



1. Name and Academic Rank: Mohamad El Dandachy, Associate Professor, (full time), Faculty of Engineering

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2. Education: Degrees, Discipline, Institution and Date:

- Ph.D. Civil Engineering – Materials – University of Grenoble Alpes, Grenoble, France, 2016
- M.S in Civil Engineering – Geomechanics – Joseph Fourier University, Grenoble, France, 2013
- M.E in Civil Engineering – Structure – Lebanese University, Tripoli, Lebanon, 2013

3. Academic experience

- Beirut Arab University, Associate Professor, July 2025 – present, Full Time
- Beirut Arab University, Assistant Professor, September 2017 – June 2025, Full Time
- University of Grenoble Alpes, Grenoble, France, 2017, Postdoctoral researcher, 2016-2017
- Joseph Fourier University, Grenoble, France, 2017, Lecturer, Part-time, 2014-2017
- University Institute of Technology, Grenoble, France, 2017, Lecturer, Part-time, 2014-2017
- Polytech University, Grenoble, France, 2017, Lecturer, Part-time, 2014-2017

4. Non academic experience:

- Junior civil Engineer, EDF – DTG (General technical Division), February to June 2013.
- Internship at GENECO, in a 5.5 km highway project, located in Tripoli, Lebanon, June and July 2011.

5. Certification or professional registration:

- Reviewer for the top journals: Journal of Building Engineering, Construction and Building Materials.
- Editorial Review Board Member for the Journal of Asian Scientific Research (Q2 Scopus indexed)

6. Membership in Professional Organizations

- Order of Engineers and Architects, Tripoli.

7. Honors and Awards:

- Excellence in Teaching, Research and Community Service at BAU, June 5th 2026.
- One of the Most Active Researcher Award at BAU for the academic year 2024-2025.
- Excellent presentation award, in the International Conference on Civil, Architectural and Environmental Engineering 2023.
- Postdoc research and PhD thesis funded by national project MACENA (Study of the pre-stressed concrete containment vessel of a nuclear power plant during a severe accident), main contributors are EDF (Electricity of France) and CEA (French Alternative Energies and Atomic Energy Commission, 2013-2017).
- MSc honours received from UGA committee for completing the first semester ranked first among 18 students, 2013.
- Competitive scholarship for pursuing higher studies, “Predoc”, Joseph Fourier University, 2012-2013



8. Service activities

Beirut Arab University (2017 - Present):

- Teaching: Mechanics of Materials, Construction Materials I and II, Concrete Technology, Project Planning and Management, Surveying I & II, Linear Algebra, Structures I and II, Concrete Technics and Repair, Quality Control in Concrete Construction, Rehabilitation of concrete structures.
- Administration: Student advising and mentoring, course offering, construction material lab development.
- Advising and supervision: final year projects advising, internships supervision, master thesis supervision.
- Community service: Conducting on site non destructive tests for the Municipality of Tripoli. Visits to high schools to inform about new majors at BAU.

Joseph Fourier University (2015- 2017):

- Teaching: Metallic Construction/Structures, Reinforced Concrete, Solids and Fluid Mechanics, Modelling of Structures.
- Master 2 research projects supervision:
 - Hydro-mechanical behaviour of concrete construction joints: Experimental study.
 - Hydro-mechanical behaviour of a representative structural volume of a reinforced concrete containment vessel of a nuclear power plant: Numerical study.
 - Evolution of the intrinsic permeability of concrete after undergoing thermo-mechanical loading in compression.
 - Evolution of transfer properties of steel-rebar concrete interface during push-in tests.

University Institute of Technology (2014- 2016):

- Teaching: Mathematics MAT1, Mathematics MAT2, Displacements in Structures.

Polytech University (2014- 2015):

- Teaching: Concrete lab.

9. Research Interests

- Thermo-hydro-mechanical behavior of concrete.
- Experimental testing of construction materials: Geopolymer concrete, mortar, bond properties, reinforced concrete, mechanical and durability properties.
- Finite element modelling of reinforced concrete structures.
- Dynamic behavior of steel-concrete composite beams under moving loads.

10. International Scientific Activities and Research Cooperation

Research Cooperation with the Université Centrale Lille, University of Wolverhampton and United Arab Emirates University.

11. National Research Cooperation

Research Cooperation with the University of Balamand.

12. Principal publications and presentations:

9.1 Journal Publications



1. AlZaatiti F, El-Mir A, Barraaj F, Al Rawi Y, Najjar R and Ezzedine El Dandachy M (2026) Selected properties and life cycle assessment of mortars incorporating municipal solid waste bottom ash and silica fume for sustainable construction. *Front. Built Environ.* 12:1952676. DOI: 10.3389/fbuilt.2026.1952676
2. Aouf, G., AlZaatiti, F., Sabsabi, A., Aouf, R., & Dandachy, M. E. E. (2026). Steel-Concrete bond behavior through Push-In tests and nonlinear finite element simulations. *Civil Engineering Journal*, 12(6), 2578–2604. <https://doi.org/10.28991/cej-2026-012-06-024>
3. AlZaatiti, F., Halwani, J., Amacha, N., Dandachy, M. E. E., Najjar, R., & Soliman, M. R. (2026). Coupled RRI–WEAP framework for integrated water balance and quality assessment under climate change and population growth in Abou Ali River basin. *Environmental Challenges*, 24, 101563. <https://doi.org/10.1016/j.envc.2026.101563>
4. Hachem, A. a. K., Barraaj, F., El-Mir, A., & Dandachy, M. E. E. (2025). Steel–Mortar and flexural Mortar–Mortar bond strengths of Metakaolin-Based geopolymer. *Engineering Reports*, 7(11). <https://doi.org/10.1002/eng2.70476>
5. Hawa, L.; El-Mir, A.; Khatib, J.; Nasr, D.; Assaad, J.; Elkordi, A.; Ezzedine El Dandachy, M. Optimization of Metakaolin-Based Geopolymer Composite for Repair Application. *J. Compos. Sci.* **2025**, 9, 527. <https://doi.org/10.3390/jcs9100527>
6. Dandachy, M. E. E., Briffaut, M., Dufour, F., & Pont, S. D. (2025). Methods in a continuous framework to assess transfer properties of concrete structures. *Results in Engineering*, 104736. <https://doi.org/10.1016/j.rineng.2025.104736>
7. Mohamad Ezzedine El Dandachy, Matthieu Briffaut, Frederic Dufour, Experimental investigation of the transfer properties of ribbed and round steel rebars concrete interfaces under shear loading and after unloading, *Construction and Building Materials*, 2024, 451, 138746. <https://doi.org/10.1016/j.conbuildmat.2024.138746>
8. Mohamad Ezzedine El Dandachy, Dalia AlMohamad, Matthieu Briffaut, Abdulkader El-Mir, Joseph J. Assaad, Hilal El-Hassane, Assessment of concrete-to-concrete shear bond behavior using 3-D direct shear testing, *Results in Engineering*, 2024, 103000, ISSN 2590-1230, <https://doi.org/10.1016/j.rineng.2024.103000>.
9. Ezzedine El Dandachy, M.; Hassoun, L.; El-Mir, A.; Khatib, J.M. Effect of Elevated Temperatures on Compressive Strength, Ultrasonic Pulse Velocity, and Transfer Properties of Metakaolin-Based Geopolymer Mortars. *Buildings* 2024, 14, 2126. <https://doi.org/10.3390/buildings14072126>.
10. Hachem, A.A.K., Khatib, J.M. and Ezzedine El Dandachy, M. (2024), "Assessment of interfacial mortar-mortar bond and pure shear strength of metakaolin-based geopolymer", *International Journal of Building Pathology and Adaptation*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJBPA-02-2024-0031>.
11. Abdulkader El-Mir, Tony Fayad, Joseph J. Assaad, Mohamad Ezzedine El Dandachy, Jamal Khatib, Hilal El-Hassan, Multi-criteria optimization of SBR-modified mortar incorporating polyethylene terephthalate waste, *Case studies in Construction Materials*, 2024, Vol. 20, e03295, <https://doi.org/10.1016/j.cscm.2024.e03295>.
12. Mohamad Ali, Mohamad Ezzedine el dandachy, Ahmad ellakany, Dynamic Response of Steel-concrete Beams with Partial Interaction Due To Moving Loads, *Journal of Science and Construction*, ISSN: 2789-7605/ Vol.4 No.4, 2023.
13. Hachem, Y.; Ezzedine El Dandachy, M.; Khatib, J. M. Physical, Mechanical and Transfer Properties at the Steel-Concrete Interface: A Review. *Buildings* 2023, 13 (4). <https://doi.org/10.3390/buildings13040886>.



14. Bouhjiti E, Ezzedine El Dandachy M, Briffaut M, Dufour F, Baroth J, Dal Pont S., New continuous strain-based description of concrete's damage-permeability, *International Journal for Analytical and Numerical Methods in Geomechanics*, 2018, DOI: 10.1002/nag.2808.
15. Ezzedine El Dandachy M, Briffaut M, Dal Pont S, Dufour F. Induced anisotropic gas permeability of concrete due to coupled effect of drying and temperature, *Key Engineering Materials*, 711: 871-878, 2016, DOI: 10.4028/www.scientific.net/KEM.711.871.
16. Ezzedine El Dandachy M, Briffaut M, Dufour F, Dal Pont S. An original semi-discrete approach to assess gas conductivity of concrete structures, *International Journal for Analytical and Numerical Methods in Geomechanics*, 2016, DOI: 10.1002/nag.2655.

9.2 Papers Book Section

None

9.3 Conference Proceedings

1. Dandachy, M. E. E., Khatib, J. M., Hachem, A. a. K., Ali, M. M. A., & Mustafa, A. F. (2025). Investigation of the bond strength of metakaolin-based geopolymer mortar as a repair material. *AIP Conference Proceedings*, 3430, 030004. <https://doi.org/10.1063/5.0291832>
2. Layal Hawa, Jamal M Khatib, Mohamad Ezzedine El Dandachy, Investigation of the density, ultrasonic pulse velocity and strength properties of metakaolin based geopolymer mortars. *Materials Research Proceedings*, 2025, 48, 350–358. <https://doi.org/10.21741/9781644903414-39>
3. Reem Allam, Jamal M Khatib, Mohamad Ezzedine El Dandachy, Investigation of drying shrinkage, water absorption and strength properties of metakaolin based geopolymer mortars. *Materials Research Proceedings*, 2025, 48, 342–349. <https://doi.org/10.21741/9781644903414-38>
4. Mohamad Ezzedine El Dandachy, Lovey Hassoun, Jamal M Khatib, Effect of Elevated Temperatures on the Mechanical Properties of Metakaolin-based Geopolymer Mortars, 4th International Turkish World Engineering and Science Congress, Antalya, Turkey, 2nd of December 2023.
5. Hassan Ghanem, Ayman Trad, Mohamad El Dandachy, Adel Elkordi, Effect of Wet-Mat Curing Time on Chloride Permeability of Concrete Bridge Decks, The Official International Congress of the Soil-Structure Interaction Group in Egypt (SSIGE), 2018, DOI: 10.1007/978-3-030-01932-7_16.
6. Hassan Ghanem, Yehia Obeid, Ayman Trad, Mohamad El Dandachy, The Impact of Steel Fibers on the Properties of Self Compacting Concrete, The Official International Congress of the Soil-Structure Interaction Group in Egypt (SSIGE), 2018, DOI: https://doi.org/10.1007/978-3-030-01932-7_12
7. Ezzedine El Dandachy M, Briffaut M, Dal Pont S. and Dufour F. Effect of creep in traction and temperature on concrete permeability, *Congrès Français de Mécanique*, Lille, 28 August - 1 September, 2017.
8. Ezzedine El Dandachy M, Briffaut M, Dufour F, Dal Pont S. Numerical coupling between mechanical state and permeability for concrete applied on a 3D splitting test, *Alert Workshop 2016*, 3-5 October 2016 Aussois, France.
9. Ezzedine El Dandachy M, Briffaut M, Dufour F, Dal Pont S. Numerical coupling between damage and gas permeability for concrete applied on a 3D splitting test,



Proceeding of Coupled Problems, Eds. Schrefler B., Oñate E. and Papadrakakis M., Venice, 18-20 May, 2015.

10. Ezzedine El Dandachy M, Briffaut M, Dufour F, Dal Pont S. Coupling by means of strong discontinuity approach between crack opening and gas permeability for concrete, Congrès Français de Mécanique, Lyon, 24-28 August, 2015.
11. Dufour F, Ezzedine El Dandachy M, Briffaut M, Dal Pont S. Coupling between cracking and permeability to assess leakage rate of concrete structures, The Fifteenth International Conference on Civil Structural and Environmental Engineering Computing, Prague, 1-4 September, 2015.
12. Briffaut M, Ezzedine El Dandachy M, Dal Pont S, Dufour F. Permeability analysis of the interface between concrete and rebars during push in test, Strategies for Sustainable Concrete Structures, Rio De Janeiro, 14-16 December, 2015.