

Centre for Teaching and Learning 2016 Summer Student Employment Award Final Report

ENGG 404: Engineering Safety and Risk Management Course Expansion and Transition to Blended Learning Format

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Context

As a recipient of a Centre for Teaching and Learning 2016 Summer Student Employment Award under the supervision of Dr. Lianne Lefsrud, I worked with the instructional staff of the David and Joan Lynche School of Engineering Safety and Risk Management (Dr. Lianne Lefsrud, Professor John Cocchio, and Dr. Norman Nibber) as well as Education Developer Ellen Watson from the Centre for Teaching and Learning on the initiative to re-structure the course *ENGG 404: Leadership in Risk Management*. This course revision was necessitated by a decision by the Faculty of Engineering to make *ENGG 404* a mandatory course for all Engineering students, which would increase enrollment in the course from approximately 200 students per year to a peak enrollment of approximately 670 students in a semester, with the first influx of students in the 2016 Fall semester (approximately 270 students).

Work Summary

This award allowed me to work on several projects related to the re-structuring *ENGG 404* and the incorporation of blended learning into the course, resulting in the development of approximately 20-25 hours of increased student - professor engagement in a workshop style when compared to previous semesters. The initiatives are summarized in Table 1. These initiatives are not necessarily related to the original proposal. These changes are due to project focus changes, scope changes and changes in priority (moved to an extended two-year timeline), after consultation with Centre for Teaching and Learning experts, unforeseen changes to enrollment, and identification of key learning objectives for various components of the course.

Table 1: Summary of *ENGG 404* Initiatives

Initiative	Reason for Initiative	How this will Improve Instruction
Statistical analysis of exam performance in last 3 years.	Identify areas of in need of increased teaching focus.	Increased emphasis on “weak” areas to address areas of concern in student understanding of key concepts.
Learning the structure of, writing and revising the Seminar Learning Objectives for the team project and guest speakers. <ul style="list-style-type: none"> Facilitated creation of detailed seminar plans 	Identify key learning objectives to guide re-structuring of the course, design of seminar schedule, and ensure students understand key concepts assessed in the team project.	These seminar plans ensure students understand key concepts for the team project and have an opportunity to approach the instructional staff for guidance. They also facilitate introducing new

<p>to guide instructional staff throughout the term.</p>		<p>instructional staff to the course.</p>
<p>Re-structuring <i>ENGG 404</i> course schedule and course plan.</p> <ul style="list-style-type: none"> • Created new schedule moving team project into the seminars • strategically scheduled guest speakers and lecture material to be in line with the team project, and • scheduled content within seminars to allow students to be exposed to instructor demonstration of concepts followed by application to the students' team project. 	<p>Moving to a blended learning format with team project component in the seminars in order to accommodate larger class sizes and ensure students have access to instruction team for guidance when working on the team project. Work on the team project will mimic a workplace environment.</p>	<p>Maximize student learning opportunities and increase professor-student engagement by transitioning the team project component to a guided structure within the seminar periods. This will be supported by online content that students will access out of structured class time. Students begin the team project two weeks earlier than in previous semesters.</p>
<p>Creation of online content (eClass) in the form of quizzes, surveys, and instructional information.</p>	<p>In order to allow in-seminar time for the team project, content and background information will need to be delivered to students outside of the classroom.</p>	<p>Designed to introduce background information for seminars and guest speakers, reinforce student learning through small quizzes, and provide guidance to students on the material that they are expected to review before attending the seminar periods to work on their team project. This allows for more face-to-face interaction with instructional staff, gives students time to review material before it is applied, and reinforces content that is used in the team project.</p>
<p>Contributed to <i>ENGG 404/ENGG 406</i> courseware content improvements, mainly in improving the applied team project requirements.</p>	<p>Analysis of past exams, understanding of Seminar Learning Objectives, and changes to course content revealed gaps and redundancies in what the team project was intended to assess.</p>	<p>Team project requirements are designed to assess what the instructional staff considers the key outcomes of the team project component of the course.</p>

As mentioned in Table 1, this award also allowed me to develop electronic and online resources within the current University of Alberta eClass (Moodle) platform to support the new class structure with blended learning initiatives. Specifically, the developed resources include:

- Transitioning assignments to an online submission and marking format to reduce the workload in marking, increase teaching assistant efficiency, and improve accuracy of grade tracking. This effort was leveraged by others to develop the online submission and marking of the midterm and final exams and the team projects.
- Creation of an online "Working Style" survey and subsequent response analysis program (through Excel) to assist instructors in selecting student teams for the team project component of the course. This replaces an in-seminar method used in the past.
- Creation of online quizzes to support instructor lessons and guest speaker lectures.
- Revision and selection of videos used in delivering course content, and transitioning the selected videos to an online delivery format in order to maximize face-to-face engagement time (in the seminar periods) between students and instructional staff.
- Creation of a database for inventory of past student team projects.