

Mohamad Kanaan

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DOB: January 24, 1981



1. Education – degree, discipline, institution, year

- Ph.D., Mechanical Engineering, AUB, February 2015.
Thesis title: “Effectiveness of Upper-Room UVGI in Spaces Conditioned by Localized Air-Conditioning Systems: Enhancing Air Quality and Energy Performance.
Research area: Indoor Environmental Quality & Energy Efficiency in Buildings
Department: Mechanical Engineering
Advisors: Prof. Nesreen Ghaddar and Prof. Kamel Ghali
- M.E., Mechanical Engineering, AUB, June 2010.
- M.S., Applied Mathematics, USJ, November 2007.
- B.E., Mechanical Engineering, Lebanese University, May 2007.

2. Academic experience

- Beirut Arab University, Associate Professor of Mechanical Engineering, Fall 2020 – 2021 up to the present, full time.
- Beirut Arab University, Assistant Professor of Mechanical Engineering, Spring 2014-2015 till Spring 2019-2020, full time.

3. Service activities

- Key contributor to the formulation of the Lebanese Energy Efficiency Buildings (LEEB) Code 2025.
- Member of the Student Disciplinary Board at BAU for academic year 2025-2026.
- Member of the Committee of Strategic Planning at the Faculty of Engineering for academic year 2025-2026.
- Member of the Student Affairs committee at the Faculty of Engineering at BAU for the academic years 2024-2025, 2025-2026.
- Member of the University Students Affairs Committee for academic years 2023-2024, 2024-2025, 2025-2026
- Academic Coordinator for the undergraduate level at the Faculty of Engineering since academic year 2022-2023, 2023-2024
- Member of the Engineering Website Committee in the Faculty of Engineering at BAU for the academic years 2018-2019 and 2019-2020.
- Member of the ME Assessment Committee for ABET accreditation (first self-study report submitted in June 2018)
- Presenter of the Faculty of Engineering in the Graduate Studies Open House, 2017.

- Member of the Scheduling committee in the Faculty of Engineering at BAU since 2016-2017 till present.
- Member of the ME Advisory board since 2016.
- Advisor of ASHRAE Student Branch at BAU for the academic year 2016-2017. Organized of a series of site visits and seminars for ME students.
- Member of the National Lebanese Technical committee (NLTC 180) for Solar Energy Standards in Lebanon, Libnor, 2016
- Secretary of the Faculty of Engineering Faculty Council for the academic year 2016-2017.
- Member of the Student Activities Committee in the Faculty of Engineering at BAU for the academic year 2015-2016.
- Reviewer for the International Journal of Heat and Technology.
- Reviewer for the International Journal of Ventilation.
- Reviewer for the journal of Engineering, Technology & Applied Science Research
- Reviewer for Indoor Air journal
- Reviewer for Scientific Reports journal

4. Professional Memberships

- ASHRAE Associate Member since January 10, 2016.

5. Research interests

- Indoor Environmental Quality
- Energy Efficiency in Buildings
- CFD Applications
- Ultraviolet Germicidal Irradiation Systems
- Evaporative Cooling Systems

6. Publications and presentations

Journal publications

- **Kanaan, M.**, Amine, S., Hmadi, M., 2025. Numerical Analysis of Ceiling-Mounted Air Curtains for Reducing Airborne Pathogen Transmission in Offices. *European Journal of Pure and Applied Mathematics*. In press.
- Hmadi, M., Amine, S., and **Kanaan, M.**, 2025. Active evaporative cooling for pilgrim tents in Mina, Makkah: A sustainable approach to energy and water efficiency. *Case Studies in Thermal Engineering*, 75 (2025) 107119.
- **Kanaan, M.**, Gazo-Hanna, E. and Amine, S., 2025. CFD Assessment of the Inhaled Air Quality in a UFAD-Conditioned Office with Personalized Ventilation. *Engineering, Technology & Applied Science Research*, 15 (5), p. 28128–28135.
- **Kanaan, M.**, Gazo-Hanna, E. and Amine, S., 2025. Mathematical Modelling of Upper Room UVGI in UFAD Systems for Enhanced Energy Efficiency and Airborne Disease Control: Applications for COVID-19 and Tuberculosis. *Mathematical and Computational Applications*, 30(4), p.85.

- **Kanaan, M.**, Amine, S. and Hmadi, M., 2025. Optimized Solar-Powered Evaporative-Cooled UFAD System for Sustainable Thermal Comfort: A Case Study in Riyadh, KSA. *Thermo*, 5(3), p.26.
- **Kanaan, M.**, Amine, S. and Gazo-Hanna, E., 2024. Computational Simulation and Analysis of Local Thermal Comfort and Indoor Air Quality in Space with Displacement Ventilation. *Engineering, Technology & Applied Science Research*, 14(5), pp.16383-16388.
- **Kanaan, M.**, Amine, S. and Gazo-Hanna, E., 2024. Optimizing supply conditions and use of return air in UFAD system: Assessment of IAQ, thermal comfort and energy performance. *Results in Engineering*, 24, p.103426.
- Abou Moughlbay, A., **Kanaan, M.**, 2020. Comparative Analysis of Kinematic Redundancy Resolution Techniques in Case of Hierarchical Tasks. *Journal of Mechanical Engineering Research and Developments*, 43(2):396-405.
- **Kanaan, M.**, 2019. CFD optimization of return air ratio and use of upper room UVGI in combined HVAC and heat recovery system. *Case Studies in Thermal Engineering*, 15, p.100535.
- **Kanaan, M.**, 2019. Modeling of Contaminant Dispersion in Underfloor Air Distribution Systems: Comparison of Analytical and CFD Methods. *Building Performance Simulation*. 12 (6): 759-769.
- **Kanaan, M.**, A. Abou Moughlbay, 2018. Comparative CFD Investigation of Upper Room UVGI Efficacy with Three Different Ventilation Systems. *International Journal of Applied Engineering Research* 13 (21):14897-14902.
- **Kanaan, M.**, K. Chahine, 2018. CFD study of ventilation for indoor multi-zone transformer substation. *International Journal of Heat and Technology* 36 (1): 88-94.
- **Kanaan, M.**, N. Ghaddar, K. Ghali. 2016. Localized air-conditioning with upper-room UVGI to reduce airborne bacteria cross-infection. *Building Simulation* 9: 63-74.
- **Kanaan, M.**, N. Ghaddar, K. Ghali, G. Araj. 2015. Upper room UVGI effectiveness with dispersed pathogens at different droplet sizes in spaces conditioned by chilled ceiling and mixed displacement ventilation system. *Building and Environment*, 87: 117-128.
- **Kanaan, M.**, N. Ghaddar, K. Ghali, G. Araj. 2014. New airborne pathogen transport model for upper-room UVGI spaces conditioned by chilled ceiling and mixed displacement ventilation: Enhancing air Quality and energy Performance. *Energy Conversion and Management* 85: 50-61.
- **Kanaan, M.**, N. Ghaddar, K. Ghali. 2012. Quality of inhaled air in displacement ventilation systems assisted by personalized ventilation. *HVAC&R Research* 18(3): 500-514.
- **Kanaan, M.**, N. Ghaddar, K. Ghali. 2010. Simplified model of contaminant dispersion in rooms conditioned by chilled-ceiling displacement ventilation system. *HVAC&R Research* 16(6): 765-783.

Conference proceedings

- **Conference paper**, October 2-3, 2014, Beirut, Lebanon
M. Kanaan, N. Ghaddar, K. Ghali, G. Araj. CFD Investigation of the Performance of Localized Air-Conditioning with Upper-Room Ultraviolet Germicidal Irradiation in Reducing Cross-Infection. First International ASHRAE Conference and Exhibition on Efficient Building Design, Materials and HVAC equipment technologies.
- **Conference paper**, February 24-26, 2014, Doha, Qatar
M. Kanaan, N. Ghaddar, K. Ghali, G. Araj, W. Chakroun, M. Darwish. Upper Room UV-Disinfected Mixed Air Use for Chilled Ceiling Displacement Ventilation System to Enhance Air Quality and Performance. First International Conference on Energy, Indoor Environment in Hot Climates.
- **Conference poster**, February 15, 2014, Beirut, Lebanon
M. Kanaan, N. Ghaddar, K. Ghali, G. Araj. The use of Upper-Room Ultraviolet Germicidal Irradiation for Chilled Ceiling Mixed Displacement Ventilation System to Reduce Disease Transmission. The 4th Annual AUB Biomedical Research Day.
- **Conference paper**, June 16-19, 2013, Prague, Czech Republic
Kanaan M., Ghaddar N., Ghali K. Localized Air-Conditioning with Upper-Room Ultraviolet Germicidal Irradiation for Energy Conservation and Reduction of Disease Transmission. Proceedings of CLIMA 2013 11th REHVA World Congress & 8th International Conference on IAQVEC "Energy Efficient, Smart & Healthy Buildings".