

## PROPOSAL FOR MUN DESIGN MENG

Engineering design is a mix of art, mathematics and science. It deserves to be at the highest level at universities. It is the focus of engineering in industry and in undergraduate engineering schools everywhere. However, it is rarely found at the graduate level at Universities. The focus there is usually on research. In industry, research is sometimes used to support design. At Universities, however, it is just the reverse, with design, on rare occasions, supporting research. A Design MEng could help establish a design culture at the graduate level. It is proposed that a Design MEng program be established at MUN. It would operate in parallel with a Research MEng, which already exists at MUN. Enrollment in the Research MEng by our own BEng graduates is low. The Design MEng would be targeted at our own BEng graduates. Its main goal would be to produce better engineers for NL. The Strategic Plan of MUN states that MUN has a special obligation to the people of NL. It calls for engagement with the local community. A Design MEng could help make this vision for MUN and NL a reality.

## FEATURES OF PROPOSED DESIGN MENG

Each student in the Design MEng would have to complete a thesis project and take a set number of courses. The normal duration of the program would be 5 semesters. There would be a fast track option similar to that of the Research MEng.

Special scholarships would be needed to fund Design MEng work, with a stipend for the student and a grant for prototype construction. An obvious source for these would be RDC.

A Board of Studies would run the program. It would seek out challenging problems for students to solve. It would also look after thesis examination. Members of the board would act as project advisors. There would be no supervisors in the usual Research MEng sense. Students would have total control over the projects and would be responsible for them.

Ideas for projects could come from professors, students, industry and the people of NL. The new MEng could connect the people of NL to MUN in a way never seen before. MUN could challenge the people of NL to bring forward ideas for projects. It is expected that the outcome of each project would be patentable, which implies it could be the basis for a new local industry. Thus, it could contribute significantly to the well being of NL.

## NOTES ON PROPOSED DESIGN MENG

The first semester of the program would focus on project selection and concept evaluation. The second semester would focus on detailed design of the chosen concept. The third semester would focus on prototype construction. The fourth semester would focus on prototype testing and design iteration. The fifth semester would focus on thesis preparation. The program could be compressed or expanded by one semester.

Students would be expected to pick up most of the information they need for their projects themselves. They would be expected to conduct research to support their projects. They would have to take one new course titled Engineering Design. Other potential courses, which already exist, include: Design of Experiments; Experimental Methods; Environmental Engineering; Safety & Risk Engineering; Entrepreneurial Engineering; Advanced Engineering Materials. As part of the design course, each student would have to manage a number of Engineering One junior design projects. Performance as managers would be graded. Also, as part of the design course, each student would spend one day each week throughout a semester doing design work in industry. Again, performance would be graded. There would also be assigned design tasks and lectures on various design topics in the course.

## ROLE OF COURSES

During the conceptual design phase of the project, students would have some free time. A few courses there could be used to help kick start the project and bring students up to speed in the project area. However, courses are time consuming, and too many of them would delay thesis progress and might even degrade the quality of what is finally produced, because they would drag the process out too much over time. Students would not have time to really focus on their projects. The end result would be an inefficient process. From an Engineering point of view, it would be a bad design. Also, at the graduate level, students should not be spoon fed information. Students taking courses just for the sake of taking courses does not belong at that level. Students should think and learn on their own. Every course should count. Three courses should be sufficient.