Terms of engagement

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INVOLVEMENT RATHER THAN HIGH-TECH GIMMICKS IS THE KEY TO MAMOUN MEDRAJ'S AWARD-WINNING TEACHING STYLE

This is the seventh in a series of 13 profiles of some of Concordia's leading instructors. Here, NOW profiles Mamoun Medraj, professor in the Department of Mechanical and Industrial Engineering.

In the Star Trek universe, the iconic phrase "Engage!" belongs to Captain Picard. In Mamoun Medraj's classroom, it might sum up the teaching approach of this professor of materials engineering.

From the beginning, the award-winning teacher was on a mission: to engage students from the lectern. "Nowadays, it is very difficult to get the attention of students, never mind encourage them to come to class," says Medraj. "You must provide something they won't find elsewhere."

Mamoun Medraj engages his students by infusing his lectures with national and global context. | Photos by Concordia University

Medraj, who joined the Department of Mechanical and Industrial Engineering in 2002, has developed a variety of low-tech techniques to get students to look up from their smartphones and gaming consoles and focus on his lectures.

He does not formally apply gamification, which in the education field uses the thinking and methods of gaming to engage students. However, he purposely leaves intriguing omissions in the lecture-note slides he posts online prior to a class. To fill in the blanks, students must come to class to have Medraj provide the keys. "They must actively participate to figure out the puzzle," he says.

He encourages interjection in class, which can make for some lively sessions, especially considering a core class may number as many as 100 students. He also receives inquiries from students and other educators around the world who are intrigued by the method.

Medraj punctuates his classes with live demonstrations. For instance, a lesson on brittle fractures (materials experiencing sudden failure without warning) becomes much more immediate and relevant for students when re-created before their eyes. He also throws in personal or humorous stories to make concepts more visual and memorable for them. Additionally, he holds smaller informal workgroup sessions for his Concordia students to encourage them to get to know him and their fellow students.

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Learning about the national and global contexts is also engaging for students, he says. "The topics I teach relate to materials and manufacturing and I always stress the context of Canada's situation or what's happening in the world." An example: How this country might better focus on sustainable and exportable technologies instead of selling off natural resources and then buying them back as high-priced manufactured goods.

Medraj earned a master's in mechanical engineering in his native Jordan before coming to Canada in 1998 to pursue a PhD at McGill University. Although drawn to the field by a love of physics and mathematics, "even as a child when I looked into the future, I saw myself as a teacher," he says. "It truly was my dream."

In addition to teaching four courses, Medraj is also involved in extensive research along with the administration of his department. He served as a graduate program director in engineering from 2006 to 2009 and on the curriculum committee and faculty council. He credits like-minded and supportive colleagues such as Mechanical and Industrial Engineering Chair Martin Pugh for helping him innovate.

As for the students: "From their evaluations, I think they appreciate that from the first day of the first semester, I regard them as future engineers," he says. "I am very aware that in a few years they will be working in industry or government, or conducting further research." They will be engaged.

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