



**UNIVERSITATEA  
LUCIAN BLAGA  
— DIN SIBIU —**

**Faculty of Engineering**

Department of Industrial Engineering and Management  
Department of Industrial Machines and Equipment

**11<sup>th</sup> INTERNATIONAL CONFERENCE**

**MANUFACTURING SCIENCE AND EDUCATION  
-MSE 2025-**



**June 4-6, 2025  
Sibiu, Romania**

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## MSE 2025 PROGRAM OVERVIEW

<b>WEDNESDAY, JUNE 4<sup>th</sup>, 2025 Bucharest Time (GMT+2h)</b>	
18:00 - 19:00	<b>Registration</b>
19:00 – 22:00	<b>Welcome Reception</b> <i>Student Cafeteria - Student Campus Park, Victoriei Boulevard 31</i>
<b>THURSDAY, JUNE 5<sup>th</sup>, 2025 Bucharest Time (GMT+2h)</b>	
8:30-9:30	<b>Registration</b> <i>University Lucian Blaga - Aula “Avram Iancu”, Victoriei Boulevard 5-7</i>
9:30– 10:00	<b>Opening Ceremony</b> <i>University Lucian Blaga - Aula “Avram Iancu”, Victoriei Boulevard 5-7</i>
10:00 – 11:30	<b>Plenary Session: Invited Keynote Speakers</b> <i>University Lucian Blaga - Aula “Avram Iancu”, Victoriei Boulevard 5-7</i> <ul style="list-style-type: none"> <li>• 10:00-10:45, <b>Prof. Eng. DHC Detlef Zuehlke - Pioneer of Industry 4.0 and founder of the world’s first Smart Factory in 2005</b> <i>20 years Smart Factory - lessons learned and future challenges</i></li> <li>• 10:45-11:30, <b>Prof. Eng. Cristian Doicin, Ph.D. - University Politehnica of Bucharest</b> <i>I &amp; AI: Adapting Engineering Education for an AI-Driven Future</i></li> </ul>
11:30 – 12:00	<b>Coffee Break</b> <i>University Lucian Blaga - Aula “Avram Iancu”, Victoriei Boulevard 5-7</i>
12:00 – 13:30	<b>Plenary Session: Invited Keynote Speakers</b> <i>University Lucian Blaga - Aula “Avram Iancu”, Victoriei Boulevard 5-7</i> <ul style="list-style-type: none"> <li>• 12:00 -12:45, <b>Prof. Eng. Anca Drăghici, Ph.D.- Politehnica University of Timișoara</b> <i>Education for Plastic in Circular Economy - Universities Key Partners in Greening the Plastic World</i></li> <li>• 12:45-13:30, <b>Prof. Eng. Nicolae Bâlc, Ph.D. - Technical University of Cluj-Napoca</b> <i>Metal 3D Printing, New Developments and Applications</i></li> </ul>
14:00 – 15:00	<b>Lunch</b> <i>Student Cafeteria - Student Campus Park, Victoriei Boulevard 31</i>
15:30 – 17:00	<b>Parallel Sessions</b> (All sessions from S1 to S8) <i>Faculty of Engineering, 4 Emil Cioran St.</i>
17:00 – 17:15	<b>Coffee Break</b> <i>Faculty of Engineering, 4 Emil Cioran St.</i>
17:15 – 19:00	<b>Parallel Sessions</b> (All sessions from S1 to S8) <i>Faculty of Engineering, 4 Emil Cioran St.</i>
20:00 – 23:00	<b>Gala Dinner</b> <i>“Ramada” Restaurant, 2. Emil Cioran St.</i>
<b>FRIDAY, JUNE 6<sup>th</sup>, 2025 Bucharest Time (GMT+2h)</b>	
10:00 – 12:00	<b>Parallel Sessions</b> (S6 & S8) <i>Faculty of Engineering, 4 Emil Cioran St.</i>
12:00 – 12:30	<b>Coffee Break</b> <i>Faculty of Engineering, 4 Emil Cioran St.</i>
14:00 – 15:00	<b>Lunch</b> <i>Student Cafeteria - Student Campus Park, Victoriei Boulevard 31</i>

## MSE 2025 – parallel sections program

**THURSDAY, JUNE 5<sup>th</sup>, 2025**

*Faculty of Engineering, 4 Emil Cioran St.*

SESSION NO.	CONFERENCE TOPIC	SESSION ROOM	SCHEDULE
S1	Advanced Manufacturing Technologies	IM106	June the 5th 15:30 – 17:00
S2	Modelling, Monitoring and Automation of Manufacturing Processes	IM117	June the 5th 17:15 – 19:00
S3	Design, Manufacturing and Management of Machine Elements, Technological Equipment and Systems, Advanced Materials	IM107	June the 5th 17:15 – 19:00
S4	Mechanical Engineering, Mechatronics and Robotics	IM203	June the 5th 15:30 – 17:00
S5	CAD/CAE/CAM/CAPP/CAX Techniques	IM103	June the 5th 15:30 – 17:00
S6	Production Management, Marketing and Education in Engineering	IM404	June the 5th 17:15 – 19:00
S7	Quality Engineering	IE301	June the 5th 15:30 – 17:00
S8	Occupational Safety Challenges in Industry 4.0 Context	IE101	June the 5th 17:15 – 19:00

**FRIDAY, JUNE 6<sup>th</sup>, 2025**

*Faculty of Engineering, 4 Emil Cioran St.*

SESSION NO.	CONFERENCE TOPIC	SESSION ROOM	SCHEDULE
S6	Production Management, Marketing and Education in Engineering	IM404	June the 6th 10:00-12:00
S8	Occupational Safety Challenges in Industry 4.0 Context	IE101	June the 6th 10:00-12:00

## SESSION 1 - Advanced Manufacturing Technologies

THURSDAY, JUNE 5<sup>th</sup> 2025, 15:30 – 17:00 Bucharest Time (GMT+2h)

**Chairpersons: Sever-Gabriel Racz, Valentin Oleksik, Sebastian-Marian Zaharia**

Faculty of Engineering ROOM IM106

Paper No.	Authors	Paper title	Paper ID
1.	Florin Daniel Edutanu, Dragoş-Florin Chitariu, Emilian Paduraru, Florin Chifan, Neculai-Eduard Bumbu and Mariana Ciorap	A STUDY OF THE 3D PRINTING PROCESS USING A ROBOTIC ARM TO IDENTIFY THE BEHAVIOR OF PETG AND PLA MATERIALS	16
2.	Ana-Maria Bucur, Tomasz Trzepieciński, Mihaela Oleksik, Delia Rebeca Vasilca and Valentin Oleksik	EVALUATION OF THE FORMABILITY OF EN AW-5754 H22 ALUMINIUM-MAGNESIUM ALLOY PERFORATED SHEETS DURING THE SINGLE POINT INCREMENTAL FORMING PROCESS	49
3.	Robert-Marian Bleotu, Sever-Gabriel Racz, Cosmin Preda and Eugen Avrigan	STUDY OF STRAINS AND FORCES IN THE INCREMENTAL FORMING OF CLAD MATERIAL AL 3003/AL 4343	55
4.	Robert-Marian Bleotu, Dorin Vlad, Cosmin Preda and Mihaela Oleksik	ANALYSIS OF THICKNESS REDUCTION IN THE INCREMENTAL FORMING PROCESS OF THE CLAD ALUMINUM ALLOY EN AW 3003/EN AW 4343	56
5.	Nicoleta-Mihaela Casaneanu (Dascalu), Laura-Crina Miraute (Coca), Marius Pislaru and Larisa Ivascu	STRATEGIC INTEGRATION OF INDUSTRY 4.0 AND LEAN SIX SIGMA: ADDRESSING IMPLEMENTATION GAPS IN MANUFACTURING OPERATIONS	57
6.	Ana Gogorici, Daniela-Monica Iordache, Eduard-Laurențiu Nițu and Claudiu Bădulescu	ANALYSIS OF THE IMPACT OF ROTATION SPEED ON THE FSW BEAD PROPERTIES FOR THREE OVERLAPPING ALUMINIUM ALLOYS	61
7.	Radu Torpan, Sebastian-Marian Zaharia, Lucia-Antoneta Chicos, Alin Mihai Pop and Camil Lancea	INFLUENCE OF INFILL DENSITY ON COMPRESSIVE PERFORMANCES OF PEI 1010 PARTS MANUFACTURED BY FUSED FILAMENT FABRICATION PROCESS	68
8.	Paul Sebastian Suciu, Sebastian-Marian Zaharia, Lucia-Antoneta Chicos, Alin Mihai Pop and Camil Lancea	EFFECT OF PROCESS PARAMETERS ON THE COMPRESSIVE BEHAVIOR OF PEKK PARTS FABRICATED BY MATERIAL EXTRUSION ADDITIVE MANUFACTURING	69
9.	Valentin Maniu and Cosmin Piele	IOT SECURITY: A STUDY OF ARCHITECTURE, THREATS, AND FUTURE SAFEGUARDS	74

## SESSION 2 - Modelling, Monitoring and Automation of Manufacturing Processes

THURSDAY, JUNE 5<sup>th</sup> 2025, 17:15 – 19:00 Bucharest Time (GMT+2h)

**Chairpersons: Florin Blaga, Livia-Dana Beju**

Faculty of Engineering ROOM IM117

Paper No.	Authors	Paper title	Paper ID
1.	Mădălin Andreica, Angela Maria Andreica, Alexandru Florin Şanta, Florian Stoian and Gabriel Dragoş Vasilescu	THE ROLE OF VENTILATION DESIGN IN AXIAL FAN MAINTENANCE	7
2.	Angela Maria Andreica, Madalin Andreica, Carla Roxana Enache, Ionel Barbul, Costică Bejinariu and Dragos Gabriel Vasilescu	REAL-TIME MONITORING AND VIBRO-MECHANICAL ANALYSIS: ENSURING THE INTEGRITY OF VENTILATION DUCT SYSTEMS IN HIGH-RISK ENVIRONMENTS	19
3.	Elena Stela Wisznovszky, Aurel Ion Perianu, Valentin Muller and Geza-Mihai Erdodi	DESTRUCTIVE EXAMINATION OF SOLDER JOINTS ON AN SMT MANUFACTURING LINE	46
4.	Geza-Mihai Erdodi, Elena Stela Wisznovszky, Valentin Muller and Aurel Ion Perianu	STUDY ON THERMAL CONTROL OF TECHNOLOGICAL FLOW IN SURFACE-MOUNT TECHNOLOGY SOLDERING OF ELECTRONIC COMPONENTS.	47
5.	Petru-Emanoil Şerban, Lucian Grama and Iulian Stănăşel	THE USE OF THE AHP METHOD IN THE EVALUATION AND SELECTION OF CUTTING TOOLS USED IN MACHINING ON CNC MACHINES	48
6.	Alexei Toca, Vitalie Beşliu, Oana Dodun, Gheorghe Nagîţ, Marius Andrei Mihalache, Margareta Coteata, Livia Beju and Laurenţiu Slătineanu	EVALUATION AND SELECTION OF SOME MANUFACTURING TECHNOLOGIES USING THE AHP METHOD	62
7.	Claudiu-Ioan Indre, Florin Blaga, Dan Claudiu Negrău, Voichiţa-Ionela Hule, Lajos Vereş and Mihai Dan Groza	PROJECT MANAGEMENT OF Z TRANSPORT CONVEYOR PRODUCT ASSIMILATION PROJECT USING MICROSOFT PROJECT	78
8.	Alin Florin Pop, Claudiu Ioan Indre, Florin Blaga, Voichiţa Hule, Lajos Vereş and Traian Buidoş	IMPROVING THE PERFORMANCE OF MANUFACTURING SYSTEMS BY MODELING WITH SPECIFIC ELEMENTS FROM SIMPY LIBRARY	79

## SESSION 3 - Design, Manufacturing and Management of Machine Elements, Technological Equipment and Systems, Advanced Materials

THURSDAY, JUNE 5<sup>th</sup> 2025, 17:15 – 19:00 Bucharest Time (GMT+2h)

**Chairpersons: Dan Dobrotă, Cristina Mohora**

Faculty of Engineering ROOM IM107

Paper No.	Authors	Paper title	Paper ID
1.	Florin Ciofu	DEGRADATION IN A CORROSIVE ENVIRONMENT OF STEELS USED IN THE CONSTRUCTION OF METAL STRUCTURES	6
2.	Marius Darie, Marius Marcu, Sorin Burian, Lucian Moldovan, Marian-Emanuel Ionașcu, Tiberiu Csaszar, Cosmin Colda, Dănuț Grecea, Gabriela Pupăzan, Adriana Andriș and Alexandru Beldiman	EXPLOSION-PROTECTED TECHNOLOGICAL EQUIPMENT – UNCERTAINTY CONSIDERATIONS IN TEMPERATURE MEASUREMENT TESTS	10
3.	Sergiu Lazăr, Ionela Magdalena Rotaru and Dan Dobrotă	ADVANCING GREEN COMPOSITES: A COMPARATIVE ANALYSIS OF SISAL, COIR, AND GLASS FIBER-REINFORCED POLYMERS THERMAL STABILITY AND DEGRADATION BEHAVIOR OF BIO-BASED AND SYNTHETIC FIBER-REINFORCED COMPOSITES: A TGA STUDY	17
4.	Sergiu Lazăr, Ionela Magdalena Rotaru and Dan Dobrotă	DEVELOPMENT OF NEW PRODUCTS– CONSIDERATIONS FOR REHABILITATION TECHNOLOGIES	18
5.	Silvia Iacob, Dana Tilina, Claudiu Bisu and Cristina Mohora	DESIGN OF ASSISTIVE DEVICE FOR SAFETY IMPROVEMENT OF VISUALLY IMPAIRED PEOPLE	29
6.	Alina Ionescu, Dorel Anania, Andra Pena and Cristina Mohora	DETERMINATION OF CLEARANCE IMPACT ON VIBRATIONS OF RADIAL BALL BEARING THROUGH EXPERIMENTAL TESTING	30
7.	Mirjana Bojanić Šejat, Nicolae-Florin Cofaru, Milan Rackov, Aleksandar Živković, Ivan Knežević, Ileana Ioana Cofaru and Dejan Lukić	AN ANALYTICAL APPROACH FOR THE SELECTION OF CUTTING TOOL SUPPLIERS USING THE RSMVC METHOD. CASE STUDY	64
8.	Flaviu Corb, Caius Stănăsel and Iulian Stănăsel		80

## SESSION 4 - Mechanical Engineering, Mechatronics and Robotics

THURSDAY, JUNE 5<sup>th</sup> 2025, 15:30 – 17:00 Bucharest Time (GMT+2h)

**Chairpersons: Peter Košťál, Adrian Marius Pascu**

Faculty of Engineering ROOM IM203

Paper No.	Authors	Paper title	Paper ID
1.	Andreea Mădălina Alexandru and Irina Severin	IMPROVEMENT OF OPERATIONAL EFFICIENCY IN SUPPLY CHAIN MANAGEMENT	45
2.	Fineas Morariu, Timotei Morariu, Alexandru Bârsan, Sever-Gabriel Racz, Adrian-Iosif Maroşan and Andrei-Horia Brănescu	THE DETERMINATION OF MECHANICAL PROPERTIES BY TENSILE TESTING OF HARDFACING WEAR PLATES	50
3.	Radovan Holubek, Daynier Rolando Delgado Sobrino, Peter Križan, Mirim Matúšová and Peter Košťál	ROBOTIC SIMULATION FOR 3D PRINTING: DEVELOPMENT OF AN ADJUSTABLE POSITIONING FIXTURE	51
4.	Iosif-Adrian Maroşan, Claudia-Emilia Gîrjob, Mihai Crenganiş and Cristina Biriş	TRAJECTORY SIMULATION AND ENERGY CONSUMPTION EVALUATION FOR MOBILE ROBOTS EQUIPPED WITH MECANUM WHEELS USING MATLAB	52
5.	Olivia-Laura Petraşcu, Nicolae Ştefanoaea and Adrian Marius Pascu	IMPACT OF INDUSTRIAL AGENTS ON PVC MATERIAL	66
6.	Mihai-Octavian Popp, Gabriela-Petruţa Popp, Anca Lucia Chicea, Ilie Octavian Popp and Fineas Morariu	VALIDATION OF FINITE ELEMENT MODEL FOR STRAIN ANALYSIS OF SINGLE POINT INCREMENTAL FORMING PROCESS	72

## SESSION 5 - CAD/CAE/CAM/CAPP/CAX Techniques

THURSDAY, JUNE 5<sup>th</sup> 2025, 15:30 – 17:00 Bucharest Time (GMT+2h)

**Chairpersons: Nenad Marjanovic, Mircea-Viorel Drăgoi**

Faculty of Engineering ROOM IM103

Paper No.	Authors	Paper title	Paper ID
1.	Nenad Petrovic, Nenad Kostic, Nenad Marjanovic, Ileana Ioana Cofaru, Vesna Marjanovic and Nicolae Florin Cofaru	CARDINALITY CONSTRAINT FOR TRUSS SIZING OPTIMIZATION OF PLANAR TRUSS STRUCTURES	13
2.	Alina Bianca Pop, Sandor Ravai-Nagy, Gheorghe Ioan Pop, Cătălin Filip and Aurel Mihail Țițu	EXPERIMENTAL INVESTIGATION OF CUTTING SPEED EFFECTS ON SURFACE ROUGHNESS AND TOOL WEAR IN TI-6AL-4V MILLING	28
3.	Delia Rebeca Vasilca, Sherwan Mohammed Najm, Eugen Avrigean, Ana-Maria Bucur and Valentin Oleksik	INFLUENCE OF PUNCH GEOMETRY AND HOLE EXPANSION RATIO ON THE HOLE FLANGING PROCESS: A FINITE ELEMENT ANALYSIS	44
4.	Radu-Vlad Pescaru, Tudor George Alexandru, Dragos Rotaru and Diana Popescu	NUMERICAL APPROCHES FOR ANALYZING 3D-PRINTED SOFT GRIPPER BASED ON FINRAY STRUCTURE WITH ARTICULATED CROSS BEAMS	60
5.	Răzvan Udriou and Horia Andronic	THE EFFECT OF ADVANCED TECHNOLOGIES ON LIGHTWEIGHT DESIGN AND MANUFACTURING OF A SAE STEERING WHEEL	63
6.	Mircea-Viorel Drăgoi and Flavia Fecete	A BRAKELESS SAVONIUS TURBINE	83
7.	Radu Emanuil Petrusse, Jelena Šaković-Jovanović, Nikola Soc, Andrei-Horia Brănescu and Paul Gliga	HYBRID MANUFACTURING: OPTIMIZING LATHE FINISHING PARAMETERS FOR IMPROVED SURFACE QUALITY AND DIMENSIONAL PRECISION IN FDM-PRINTED COMPONENTS	90
8.	Ioana Corocea and Călin Neamțu	SEEDING THE FUTURE: LITERATURE REVIEW OF DIGITAL TWIN AND ITS APPLICATIONS	91
9.	Radu Emanuil Petrusse and Nicolae-Claudiu Gresoiu	OPTIMIZING LASER FINISHING PARAMETERS TO IMPROVE SURFACE QUALITY OF FDM-PRINTED PLA AND ABS COMPONENTS	92

## SESSION 6 - Production Management, Marketing and Education in Engineering

THURSDAY, JUNE 5<sup>th</sup> 2025, 17:15 – 19:00 Bucharest Time (GMT+2h)

**Chairpersons: Radu Stanciu, Dan Miricescu**

Faculty of Engineering ROOM IM404

Paper No.	Authors	Paper title	Paper ID
1.	Dana Rad, Musata Bocos and Elena Lucia Mara	CLUSTERING TEACHER EXPECTATIONS IN DIGITAL EDUCATION PROGRAMS USING FUZZY C-MEANS ANALYSIS	88
2.	Alina Felicia Roman, Alina Costin, Tiberiu Dughi, Liliana Ciascai and Letiția Muntean-Trif	MODELING USER ENGAGEMENT AMONG YOUTH IN DIGITAL PLATFORMS: A MACHINE LEARNING APPROACH	89
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## SESSION 6 - Production Management, Marketing and Education in Engineering

FRIDAY, JUNE 6<sup>th</sup> 2025, 10:00-12:00 Bucharest Time (GMT+2h)

**Chairpersons: Daniel Mara, Aurel Mihail Țițu**

Faculty of Engineering ROOM IM404

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1.	Ana-Andreea Muțiu and Dănuț Dumitru Dumitrașcu	GLOBAL TRENDS IN SCIENTIFIC RESEARCH OF QUALITY MANAGEMENT IN THE AUTOMOTIVE INDUSTRY: A BIBLIOMETRIC ANALYSIS	77
2.	Robert Cristian Trif, Oana Dumitrașcu and Dănuț Dumitru Dumitrașcu	A SYSTEMATIC LITERATURE REVIEW ON MILITARY SUPPLY CHAIN MANAGEMENT: TECHNOLOGICAL IMPLICATIONS AND VULNERABILITIES	81
3.	Raluca Sassu, Daniel Mara and Elena-Lucia Mara	DATA-DRIVEN INSIGHTS INTO MEDIA INTEGRATION IN EDUCATION: A DECISION TREE REGRESSION STUDY	86
4.	Daniel Mara, Raluca Sassu and Dana Rad	A DATA-DRIVEN APPROACH TO UNDERSTANDING DIGITAL PARENTING AND YOUTH MEDIA BEHAVIOR	87
5.	Marius Toderici, Aurel Mihail Țițu and Nicoleta Mădălina Stan	HYBRID CLOUD IT INFRASTRUCTURE MAINTENANCE USING ARTIFICIAL INTELIGENCE	35
6.	Mihaela Rotaru	AN EDUCATIONAL FRAMEWORK FOR INTEGRATING NATURE-BASED THINKING INTO SUSTAINABILITY-ORIENTED ENGINEERING EDUCATION	39
7.	Valentin Grecu	INTEGRATING THE EUROPEAN GREEN COMPETENCE FRAMEWORK IN ENGINEERING EDUCATION: A REVIEW OF PROJECTS AND APPROACHES	93
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## SESSION 7 - Quality Engineering

THURSDAY, JUNE 5<sup>th</sup> 2025, 15:30 – 17:00 Bucharest Time (GMT+2h)

**Chairpersons: Georgina Nóra Tóth, Claudiu Vasile Kifor**

Faculty of Engineering ROOM IE301

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2.	Georgiana-Alexandra Voicu and Irina Severin	INTEGRATION OF IATF 16949 IN SOFTWARE DEVELOPMENT LIFECYCLE FOR AUTOMOTIVE INDUSTRY	8
3.	Aurelian Popescu and Claudiu Vasile Kifor	APPLICATION OF FUZZ TESTING FOR FUNCTIONAL VALIDATION IN AUTOMOTIVE	9
4.	Antonov Anca Elena, Georgeta Buică, Constantin Beiu and Remus Dobra	OCCUPATIONAL RISK MANAGEMENT IN THE DESIGN AND MANUFACTURE OF WORK EQUIPMENT USING SR ISO 31000 STANDARD	14
5.	Anca-Victoria Țîrlea and Ștefania Kifor	THE IMPACT OF EMPLOYEE PROFILES AND WORK HABITS ON TELEWORKING	36
6.	Gabriella Farkas, Georgina Nóra Tóth, András Horváth and Zoltán Sebán	ASSESSMENT OF STUDENT FEEDBACK METHODS AND THE ENHANCEMENT OF FACULTY PERFORMANCE IN HIGHER EDUCATION	38
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## SESSION 8 - Occupational Safety Challenges in Industry 4.0 Context

THURSDAY, JUNE 5<sup>th</sup> 2025, 17:15 – 19:00 Bucharest Time (GMT+2h)

**Chairpersons: Lucian-Ionel Cioca, Roland Iosif Moraru**

Faculty of Engineering ROOM IE101

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2.	Timur-Vasile Chis, Anca Antonov, Al-Gburi Hasan Ali Mosleh, Cristina Vlădescu and Cătălin Popescu	MODELING THE RISK OF ABNORMAL FUNCTIONING OF OIL AND GAS WELL BREAKOUT PREVENTERS	11
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## SESSION 8 - Occupational Safety Challenges in Industry 4.0 Context

FRIDAY, JUNE 6<sup>th</sup> 2025, 10:00-12:00 Bucharest Time (GMT+2h)

**Chairpersons: Nicolae Stelian Ungureanu, Doru Costin Darabont**

Faculty of Engineering ROOM IE101

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