis.

3. Strategies and procedures implemented at the field levelof doctoral studies, as improvement measurescontinuous quality of doctoral study programs other thanthose set out in Annex 4 to the Guide

A fundamental objective of IOSUD and SDSI is the elaboration of doctoral theses of very good scientific level. In support of achieving this goal, IOSUD came to the aid of the guidance commissions by developing the M-21, *Methodology for the evaluation of doctoral theses by the guidance committee.* The methodology is in accordance with MEN ORDER no. 5,229 of August 17, 2020, published in the OFFICIAL GAZETTE no. 783 of August 27, 2020.

In fact, IOSUD and SDSI envisage the continuous monitoring of legislation and the development of new methodologies / procedures whenever necessary, as well as the revision of existing ones. In this sense, we mention PO 07.43, *Completion of doctoral studies using alternative methods, PO 07.44-Organizing and conducting online the process of obtaining the certificate of qualification, M20-Methodology for resolving complaints regarding non-compliance with quality or ethical standards professional in doctoral theses, etc.*

4. Other additional information relevant to the field ofdoctoral studies

In the field of continuing education / training, IOSUD and SDSI aims to open new doctoral fields and consolidate existing ones. In order to strengthen SDSI-IMec, the action of *identifying, supporting and advising the teachers who meet the qualification conditions is provided.* Thus, we managed to co-opt in our team in 2021 two colleagues: Conf. dr. ing. Ivona Camelia PETRE, from UVT, who received the title of PhD supervisor by O.M. nr. 4179/05.07.2021, Annex 25, respectively CS-I dr. ing. Cristinel Ioan ILIE, from ICPE-CA, who received the title of PhD supervisor by O.M. nr. 4180/05.07.2021, Annex 25.

CONCLUSIONS

MEETING THE INDICATORS

All 6 critical indicators (A.2.1.1., A.3.1.1, A.3.2.1., B.2.1.5., B.3.1.1., C.2.1.1) are met.

Of the 35 indicators included in the methodology, 34 are fully met and one is not met. **The only indicator that is not met is * A.1.3.3.**

Indicator * A.1.3.3. At least 10% of the total amounts resulting from doctoral grants obtained by the university through institutional contract and through tuition fees collected from the PhD students enrolled in full fee-paying places are used to cover the training expenses of the PhD students (participation in conferences, summer schools, courses, abroad internship programs, publication of specialized articles and other specific forms of dissemination, etc.)

The indicator is not met - completion percentage: 0%. For the for engineering fields we consider a budget allocation of RON 25.3 thousand and an average tuition fee of RON 4.5 thousand (at UVT the tuition fee has varied between RON 4 and 5 thousand). During the evaluation period, three PhD students were admitted to SDSI-IMec on state-funded places and nine on fee-paying places. The budget allocation is paid for 3 years. Considering the same duration of 3 years for the fee-paying places, there results an amount of 3 x 25.3 x 3 x + 3 x 4.5 x 9 = 349.2 th RON. The PhD students enrolled at SDSI-IMec did not receive training funding from these sources, Annex 12.

We are mentioning that SDSI made up for the lack of funding from UVT using other sources of finance, namely research contracts and various projects, an aspect that can be easily noticed by examining the sections referring to the participation in scientific events (* B.3.1.2) and the financing of PhD students from other sources (* A.1.3.2).

STRENGTHS, VULNERABILITIES, OPPORTUNITIES, THREATS

The report shows that SDSI-IMec meets to a large extent the criteria stipulated by the accreditation methodology. Up to the present, twelve PhD students of SDSI have received the title of Doctor of Mechanical Engineering, four of whom during the evaluation period. The table with the theses defended, the PhD supervisors and the confirmation through OM can be found in Annex 3 Currently, of the graduates who obtained their PhD degree, five are researchers at the National Institute of Research and Development in Mechatronics and Measurement Technique from Bucharest (CONSTANTIN V. Anghel, CIOBOTA T. Năstase - Dan, ANGELESCU I. Dorin, GORNOAVĂ V. Valentin, STANCIU F. Dănuț Iulian), and one works at Macartney

Hydraulics A / S Lenmvig, Denmark - Romania branch (BĂLAȘA C.E. Constantin-Mihai).

During the period subject to evaluation, sixteen PhD students performed their activity. Currently, we have ten PhD students in training: six of them are supervised by Prof. Gheorghe GHEORGHE, three are supervised by Prof. Viviana FILIP, and one is supervised by Prof. Cornel MARIN.

Of the sixteen PhD students who performed their activity during the period under evaluation, **eight participated in 35 projects (Anghel Constantin - 8 projects, Ciobota Nastase Dan - 7 projects (one as manager), Angelescu Dorin - 3 projects, Stanciu Danuț - 8 projects (one as manager), Gornoavă Valentin - 4 projects, Ilie Iulian - 3 projects (one as project manager), Soci (Leț) Andreea - Mihaela - 1 project, Badea Sorin-Ionuț - 1 project), as shown in** Annex 4**.**

The PhD students' scientific production in the field of Mechanical Engineering during the period subject to evaluation is presented in Annex 5 and consists of 66 papers. It is worth mentioning that during the period under evaluation, the PhD students obtained **6 patents and filed another 3 patent applications.** They also published 3 books / book chapters, 4 articles in ISI-WOS rated journals (of which 2 in Q2 journals), 2 articles in ISI-WOS indexed journals, 4 articles in ISI-WOS indexed conference proceedings, 23 articles in BDI indexed journals, and 21 in BDI indexed conference proceedings (of which 4 abroad).

The training PhD students won 11 national and international awards, 7 gold medals, 4 silver medals, 2 special awards and two award-winning patents and participated in 35 national and international research projects (6 European projects, 12 PN III projects, 7 POC projects, 10 Core projects), the complete list of which can be found in Annex 4:

SDSI-IMec STRENGTHS:

- **The PhD supervisors' expertise.** The PhD supervisors of SDSI-IMec have vast experience in research and a good national and international visibility, as proved by the papers published in ISI-WOS rated journals, the membership in scientific committees of various journals, conferences, professional associations, the patents, awards, and medals won, as well as the participation in numerous research projects involving in which they involved also the PhD students.
- **The consolidation of the doctoral school of mechanical engineering** through the habilitation of two new PhD supervisors (associate professor Ivona Camelia PETRE, Doctor of Engineering - UVT and CS-I Cristinel Ioan ILIE, Doctor of Engineering - ICPE -CA).
- **The complementarity of thePhD supervisors' activity**, some of them being full professors at the university, and others working full-time in research institutes, which helps them obtain, as a team, results that better cover the full range of needs within the doctoral school.
- **The material resources.** The SDSI-IMec PhD students are affiliated to the research centres of *the Scientific and Technological Multidisciplinary Research Institute* - ICSTM within UVT where their supervisors work._In addition to the

infrastructure provided by ICSTM, the PhD students have access to the laboratories of the Faculty of Materials Engineering and Mechanics - FIMM of UVT, the university library, etc. Details are presented in the section referring to Criterion A.2.

WEAKNESSES:

- Low financial allocation for the training expenses of the PhD students (participation in conferences, summer schools, courses, abroad internships programs, publication of specialized articles or other specific forms of dissemination, etc.)
- Low number of international projects anda relatively modest level of internationalization in terms of involvement from external experts in thesis guidance commissions or thesis defence committees and coordination of co-supervised theses

THREATS:

- **The funding.** The number of state-funded places allocated to UVT is small. In addition, we have faced a certain level of unpredictability as research project competitions have been organised at an irregular pace.
- **The relatively high average age of the supervisors (61)**
- The increasingly low attractiveness exerted by the doctoral studies in engineering, since graduates prefer to enter the labor market immediately rather than pursuing a PhD.

OPPORTUNITIES:

- **The existence** of the *Scientific and Technological Multidisciplinary Research Institute* - ICSTM of UVT and its infrastructure ;
- **The national / international visibility** of the PhD supervisors;
- **The public-private partnerships between Renault, Arctic and Schneider** and UVT, which can involve PhD students, provide assignments and subjects for PhD theses at the suggestion of the aforementioned companies, and involve them financially.

The above analysis shows that SDSI-IMec has strengths and opportunities that allow it to continue its work successfully.

Efforts should be stepped-up to eliminate weaknesses. As part of these efforts, SDSI-IMec should submit projects and participate in national competitions on a constant basis and, in particular, to build consortia with a view to taking part in international contests, as well as covering the PhD students' training expenses related to participation in conferences, summer schools, courses, abroad internship programmes, and publication of specialized articles.

Regarding threats, special attention should be paid to the rejuvenation of the PhD supervisors's team by supporting younger colleagues to meet the qualification criteria in the near future. Our analysis concludes that mechanical engineering is a viable field of SDSI.

5. List of annexes, in electronic format, which can be accessed by clicking the links in the text of the internal evaluation report

Annex 1 SDSI-Imec curriculum
Annex 2 CV's + List of PhD supervisors
Annex 3 The situation of the PhD students enrolled and the theses defended
Annex 4 PhD students' projects
Annex 5 SPhD students' scientific papers
Annex 6 PhD graduates' projects
Annex 7 Minimum standards for granting the title of doctor OM5110
Annex 8 Quality assurance
Annex 9 Procedures-regulations-methodologies
Annex 10 CSUD CSD-SDSI Minutes of proceedings
Annex 11 2020 Master agreement for doctoral studies
Annex 12 Funding fir PhD students' professional training
Annex 13 Minimal criteria compliance by supervisors
Annex 14 SDSI List of positions for 2020-2021
Annex 15 Professors' CV's - *Ethics and integrity* + *Research methodology* courses
Annex 16 Course syllabi
Annex 17 IOSUD graduates' full papers
Annex 18 Evaluation of the level of satisfaction
Annex 19 Collaboration agreement regarding INCDMTM doctoral studies
Annex 20 PO 07.46-UVT International Marketing
Annex 21 Internationalization strategy
Annex 22 Erasmus charter for higher education
Annex 23 Ukraine and Belarus agreements
Annex 24 European Universities Consortium
Annex 25 Habilitation titles 2021-Petre I+Ilie C