Bookmarks on engineering education

How do you create an engineering education program that really prepares students for the reality of professional work? How do you get kids excited about engineering? And how do you foster early science education so kids are ready for the challenges of engineering education? There's no single answer–but educators, legislators, and engineers across Canada and the U.S. have come up with some creative responses.

If you're looking for information on Canadian engineering programs, PEO's website is a good place to start. For a hyperlinked list of Canadian universities, click on "Licensing & Registration" from the left menu on the home page, then "Educational Requirements" and "Canadian universities offering accredited engineering programs" on the next screen. "Links" from the home page provides portals to an array of engineering programs and education, science, and other resources. Here's a look at some other innovative and informative sites:

Generation-E: a new brand of engineer
http://www.generation-e.ca

This site, an initiative led by the Association of Consulting Engineers of Canada with funding from Human Resources Development Canada, is a visual feast. It was created for Canadian secondary students considering their career options; however, it also has something for university students and for educators (teachers and guidance counsellors). To skip the Macromedia Flash introduction, click "skip intro" at screen bottom to move straight to links. Hover your mouse around the sphere to see the links. "Teachers" leads to a storehouse of training materials, teachers' kits and curriculum grids. From the "high school students" link, click "site map," then "university hot spots." Roll your mouse over dots on the map to hear audio clips of engineers talking about their work.

McMaster Engineering & Management (E&M) Program
http://www.eng.mcmaster.ca/engandmgt

Many careers progress toward business and engineering management, and the growth of dual degree programs reflects this reality. McMaster University recognized this trend back in the mid-1970s, and since then has offered a five-year combined degree program in nine engineering disciplines. For more on E&M's rationale and impetus, click on "What is E&M" and "Why take E&M."

U of T Skoll Program
http://www.mgmt.utoronto.ca/skoll/

For an example of a joint BASc/MBA program, take a look at the University of Toronto's newly-minted Jeffrey Skoll program, named after one of eBay's co-founders. Students fast-track through a BASc, a professional experience year (PEY), a management internship, and an MBA. Click "Program Overview" and scroll to the bottom for a graphic comparison between conventional and Skoll program paths. "Curriculum and Courses" leads to more detail on the PEY internships.

Queen's University Integrated Learning Centre (ILC)
http://ilc.queensu.ca/

Queen's brand-new ILC program integrates education on many levels. It links theoretical instruction with professional skills, integrates across courses, disciplines and years, and connects with industry and societal concerns. Under "Vision" on the left, click on "Philosophy" and "Background" for a description of this multidisciplinary, self-directed approach. Under "Facilities," learn more about the "Live Building," which will be designed as an active teaching tool.

Enterprise Program at MichiganTech
http://www.enterprise.mtu.edu/

Since the fall of 2000, a new curriculum option at Michigan Tech allows "enterprise teams" of 20 to 30 students from varied disciplines to work for several years in a business-like setting, solving real-world engineering problems suggested by industry. Faculty act as coaches and mentors. Click "Start" in the screen centre to scroll through teams. Click on a team's logo. The links to teams' web pages provide details of ongoing projects. The "Student Information" link on the home page gives minimum curriculum requirements and concentration options.

Tufts: The Center for Engineering Educational Outreach (CEEO)
http://www.ceeo.tufts.edu/

Massachusetts is the only state to mandate engineering education in every public school grade. A primary supporter of this three-year-old initiative is Tufts University's Center for Engineering Education Outreach. Starting from the left navigation frame, "K-12 Curriculum" leads to teaching support, including curriculum and lesson plan resources such as ROBOLAB@CEEO, a database of activities using LEGO® materials as a learning tool for students, tips for classroom implementation, and other great resources. Undergraduate level support, including course descriptions and syllabi can be found at the "College Curriculum" link.

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