

Engineering Students Plan for Green

What better way to have students learn than to have them do? That's the idea behind a proposed Engineering Centre for Experiential Learning (ExCEL), to be housed in a new building designed with "green" in mind. The building will house extensive facilities for the Faculty's many student teams working on vehicles (solar car, Mini Baja and Formula SAE) and other projects (e.g. concrete toboggan, autonomous robots). There will also be meeting rooms, study space and a common area to enable student collaboration

Shortly after becoming Dean in 2008, David Wilkinson identified a lack of space dedicated to experiential learning as a critical need for the Faculty. He envisioned a student centre that would incorporate cutting-edge green technologies, and that would be planned and designed using a significant element of student input. When this idea was presented to engineering students at their



spring 2010 AGM, some interested students were motivated to develop projects covering the design process and a needs assessment.

A group of seven Mechanical Engineering students under the supervision of Jim Cotton, associate professor in Mechanical Engineering and associate director of the McMaster Institute of Energy Studies (MIES), is conducting a feasibility study. This group is working in collaboration with Hamilton chapters of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the Mechanical Contractors Association (MCA). The students are looking specifically at the building's energy requirements based on the student needs assessment, such as heating/cooling and electrical, with a view to modifying and/or enhancing them by means of green technology. Another group of six Engineering & Management students, supervised by Dr. David Reid, is conducting a needs assessment to identify space requirement through surveys and interviews, as well as performing an independent survey of green technologies.

The stated goal is to produce as much energy onsite over one year as the building will use. Students will explore and consider all current technology such as combined heat and power generation, geothermal, wind and solar photovoltaic, along with the

environmental issues of the technologies. Other initiatives to be considered include LED lighting, extreme insulation approaches, appropriate use of shading, passive solar lighting, and a green lining roof system. Over the course of the project, it is expected that students from many engineering fields will become involved. "The idea is to produce a net-zero-energy building," says Dr. Cotton.

The current group of students understands that this is a long-term project. The short-term benefits, however, are very valuable. Students have an opportunity to interact with industry and professional organizations, and they are working on something that is practical as well as related to coursework.

Dr. Cotton notes that the local ASHRAE and MCA chapters have been very supportive. "These organizations realize there is a growing need for green buildings in the future and, as a result, a need for engineering graduates with the knowledge and expertise who can accept the challenge."

If the building is ultimately approved, it will be funded in part through a student levy, with the remainder to be solicited from alumni and corporate partners. ■