WESTERN UNIVERSITY
Department of Mechanical and Materials Engineering

Fully Funded MESc Position in Experimental Fluid Mechanics and Turbulence

Thesis-based Master of Engineering Science (MESc) - May 2027 Start

Supervisor: Dr. Amir Sagharichi | Incoming Assistant Professor | London, Ontario, Canada

Position	MESc research student
Start date	May 2027 (Summer term)
Eligibility for this opening	Canadian citizens or permanent residents
Program	Full-time, thesis-based MESc in Mechanical and Materials Engineering

PROJECT OVERVIEW

I am seeking a motivated graduate student to join a new research program focused on the fundamental physics of turbulent shear flows, flow separation and reattachment, and bluff-body aerodynamics. The research will be primarily experimental, with opportunities to integrate computational fluid dynamics where it strengthens the physical interpretation of the measurements.

Depending on the final thesis topic, research methods may include particle image velocimetry (PIV), force measurements, turbulence statistics, spectral analysis, and modal analysis. Research questions will examine how inflow conditions and geometry govern boundary-layer development, coherent structures, turbulent transport, unsteady loading, and wake dynamics.

POTENTIAL RESEARCH DIRECTIONS

- Freestream-turbulence effects on separated and reattaching flows
- Bluff-body and ground-vehicle aerodynamics
- Boundary-layer development, coherent structures, and wake dynamics
- Flow control, drag reduction, and flow-induced loading
- Turbulence in renewable-energy, environmental, or hydraulic applications

RESEARCH ENVIRONMENT AND TRAINING

As the first graduate student in the group, the student will have the opportunity to help shape the experimental research program from an early stage and will receive close research mentorship. The project is intended to provide rigorous training in experimental design, optical flow measurement, data analysis, scientific programming, and technical communication. Depending on the final thesis topic, the student may also use CFD as a complementary tool for interpreting three-dimensional and unsteady flow physics.

The broader research program builds on work in freestream turbulence, separated flows, Ahmed-body aerodynamics, backward-facing steps, grid-generated turbulence, ecohydraulics, and wind-energy applications.

CANDIDATE QUALIFICATIONS

- **Required:** a four-year bachelor's degree (or equivalent) in Mechanical Engineering, Aerospace Engineering, Civil Engineering, or another relevant engineering discipline.
- **Academic standing:** a minimum average of 78% (B+, North American equivalent) over the last two years of full-time study or the last 20 courses, which is the MME threshold for funded MESc admission.
- A strong foundation in fluid mechanics, thermofluids, aerodynamics, or transport phenomena.
- Strong analytical ability, technical writing skills, initiative, reliability, and an interest in research.
- **Assets:** prior experience with experimental fluid mechanics, PIV/optical diagnostics, MATLAB, Python, CFD, signal processing, turbulence statistics, laboratory instrumentation, or data acquisition.

PROGRAM AND FUNDING

The MESc in Mechanical and Materials Engineering at Western University is a full-time, thesis-based research degree that is designed to be completed in two years (six terms). Students admitted to the MESc research program receive a funding package that covers tuition and basic living expenses for the first two years, in accordance with Western University and MME funding policies. Continued funding is conditional on maintaining a minimum 78% cumulative average and satisfactory research progress.

Strong candidates are encouraged to apply for external scholarships, such as the Ontario Graduate Scholarship (OGS) and the NSERC Canada Graduate Research Scholarship – Master's (CGRS M), which may increase their overall funding. The supervisor will support these applications.

Important timing: Western's formal deadline for Canadian citizens/permanent residents applying for a May start is March 1. Because the department requires time to assess complete files and arrange funding, interested candidates should contact the supervisor well before the formal deadline.

HOW TO EXPRESS INTEREST

Please email the following materials as one PDF:

- Curriculum vitae (CV)
- Unofficial transcripts from all post-secondary institutions
- A brief statement (approximately one page) describing your research interests, relevant experience, and why this position is a good fit
- Optional: one representative publication, project report, thesis excerpt, or portfolio item that demonstrates relevant research or technical experience

Email	Sagharia@myumanitoba.ca
Subject line	MESc Position - May 2027 - [Your Name]

Applications will be reviewed as they are received until the position is filled. Only candidates selected for further discussion will be contacted. A prospective supervisor cannot make a formal admission decision; the selected candidate must complete Western University's official graduate application (including two reference letters) and be assessed by the program. Applications are welcome from all qualified candidates, including members of equity-deserving groups.

ABOUT THE SUPERVISOR

Dr. Amir Sagharichi is an incoming Assistant Professor in the Department of Mechanical and Materials Engineering at Western University. His research spans experimental turbulence, separation and reattachment, bluff-body aerodynamics, grid-generated turbulence, ecohydraulics, and wind energy, with extensive use of time-resolved PIV, force measurements, spectral/modal analysis, and complementary CFD.

Official program information: Western University - MME Graduate Research Program and Application Process