

Dr. Catherine Mavriplis
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Catherine Mavriplis is a Professional Engineer registered in Virginia and is currently an Associate Professor of Mechanical Engineering at University of Ottawa. Catherine spent 25 years in the US after obtaining her Bachelor's degree in Mechanical Engineering from McGill. Graduate studies in Aeronautics and Applied Mathematics at MIT led her to a postdoc at Princeton and a tenured Associate Professor position at the George Washington University where she spent 14 years in the Department of Mechanical and Aerospace Engineering, Catherine also enjoyed her two years as a program manager at the US National Science Foundation's (NSF) Division of Mathematics. As a research fellow at the University of Oklahoma and the US NOAA National Severe Storms Laboratory, she broadened her interests to meteorology.

What do all of these experiences have in common, you ask? A love for computational fluid dynamics modeling in different fields: first in aerodynamics, then in combustion and MEMS, and finally in severe weather modeling. Catherine's expertise is in high order adaptive methods for direct numerical simulation – which means she loves to use math and computers to calculate complex and beautiful flows that approach turbulence.

Back in Canada since 2008, Catherine has returned to aerodynamics with the Canadian Aeronautics community so vibrant and has expanded to biomedical flows as well.

Since 1996, Catherine has been designing and delivering funded programs to advance women in science and engineering, first through the FORWARD program with colleagues from George Washington and Gallaudet University, and more recently as the NSERC / Pratt & Whitney Canada Chair for Women in Science & Engineering.

Catherine has had significant involvement in the US NSF ADVANCE program since its inception with two Leadership Awards for the FORWARD to Professorship workshop, which has offered information and advice to over 1300 doctoral science and engineering women since 2003. At the University of Oklahoma, she led an ADVANCE PAID project to advance women in the Central US States. Attending the ADVANCE Principal Investigators Meeting in Alexandria, Virginia a few weeks ago was certainly exhilarating as the breadth, scope and success of ADVANCE projects were clearly visible.

Work with the Pratt & Whitney Canada's Inaugural Women's Leadership Forum in 2007 and presenting her work at the two International PROMETEA conferences on Women in Engineering in Paris in 2007 and 2009 added industrial and international experience in this field. Through Pratt & Whitney Canada's generous support of the bid for the NSERC Chair, Catherine is able to offer programs for and conduct research on women in science & engineering, for the entire spectrum "from the classroom to the boardroom". Examples include cultural diversity sessions on teamwork and communications in engineering at Pratt & Whitney Canada as well as for the general engineering public in Ottawa and Take the Final Step, a bilingual workshop for science and engineering women associate professors of Ontario and Québec seeking promotion to the highest rank of Full Professor.

Catherine serves on the Board of Directors of the Computational Fluid Dynamics Society of Canada, the WINSETT Center and the Ottawa Branch of the Canadian Aeronautics and Space Institute.

Q. Who inspired you to become a Mechanical Engineer?

A. My dad for sure. In school I loved mathematics and still do. Besides skiing, it's my favourite thing to do. But my dad, being an engineer for Canadair / Bombardier, convinced me that using my math to build things was the ticket for interesting studies and eventually a career. Listening to countless stories at the dinner table of how airplanes get built or how turbulence acts on a wing, aerospace engineering was already engrained by the time I hit university applied mathematics and fluid mechanics courses. Wrapping that all up in a love for computer programming sealed it for me. I work in computational fluid dynamics.

Q. Who (other than family members) do you admire most?

A. I admire people who are smart technically but also in their interactions with people. People who are aware of their surroundings and the people they're dealing with and can communicate their technical knowledge effectively and appropriately to create great things as part of a team.

Q. What has been your most important professional accomplishment to date?

A. Training female doctoral students and watching them grow into accomplished well-balanced individuals.

Q. If you had not chosen a career in engineering academia, what else would you have done?

A. I would probably be an applied mathematician or in engineering industry, although it was unclear to me upon graduating in 1983 how I would fare in a big

engineering company. Computer programming would have been fun too. It wasn't clear to me at the time that that could be a job. If we get away from these topics completely, I guess I would have been in a position of leadership for women of some sort. I always used to think I could do the principal's job at our all girls school, after being class president for a number of years.

Q. What's one piece of advice you would give to Women in Engineering?

A. If you love or even like engineering and the disciplines associated with engineering (you don't have to love them all), find something you can get excited about and do well at, then find good people to work with. They can make all the difference. All the while, lead a balanced life outside the engineering environment and don't take any flack for doing so.

