



**Politecnico  
di Torino**  
Department of Energy  
"G.Ferraris"



## **SEMINAR BY DR. MARJAN ALAVI**

### **PREPARING NEXT GENERATION OF GLOBAL ENGINEERS THROUGH PROBLEM-BASED LEARNING**

**WEDNESDAY, JULY 23, 2025, 14.00 - 15.00 PM**

**Sala multimedia DENERG CORSO MONTEVECCHIO 71,  
SECOND FLOOR**



This seminar explains Problem-based learning (PBL) at McMaster University's W Booth School of Engineering Practice and Technology (SEPT). Highlighting the Master of Engineering (MEng) programs, we will showcase how students engage in eight-month projects to solve real-world challenges defined by community partners. Real-world examples will demonstrate how McMaster University cultivates innovation, equips students to become inclusive leaders, and provides collaborative channels for industry and international partners. We will conclude by exploring diverse collaboration opportunities, including MEng project leadership, community partnerships, and joint research supervision, enabling the audience to participate in shaping the future of engineering education and fostering a brighter world.

The seminar will also explain the VSP-based FDI approach for early diagnosis of power electronic inverters and how this theory can be applied to other applications such as battery lifetime prediction, faulty cell diagnostics, winding short circuit isolation, and other non-electrical fields (leak detection for example).

#### **Speaker's Biography** Dr. Marjan Alavi, P.Eng., SMIEEE

Dr. Marjan Alavi is an Assistant Professor (Teaching-Track) at the W Booth School of Engineering Practice and Technology (SEPT), McMaster University. She is the Program Lead for the Master of Engineering in Systems and Technology and past Program Lead for the Master of Engineering in Manufacturing Engineering. She is also an Associate Member of the Departments of Electrical and Computer Engineering and Mechanical Engineering at McMaster University.

Dr. Alavi holds a Ph.D. in Electrical Engineering from Nanyang Technological University (NTU), Singapore, a Master of Science in Micro- and Nano-Electronics from Sharif University of Technology, and a Bachelor of Science in Control and Instrumentation Engineering from K.N. Toosi University of Technology. She was a recipient of the Singapore International Graduate Award (SINGA) in 2010.

Her research focuses on Cyber-Physical Systems, Smart Cities, and model-based and data-driven diagnosis and prognosis of hybrid systems.

Dr. Alavi is a Senior Member of IEEE (SMIEEE) and has held multiple leadership roles, including Chair of the IEEE Canada Membership Services Committee (2025–present), Vice-Chair (2024–2025), and Past Chair of IEEE Women in Engineering (WIE) Hamilton Section (2022–2023). She previously served as the Treasurer for IEEE Toronto Section (2016–2020) and Vice-Chair of the IEEE Industry Applications Society Toronto Section (2014–2015).

Dr. Alavi has integrated industry-relevant certifications and hands-on experiential learning into her courses. Dr. Alavi is also committed to public engagement and knowledge dissemination. She was featured as an invited expert in the TV series "Engineering Evolved", broadcast in Canada and available on Amazon Prime. She has been recognized with the McMaster Student Union (MSU) Teaching Award for Community Engagement (2024) and multiple IEEE Certificates of Appreciation for her contributions to engineering education and professional service.