

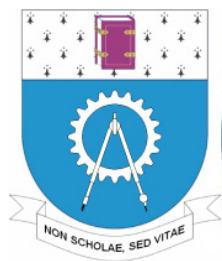
**THE 11th INTERNATIONAL CONFERENCE ON
ADVANCED CONCEPTS IN MECHANICAL ENGINEERING**

ACME 2024

**JUNE 6 – 7, 2024
IAȘI, ROMANIA**



Organized by:



**FACULTY OF MECHANICAL ENGINEERING
"GHEORGHE ASACHI" TECHNICAL UNIVERSITY OF IAȘI
and
ROMANIAN ACADEMY OF TECHNICAL
SCIENCES**



Under the aegis of:

ROMANIAN MINISTRY OF EDUCATION
ACADEMY OF ROMANIAN SCIENTISTS

In partnership with:

SRR - ROBOTICS SOCIETY OF ROMANIA
SRT - ROMANIAN SOCIETY OF THERMODYNAMICS
SIAR - SOCIETY OF AUTOMOTIVE ENGINEERS OF ROMANIA
AROTMM - ROMANIAN ASSOCIATION FOR MECHANISMS AND MACHINE SCIENCE
AFCR - ROMANIAN ASSOCIATION FOR REFRIGERATION AND CRYOGENICS ENGINEERS
SROMECA - ROMANIAN ASSOCIATION OF MECHATRONICS
ART - ROMANIAN TRIBOLOGY ASSOCIATION

CONFERENCE CHAIRMAN

Gelu IANUȘ “Gheorghe Asachi” Technical University of Iași, RO

ORGANIZING COMMITTEE CHAIRMEN

Ioan DOROFTEI “Gheorghe Asachi” Technical University of Iași, RO
Aristotel POPESCU “Gheorghe Asachi” Technical University of Iași, RO

SECRETARY

Carmen BUJOREANU “Gheorghe Asachi” Technical University of Iași, RO

HONORARY COMMITTEE

HONORARY PRESIDENT

Spiridon CREȚU “Gheorghe Asachi” Technical University of Iași, RO

MEMBERS

Păun ANTONESCU N.U.S.T. POLITEHNICA of Bucharest, RO
Costică ATANASIU N.U.S.T. POLITEHNICA of Bucharest, RO
Yvan BAUDOIN Royal Academy Bruxelles, BE
Adrian BEJAN Duke University, NC, USA
Ioan BOSTAN Technical University of Chișinău, MD
Vasile BUMACOV State Agrarian University, MD
Anghel CHIRU “Transilvania” University of Brașov, RO
Daniel CONDURACHE “Gheorghe Asachi” Technical University of Iași, RO
Michel FEIDT University of Nancy, FR
Mihai GAFIȚANU “Gheorghe Asachi” Technical University of Iași, RO
Pedro Silva GIRAO Superior Technical Institute Lisboa, PT
David HUI University of New Orleans, LA, USA
Valeriu JINESCU Romanian Academy of Technical Sciences, RO
Sadik KAKAÇ TOBB University of Economics and Technology Ankara, TR
Dorel LEON “Gheorghe Asachi” Technical University of Iași, RO
Peter LORENZ HTW des Saarlandes, DE
Vasile NASTASESCU Military Technical Academy, Bucharest, RO
Daniel NELIAS INSA Lyon, FR
Tănase PANAIT “Dunărea de Jos” University of Galați, RO
Constantin PANA N.U.S.T. POLITEHNICA of Bucharest, RO
Stoian PETRESCU N.U.S.T. POLITEHNICA of Bucharest, RO
Tudor PRISECARU N.U.S.T. POLITEHNICA of Bucharest, RO
Gheorghe Al. RADU Romanian Academy of Technical Sciences, RO
James WELTY Oregon State University, OR, USA

SCIENTIFIC COMMITTEE

Stelian ALACI	“Ștefan cel Mare” University of Suceava, RO
Cătălin ALEXANDRU	“Transilvania” University of Brașov, RO
Nicușor AMARIEI	“Gheorghe Asachi” Technical University of Iași, RO
Valentin Gheorghe APOSTOL	N.U.S.T. POLITEHNICA of Bucharest, RO
Virgil ATANASIU	“Gheorghe Asachi” Technical University of Iasi, RO
Mihai AVRAM	N.U.S.T. POLITEHNICA of Bucharest, RO
Mugur Ciprian BĂLAN	Technical University of Cluj-Napoca, RO
Dan-Teodor BĂLĂNESCU	“Gheorghe Asachi” Technical University of Iași, RO
Florin BĂLTĂREȚU	Technical University of Civil Engineering Bucharest, RO
Paul BÂRSĂNESCU	“Gheorghe Asachi” Technical University of Iași, RO
Liliana Emilia BEJAN	“Gheorghe Asachi” Technical University of Iași, RO
Karsten BERNS	Technical University of Kaiserslautern, DE
Luminița BIBIRE	“Vasile Alecsandri” University of Bacău, RO
Marin BICĂ	University of Craiova, RO
Sorin Ștefan BIRIȘ	N.U.S.T. POLITEHNICA of Bucharest, RO
Elidia Beatriz BLÁZQUEZ PARRA	University of Málaga, PT
Benyebka BOU-SAID	INSA Lyon, FR
Florin BREABAN	University d’Artois, FR
Cornel BRIȘAN	Technical University of Cluj-Napoca, RO
Carmen BUJOREANU	“Gheorghe Asachi” Technical University of Iași, RO
Salvadore Mugurel BURCIU	“Dunărea de Jos” University of Galați, RO
Nicolae BURNETE	Technical University of Cluj-Napoca, RO
Walter CALLES	HTW des Saarlandes, DE
Marco CECCARELLI	University of Cassino and South Latium, IT
Traian CICONE	N.U.S.T. POLITEHNICA of Bucharest, RO
Constantin CIOCĂNEL	Northern Arizona University, USA
Adrian CLENCI	N.U.S.T. POLITEHNICA of Bucharest – Pitești branch, RO
Monica COSTEA	N.U.S.T. POLITEHNICA of Bucharest, RO
Luciana CRISTEA	“Transilvania” University of Brașov, RO
Geert De CUBBER	Royal Military Academy of Brussels, BE
Bertrand DANO	University of Miami, FL, USA
Alexandru DOBROVICESCU	N.U.S.T. POLITEHNICA of Bucharest, RO
Valeriu DOLGA	Politehnica University Timișoara, RO
Ioan DOROFTEI	“Gheorghe Asachi” Technical University of Iași, RO
Radu DROSESCU	“Gheorghe Asachi” Technical University of Iași, RO
Liviu DRUGHEAN	Technical University of Civil Engineering Bucharest, RO
Valeriu DULGHERU	Technical University of Chișinău, MD
Gheorghe DUMITRAȘCU	“Gheorghe Asachi” Technical University of Iași, RO
Ilie DUMITRU	University of Craiova, RO
Dan ELIEZER	Ben-Gurion University of the Negev, IL
Jean-Christophe FAUROUX	IFMA, Clermont-Ferrand, FR
Cătălin FETECĂU	“Dunărea de Jos” University of Galați, RO
Romeo GLOVNEA	University of Sussex, UK
Viorel GOANȚĂ	“Gheorghe Asachi” Technical University of Iași, RO
Anton HADĂR	N.U.S.T. POLITEHNICA of Bucharest, RO
Abel HERNANDEZ-GUERRERO	University of Guanajuato, MX
Vlad-Mario HOMUTESCU	“Gheorghe Asachi” Technical University of Iași, RO
Bogdan HORBANIUC	“Gheorghe Asachi” Technical University of Iași, RO
Luc HOUPERT	Timken Europe, Colmar, FR
Evangelos HRISTOFOROU	National Technical University of Athens, GR
Gabriela HUMINIC	“Transilvania” University of Brașov, RO
Ion V. ION	“Dunărea de Jos” University of Galați, RO
Romeo IONESCU	“Ștefan cel Mare” University of Suceava, RO
Daniel IOSZA	N.U.S.T. POLITEHNICA of Bucharest, RO
Nicolae ISPAS	“Transilvania” University of Brașov, RO
Koonlaya KANOKJARUVIJIT	Naresuan University, Phitsanulok, T

Sotirios KARELLAS	National Technical University of Athens, GR
Dirk LEFEBER	Vrije Universiteit Brussel, BE
James LIBURDY	Oregon State University, OR, USA
Erwin LOVASZ	Politehnica University Timișoara, RO
Jose MACHADO	University of Minho, Guimaraes, PT
Liviu MARȘAVINA	Politehnica University Timișoara, RO
Silviu Dan MÂNDRU	Technical University of Cluj-Napoca, RO
Gheorghe MANOLACHE	“Gheorghe Asachi” Technical University of Iași, RO
Grigore MARIAN	State Agrarian University, MD
Vistriian MĂTIEȘ	Technical University of Cluj-Napoca, RO
Fabio MIANI	University of Udine, IT
Alexandra MICHAILIDOU	Aristotle University of Thessaloniki, GR
Liviu MIHON	Politehnica University Timișoara
Minu MITREA	Military Technical Academy, Bucharest, RO
Emilia-Cerna MLADIN	N.U.S.T. POLITEHNICA of Bucharest, RO
Costel MOCANU	“Dunărea de Jos” University of Galați, RO
Florentina MOCANU	“Gheorghe Asachi” Technical University of Iași, RO
Corneliu MUNTEANU	“Gheorghe Asachi” Technical University of Iași, RO
Ilie MUSCĂ	“Ștefan cel Mare” University of Suceava, RO
Mircea NĂSTĂSOIU	“Transilvania” University of Brașov, RO
Valentin NEDEFF	“Vasile Alecsandri” University of Bacău, RO
Dumitru NEDELCU	“Gheorghe Asachi” Technical University of Iași, RO
Viorel NICOLAE	N.U.S.T. POLITEHNICA OF Bucharest – Pitești branch, RO
Vincenzo NIGRELLI	University of Palermo, IT
Constantin NIȚU	N.U.S.T. POLITEHNICA of Bucharest, RO
Dumitru OLARU	“Gheorghe Asachi” Technical University of Iași, RO
Dan OPRUȚA	Technical University of Cluj-Napoca, RO
Viorel PALEU	“Gheorghe Asachi” Technical University of Iași, RO
Constantin PANA	N.U.S.T. POLITEHNICA of Bucharest, RO
Carmen Ema PANAITE	“Gheorghe Asachi” Technical University of Iași, RO
Konstantinos PAPAKOSTAS	Aristotle University of Thessaloniki, GR
Mircea PASCOVICI	N.U.S.T. POLITEHNICA of Bucharest, RO
Liliana Doina PÎSLĂ	Technical University of Cluj-Napoca, RO
Dumitru POP	Technical University of Cluj-Napoca, RO
Lucian Horațiu POP	N.U.S.T. POLITEHNICA Bucharest, RO
Viorel POPA	“Dunărea de Jos” University of Galați, RO
Aristotel POPESCU	“Gheorghe Asachi” Technical University of Iași, RO
Ion PREDA	“Transilvania” University of Brașov, RO
Gheorghe PRISĂCARU	“Gheorghe Asachi” Technical University of Iași, RO
Edward RAKOȘI	“Gheorghe Asachi” Technical University of Iași, RO
Eugen Victor Cristian RUSU	“Dunărea de Jos” University of Galați, RO
Adrian SACHELARIE	“Gheorghe Asachi” Technical University of Iași, RO
Filipe SILVA	University of Minho, Guimaraes, PT
Domnica-Mariana STANCIU	“Transilvania” University of Brașov, RO
Ionel STAREȚU	“Transilvania” University of Brașov, RO
Romeo Florin SUSAN-RESIGA	Politehnica University Timișoara, RO
Adrian ȘOICA	“Transilvania” University of Brașov, RO
Ștefan TABACU	N.U.S.T. POLITEHNICA OF Bucharest – Pitești branch, RO
Daniela TARNIȚĂ	University of Craiova, RO
Leonid TARTAKOVSKY	Tehnon Israel Institute of Technology, IL
Ana-Maria TRUNFIO-SFARGHIU	INSA Lyon, FR
Andrei TUDOR	N.U.S.T. POLITEHNICA of Bucharest, RO
Krisztina UZUNEANU	“Dunărea de Jos” University of Galați, RO
Ondřej VACULÍN	Technische Hochschule Ingolstadt, DE
Ion VIȘA	“Transilvania” University of Brașov, RO
Christos VLACHOKOSTAS	Aristotle University of Thessaloniki, GR
Gheorghe VOICU	N.U.S.T. POLITEHNICA of Bucharest, RO

ORGANIZING COMMITTEE

Chairmen	Ioan DOROFTEI	ioan.doroftei@academic.tuiasi.ro
	Aristotel POPESCU	aristotel.popescu@academic.tuiasi.ro
Secretary	Carmen BUJOREANU	carmen.bujoreanu@academic.tuiasi.ro
Section 1	Marcelin BENCHEA	marcelin.benchea@academic.tuiasi.ro
	Ana TUFESCU	ana.tufescu@academic.tuiasi.ro
Section 2	Corneliu MUNTEANU	corneliu.munteanu@academic.tuiasi.ro
	Bogdan ISTRATE	bogdan.istrate@academic.tuiasi.ro
Section 3	Ciprian STAMATE	vasile-ciprian.stamate@academic.tuiasi.ro
	Vlad CÂRLESCU	vlad.carlescu@academic.tuiasi.ro
Section 4	Eugen MERTICARU	eugen.merticaru@academic.tuiasi.ro
	Cristina CAZACU	cristina-magda.cazacu@academic.tuiasi.ro
Section 5	Viorel GOANTA	viorel.goanta@academic.tuiasi.ro
	Marian MARES	marian-anisor.mares@academic.tuiasi.ro
Section 6	Andrei DONTU	andrei-ionut.dontu@academic.tuiasi.ro
	Tudor ULIAN	tudor-marian.ulian@academic.tuiasi.ro
Section 7	Mario HOMUTESCU	vlad-mario.homutescu@academic.tuiasi.ro
	Marius ATANASIU	marius-vasile.atanasiu@academic.tuiasi.ro
Section 8	Alina DUMITRAȘCU	alina-corina.dumitrascu@academic.tuiasi.ro

TOPICS:

- Section 1 Machine Design. Tribology
- Section 2 Materials and Surface Engineering
- Section 3 Mechatronics. CAD. Mechanical Vibrations
- Section 4 Theory of Mechanisms and Machinery. Robotics
- Section 5 Mechanics of Deformable Bodies
- Section 6 Automotives. Engine and Transmission. Road Safety
- Section 7 Applied Thermodynamics, Heat Transfer, and Renewable Energy. Thermal Systems
- Section 8 Technologies in Agriculture and Food Processing

HISTORY AND AIM:

Faculty of Mechanical Engineering from “Gheorghe Asachi” Technical University of Iași organizes the International Conference on **Advanced Concepts in Mechanical Engineering** on a biennial basis. In 2024 we proudly celebrate the 11th edition of the most significant conference hosted by our faculty.

The aim of **ACME** is to outline the image of future mechanical systems, to initiate research in new areas bordering various research fields and to promote innovation in all its forms. The event will provide a forum for interaction between researchers and professionals from academia and industry, while promoting interaction between scientists and engineers. The conference will comprise technical and social programs. The technical program will include plenary and regular oral or poster presentations.

The papers presented at the 6th and 9th editions (ACME2014 and ACME2020) are indexed in Scopus and the 7th and 8th editions (ACME2016 and ACME2018) were indexed in both Web of Science (ISI Thomson) and Scopus.

CONFERENCE FEES:	Authors and members of sponsoring institutions	160 €
	Others	200 €
	Students/PhD students	110 €

The fees include the lunches, gala dinner and ACME 2024 program. For paper publication, see the publication fees below.

DEADLINES:

- Full Paper Submission: March 15th, 2024
- Notification of Full Paper Acceptance: April 30th, 2024

GENERAL INFORMATION:

- The corresponding author must submit the full paper on the conference website page or directly on <https://controls.papercept.net/conferences/scripts/start.pl>
- Based on the authors option, full-length papers will be published in:
 - Environmental Engineering and Management Journal, <http://www.eemj.icpm.tuiasi.ro/>, indexed in Web of Science (2022 IF = 1.1);
 - International Journal of Modern Manufacturing Technologies, <https://ijmmt.ro/>, indexed in Scopus;
 - Buletinul Institutului Politehnic Iasi, <https://cmmi.tuiasi.ro/cercetare/buletinul-institutului-politehnic-iasi/sectia-constructii-de-masini/>, indexed in other international data bases.
- In order to be published, at least one (co)author must be registered participant to the conference and present the paper.
- According to the authors publication option, their papers will be subject to an additional review process, specific to the journal for which it was chosen to be published.

PUBLICATION FEES:	Environmental Engineering and Management Journal	150 €
	International Journal of Modern Manufacturing Technologies	40 €
	Buletinul Institutului Politehnic Iasi	Free of charge

More information on the conference WEB page: <http://www.mec.tuiasi.ro/acme2024>