Queen's UNIVERSITY

Senate Committee on Academic Development
Report to Senate – Meeting of October 23, 2008

Proposal to introduce a Master of Engineering Education in the School of Graduate Studies and Research

Introduction

The proposal to introduce a Master of Engineering Education in the School of Graduate Studies and Research (SGSR) was reviewed by the Senate Committee on Academic Development (SCAD) at its meeting of October 1, 2008. B. Brouwer, Associate Dean of

Conclusions/Recommendation

Recommendation:

On academic grounds, SCAD recommends that Senate approve the establishment of a Master of Engineering Education in the School of Graduate Studies and Research.

Respectfully submitted,

Patrick Deane
Chair, Senate Committee on Academic Development

Committee Members:
Members
C. Baker
[illegible]

P. Deane (Chair)
M. Lombardi
D. McKeown
K. O'Brien (Secretary)
P. Oosthuizen
M. Roberts
D. Stockley
M. Whitehead

Senate Budget Review Committee

Report to Senate – October 7, 2008

Proposal to establish the program Master in Engineering Education.

Introduction

On October 7, 2008, the Senate Budget Review Committee (SBRC) met to discuss the Proposal to establish the program Masters in Engineering Education.

Analysis and Discussion

The projected expenses for the program were primarily for administration and web development. It was explained that the required 0.3 FTE staff position already existed and would be filled by someone with extra capacity from a department where enrolment levels were lower than normal. The web design work will be part of a larger initiative within the Faculty to move towards the delivery of distance learning in the future.

The majority of the discussion concerned teaching and supervision of additional students in the Faculty of Applied Sciences. Within the proposal it stated that specific faculty members, who were named, have "agreed with their department Heads that any additional workload that this entails would not affect their other duties, nor require financial compensation." The members of the committee are troubled by this statement and strongly urge the members of the Faculty of Applied Science to absorb the additional teaching into the agreed workload of the members. While the two named members may be willing, it may not be the case for new faculty and a program should not be considered viable over the long term with faculty teaching overload.

Conclusions/Recommendation

The committee agreed to recommend to Senate that it approve the program Masters in Engineering Education. The members of the SBRC look forward to

hearing of the progress of this exciting innovative program and wish them all

Memo

Queen's UNIVERSITY
UNIVERSITY SECRETARIAT

TO Patrick Deane, Chair, SCAD

FROM Jennifer Medves, Chair SBRC
Georgina Moore, Secretary of the Senate

DATE September 22, 2008

SUBJECT Proposed Masters of Engineering Education

Mackintosh-Corry Hall, Room B400
Queen's University
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-6095
Fax 613 533-2793
www.queensu.ca/secretariat

The attached proposal has been submitted to the Senate by the School of Graduate Studies and Research and is referred to SCAD and Budget Review for approval. The proposed new Masters in Engineering Education was approved by the Graduate Council on September 10, 2008 and the Faculty of Applied Science Faculty Board on May 23, 2007 and is submitted to the Senate for approval.

Please review the proposal and report back to Senate with your committee's recommendation. Professor Caroline Baillie, Faculty of Applied Science should be contacted if you have any questions or if you would like her to attend a committee meeting. Please contact her directly at ext. 36249 or by email at caroline.baillie@queensu.ca.

Thank you for your attention to this matter.

Georgina

Georgina Moore
Secretary of the Senate

copy: Kathy O'Brien, Secretary, SCAD + copy of Proposal
Bob Cooke, Secretary, SBRC + copy of Proposal
Janice Deakin, Associate Vice-Principal and Dean, School of Graduate Studies and Research

Committee on Academic Development
and
Senate Budget Review Committee

Program Approval Submission

This form is to be used when seeking approval for all new or substantially revised programs of study leading to a degree, diploma or certificate

FACULTY/SCHOOL: School of Graduate Studies and Research

PROPOSED NEW PROGRAM: Masters in Engineering Education

PROPOSED IMPLEMENTATION DATE: Sept 2009

DATE OF FACULTY BOARD (APPLIED SCIENCE) APPROVAL: May 23rd 2007

DATE DIVISION II APPROVAL March 25th 2008

DATE DIVISION III APPROVAL: May 15th 2008

DATE OF SCHOOL OF GRADUATE STUDIES COUNCIL APPROVAL: Sept. 10th 2008

SUBMISSION CONTACT

[redacted]

NAME: Caroline Baillie

TELEPHONE: 533-6249

EMAIL: caroline.baillie@queensu.ca

[redacted]

Table of Contents

Part A

1 Objectives..... 3
1.1 Learning objectives 3
1.2 Governance and relation of the program to existing faculties, programs, and

1.3 Capacity for the proposed program 4
1.4 Relationship to Institutional objectives.....4

3 Curriculum 5

PART A

1 Objectives

[redacted]

bodies in the US, Canada, Australia, Europe and South Africa in particular for development

The MEngEd program is a multidisciplinary program administered by the Faculty of Applied Science and with supporting instruction by the Faculty of Education, Development Studies

and Sociology. As is occurring at other institutions developing graduate programs in engineering education, the program will be administered and housed by

Students will be expected to interact with the broader community by participating and presenting at local seminars, and at national and international conferences on engineering

2 Admission Requirements

Applicants will be accepted into the program with a minimum of a second class standing in an honours bachelor degree in Engineering or related discipline if accompanied by experience in

Education (such as volunteer teaching, tutoring or teaching others in a non scholarly activity). Applicants without an engineering degree who are accepted will be guided by the MEngEd committee to a suitable program of coursework.

The four lead faculty will be members of the MEngEd committee which acts as the

Education together with supporting courses in engineering and in education as well as electives in development studies and sociology. The MEngEd program will enable graduates

Part-time students will be expected to take twice as long to complete the degree requirements

[redacted]

project/thesis interest/ student background), to develop the most appropriate set of electives

for their background and future career path.

Table 2 - Coursework for Thesis option (2 core plus 2 electives plus thesis)

ENED 840 Introduction to Learning and Teaching in Engineering (CHEE 840*)*

This course is intended to help students understand the basic issues of learning and

teaching practices which facilitate the development of knowledge, skills and

Electives within Engineering Education (numbers to be assigned upon approval)

*ENED 8XX** *Engineering Design Education*

This course will address the special features required in the teaching and

*EDUC 840** *Issues in Mathematics, Science, and Technology Education*

An interdisciplinary seminar critically examining the cultural, social and political context of mathematics, science and technology education as it exists in schools

universities), and informal settings (museums, science centres). Topics include related issues in ethics, ecology, and environmental education; policy making and political control of education, equity, and career opportunities; public images of

studies as well as contemporary debates. The course is intended to ensure that students have a high-level knowledge and understanding of the major philosophical tenets in development theory as well as their historical contexts and contemporary shifts.

DEVS 802 Methods in Development Studies*

This course exposes students to a range of research methodologies and ethical

admission into a full-time program.

Admission Requirements

The minimum qualification for admission is a second class standing in an honours bachelor degree in Engineering or related discipline if accompanied by experience in Education (such as volunteer teaching, tutoring or teaching others in a non scholarly activity). Applicants without an engineering degree, who are accepted into the program, will be guided by the MEngEd committee to a suitable program of study.

Options

The Master's program leads to the degree of Masters of Engineering Education (M.Eng.Ed.),

students taking programs on a part time basis at Queen's may be found in Appendix 3.

Blended learning– Several students who take the part time option are expected to live at a

distance from Kingston, some in other countries. The School of Graduate Studies and

students will be required to complete two terms (not necessarily consecutive) on campus

- Participation in group meetings
- Learning journal
- Project report and presentation.

These are appropriate methods of assessment as they are intended to help the students demonstrate a *deep* approach to their studies. A deep approach is one in which students try

to make meaning from their learning, as opposed to a *surface* approach in which they would simply try to pass the course by memory or mimicry of techniques. As such it is felt that reflective reports and papers in which students can share their developing understanding of engineering education are best suited to access this level of evaluation of students..

Education and those in Education with an interest in technical education.

- *The Dupont Canada Chair in Engineering Education Research and Development in the*

Faculty of Applied Science. This position was created with a $2.5-million endowment from DuPont Canada as part of the Faculty of Applied Science's Integrated Learning

Table 4 lists the faculty members involved in the graduate program, identifies their field

Table 4: Faculty involvement

Faculty | Technical | Education | Engineering

8 Physical and Informational Resources

Office space for MEngEd students will be provided by the Faculty of Applied Science or by

The two core courses ENED (CHEE) 840* and ENED (CHEE) 841* are already running and the elective ENED courses will be created and run by the existing lead faculty. The Lead

of individual students as well as overall running of the program. The program will be administered within existing resources of the Faculty of Applied Science.

There will be no financial impact of this program on existing programs. The two core faculty

pedagogical approaches that excite them." (*Educating the Engineer of 2020: Adapting Engineering Education to the New Century* (2005), National Academies Press, p. 54)

Similarly, a recent study by the Millennium Project initiated to examine the future of the engineering profession made several recommendations related to the education of [redacted]

including:

"...Stimulate more activity in the scholarship of engineering education and learning, encouraging investment in research and the adoption of evidence-based approaches

current student is given below

"I would be very interested in taking the degree myself. The program offers the ability to interact with students and unites my passion for teaching with engineering material. I

rate of about one every six months at present and the rate is increasing. Most of these positions will supervise PhD students. It is expected that on successful implementation of this program we will submit an application for a PhD program. In the meantime students will be able to take up places in the international PhD programs of Engineering Education (e.g. Purdue University, Aalborg University, Glasgow University, University of Cape Town, University of Western Australia).

[redacted]

Table 5: Recommended programs for career paths.

[redacted]

12 Other issues

The proposed M.Eng.Ed. program would be the first in engineering education in Canada, and one of the first in the world. Queen's University has been building a reputation for innovative engineering education worldwide and the necessity for enhanced scholarship in this area

PART B – RESOURCE IMPLICATIONS

1. SUMMARY OF RESOURCES REQUIRED

Additional resources needed

a) FACILITY: No additional faculty are required and there are no extra costs associated with

extra workload.
b) STAFF : No additional staff are required. 0.3FTE of an existing graduate assistant position

2. NEW EXPENDITURES

The following table presents a summary for year 1 with expected intake of 5 students. For full details and future years projection please see attached spreadsheet

	One time$	Base budget$
FACULTY		
STAFF		$16,000*
TEACHING ASSISTANTS		
OTHER NON SALARY		$1,000**
TOTAL		$17,000

*Staff position level 5, 0.3 FTE and $4,000 for web developer per year
**Operating costs.

3.FUNDING SOURCES

The following table presents a summary for year 1 with expected intake of 5 students. For full details and future years projection please see attached spreadsheet

	One time$	Base budget$
DEPARTMENTAL BUDGET		
FACULTY BUDGET		
UNIVERSITY BUDGET (BIU)		$37,284*
TUITION REVENUE		$11,705**
OTHER SOURCES		
TOTAL		$48,989

*Less 30% tuition shared with Central
**Less QGA allocation to SGSR

[redacted]

a 5-22 students expected over the next seven years

[redacted]

undergraduate students. There will be a positive impact on the enhanced reputation of the Faculty and Queen's University as a location of excellence in Engineering Education.

6. SIGN OFF

Supplementary comments are appended where indicated

Title	Comments appended	Signature
Dean	☐	

[redacted]

Appendix 2: LIBRARY REVIEW

[redacted]

journals, including subscribed and open access titles, and is actively selecting

The Education Library includes collections of resources to support both classroom practice and educational research: a reference collection, children's books, multi-media classroom resources, lesson resources, Ministry of Education documents, a general research collection, a textbook collection, and journal collection comprising almost 1,000 journals that are specifically education-related.

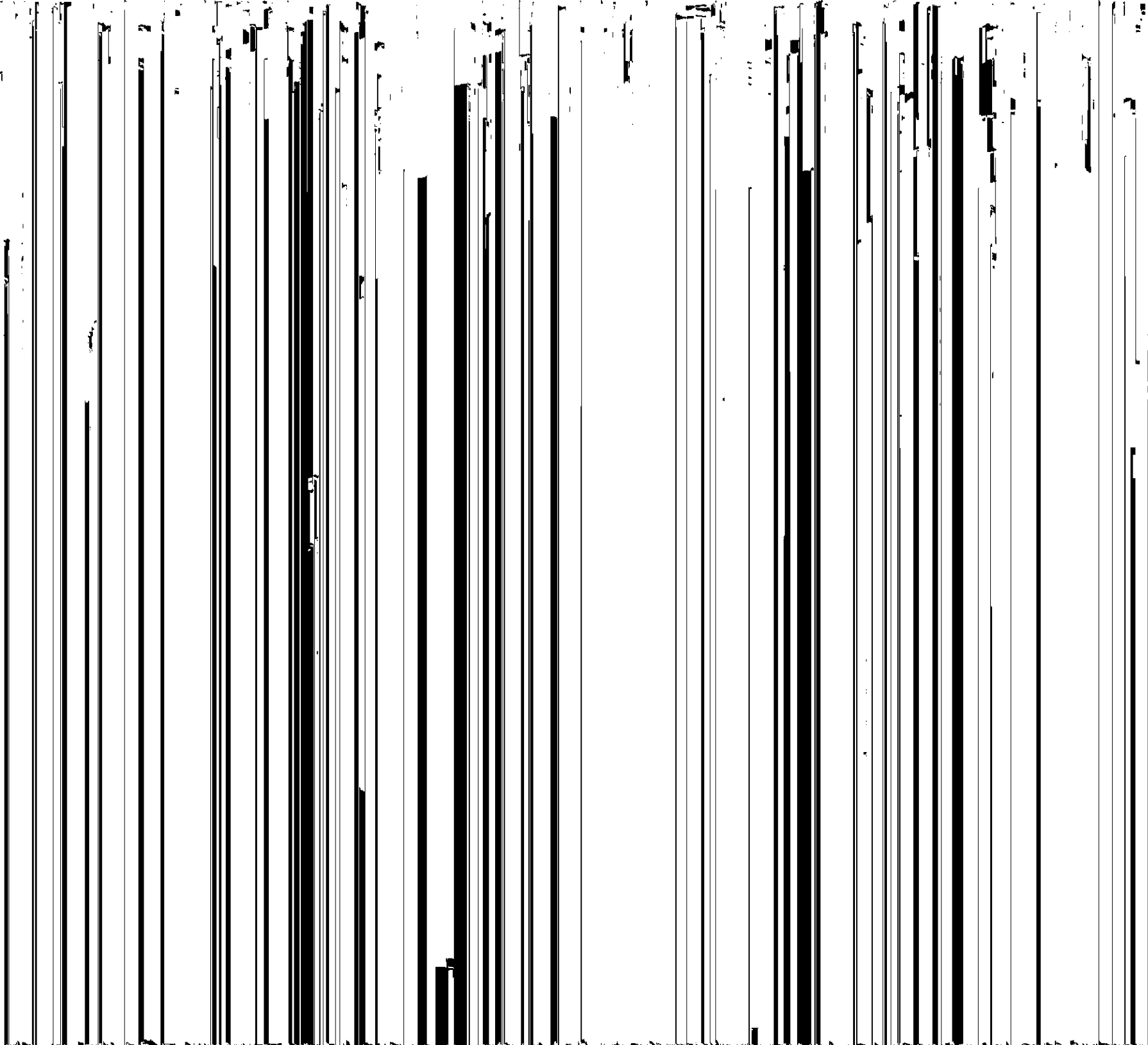
QUL's participation in various consortia has leveraged its purchasing power and dramatically increased the number of electronic books and journals available

Consortia include the Canadian Research Knowledge Network (CRKN), the

number of hard-wired personal computers, loaded with productivity and other software.

Also in 2005, the Queensla Learning Commons (QLC) was opened in the City

Library. The QLC is a partnership between the Library, Information Technology Services, Learning Strategies Development, Special Needs Services and the



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