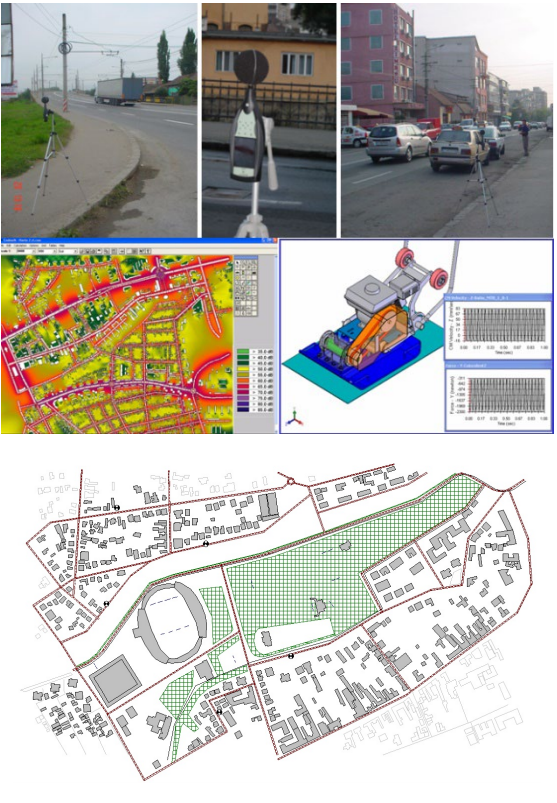
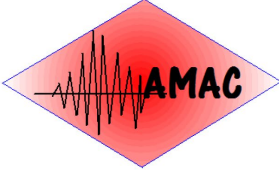


ACOUSTICS, APPLIED MECHANICS AND CAD RESEARCH LABORATORY

Contact details

Name	Acoustics, Applied Mechanics and CAD Research Laboratory	
Acronym	AMAC	
Logo		
Site	https://research.utcluj.ro/index.php/industrial-engineering-and-management.html	
Address	103-105 Muncii Blv., 400641, Cluj-Napoca, Romania	
Faculty Department	Faculty of Industrial Engineering, Robotics and Production Management Mechanical Systems Engineering Department	
Telephone	+40 264 401783 +40 264 401781	
Fax	-	
Director	Prof. Dr. Eng. Diana Ioana Popescu	
e-mail	Diana.Popescu@mep.utcluj.ro	

Areas of expertise

Advanced acoustics & Soundscape engineering

- Environmental & Urban acoustics, Industrial noise control, Bioacoustics & Psychoacoustics, Physical & Wave acoustics:

Applied mechanics

- Analytical and computational mechanics, Mechanical vibrations, Dynamic systems & Machine design, Biomechanics

Digital design & Smart engineering (CAD/CAE)

- Surface and solid modeling, Parametric modeling, Virtual prototyping, CAE.

Team

Prof.Dr.Eng. Diana Ioana Popescu, Prof.Dr.Ing.Math. Nicolae Ursu-Fischer, ȘI. Dr. Ing. Lucia Margareta Ghiolțean, Conf.Dr.Eng. Radu-Mircea Morariu-Gligor, Assist.Dr.Ing. Luminița Pleșa, ȘI.Dr.Ing. Iuliana Fabiola Moholea, Drd.Ing. Viorel Așchilean

Representative projects

“Modelling, simulation and precision in the study of mechanical systems vibrations, with applications for crankshafts of internal combustion engines and piston compressors”, CNCSIS A41-1049, (2004-2005)

“Modelling, algorithms and precision in the study of mechanical systems vibrations”, CNCSIS A-1259, Ministry of Education and Research, (2006)

“Development of engineering models and methods for assessment and prediction of the environmental noise”, PNII-Idei, (2007-2010)

“Fundamental and applied research on the modernization of the vibrating plate compactors - design and execution”, Managerial Agency for Scientific Research, Innovation and Technological Transfer, RELANSIN, (2001-2003)

“Research and studies on perception, assessment, control and prediction of industrial noise”, CNCSIS, A33, Ministry of Education and Research, (2004-2005)

Significant results

The most representative publications of the past years:

- Popescu D.I., *Hearing Protection by Attitude among Young Adults*, Invited paper, 31st International Congress on Sound and Vibration, Incheon, Korea, Proceedings, ISSN 2329-3675, ISBN 978-89-94-02142-3, paper nr. 434, 2025
- Popescu, D.I., Moholea, I.F., Așchilean, V., *Noise Pollution in Urban Areas During Outdoor Music Festivals*, Proc. of the 30th International Congress on Sound and Vibration, Amsterdam, ISSN 2329-3675, ISBN 978-90-90-39058-1, Paper nr. 304, 2024.

- Popescu, D.I., *A study of the Romanian framework and the challenges in implementing the noise mapping legislation*, Archives of Acoustics, Vol. 48, No. 2, pp. 273–280, 2023.
- Morariu-Gligor, R.M. The Study of the Dynamic Behavior for a Tamping Rammer, *Symmetry*, 2022, 14, 980.
- Plesa, L., Manea, L.D., Istoan, R., Recycling plastic wastes in order to obtain new building materials, *Journal, IOP Conference Series: Materials Science and Engineering*, Vol. 1251, Issue 1, Pages 012013, IOP Publishing, 2022.
- Moholea, Iuliana F., Determination and analysis of the coefficient of restitution in the case of some mechanical systems, *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering*, Vol.65, Issue IV, p.471-476, 2022.
- Ursu-Fischer, N., Popescu, D.I., Moholea, I.F., The accurate computing of clothoid coordinate values and of the distance between a point and a clothoid, *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 64, Issue 2, pag. 207-218, Jun. 2021.
- Ursu-Fischer, N., Popescu, D.I., A Geometric Method for Optimize the Ackermann-Type Steering Mechanism, *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering*, vol.64, Issue II, pag. 219-226, June 2021
- Popescu, D.I., Case Study of the Environmental Noise and its Perception in the City of Cluj-Napoca, Romania, *Archives of Acoustics*, Vol.45 No.4, pag. 625-631, 2020
- Popescu, D.I., Popescu, A.D., Analysis of the Subjective Perception of Noise in Cluj-Napoca, Romania, *ICSV26 – The 26th International Congress on Noise and Vibration, Montreal, Canada, 7-11 July 2019*, Proceedings, Montreal bridges 2019, Edited by: ICSV26 Local Committee in Montreal, ISSN 2329-3675, ISBN 978-1-9991810-0-0, Paper no. 541, 6 pag.
- Popescu, D.I., "Environmental Noise in Urban Areas, between Acceptance and Taking Measures", *18th International Conference Noise Control*, 26-29 May 2019, Janow Podlaski, Poland, Conference Proceedings on CD, Central Institute of labour Protection – CiopPib, Polish Academy of Science, ISBN 978-83-7373-273-5, 10 pag.
- Crişan, A., Morariu-Gligor, R., A Study on the Impact Force in Case of Tamping Rammers, *Romanian Journal of Acoustics and Vibration*, Vol. 16 / I, 2019, pag. 78 – 83, 2019;
- Ursu-Fischer, N., Popescu, D.I., Radu, I., Moholea, I.F., "Multiple solutions of interpolation with second and third degree Bézier polynomials", *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering*, Vol. 61, Issue 2, pag. 159-166, Jun 2018.
- Popescu, D.I., Ursu-Fischer, N., Moholea, I.F., "Road Traffic Noise in Cluj-Napoca City – Ten Years after the First Strategic Noise Map", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60, Issue 4, pag. 515-520, Nov. 2017.
- Morariu-Gligor, R.M., Crisan, A.V., Serdean, F.M., "Optimal Design of an One-way Plat Compactor", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60, Issue 4, pag. 557-564, Nov 2017.
- Popescu, D.I., "Study of Particle Motion on a Helical Vibrating Surface", *Trans Tech Publication: Current Solutions in Mechanical Engineering, Applied Mechanics and Materials*, vol. 823, pag. 13-16, Jan. 2016, DOI 10.4028/www.scientific.net/Amm.823.

Books:

- Ursu-Fischer, N., Popescu, D.I., "Elemente de statică", Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 2024, 714 p.
- Morariu-Gligor, R.M., Şerdean, Florina M., Moholea, Iuliana F., Computer programming in C language with applications in mechanical engineering, vol. I, Editura Tehnica-Info, Chişinău, 2023, 223 p.
- Ursu-Fischer, N., "Elemente de cinematică", Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 2021, 746 p.
- Şerdean, F.M., Moholea, I.F., Morariu-Gligor, R.M., Programare în limbajul Matlab cu aplicaţii în inginerie mecanică, vol. I, Ed. UTPRESS, Cluj-Napoca, 2021, 247 p.
- Ursu-Fischer, N., Ursu M., "Metode numerice în tehnică", Ed.Casa Cărţii de Ştiinţă, Cluj-Napoca, 2019.
- Ursu-Fischer, N., "Elemente de mecanică analitică", Ed. Casa Cărţii de Ştiinţă, Cluj-Napoca, 2015.

Significant solutions:

- *Urban noise intelligence*: Developing advanced methods for the assessment, prediction, and mapping of urban acoustic environments.
- *Human-centric mitigation*: Engineering strategic solutions to reduce environmental and industrial noise exposure and its impact on human health.
- *Dynamic systems optimization*: High-fidelity modeling and simulation of industrial vibrating machinery
- *Applied mechanics excellence*: Providing integrated theoretical and practical solutions across the full spectrum of statics, kinematics, and dynamics.

The offer addressed to the economic environment

Research and development	We invite industrial collaboration to co-innovate in acoustics and vibrations. Our team provides specialized expertise for projects focused on high-precision assessment, predictive modeling, and mitigation of noise and vibration pollution.
Consulting	Consulting in the fields of: Acoustics, Noise mapping Vibrations, Machine dynamics, Vibro-acoustic diagnostics Computer aided design and engineering graphics.
Applied engineering services	Assessment of noise and vibration Computer aided drafting, design and engineering 3D modelling

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