

EMO

Dean of
Graduate Studies

Direct Address
Laggie Benston
Student Services Centre
100
Burnaby BC V5A 1S6
Canada

Mailing Address
388 University Drive
Burnaby BC V5A 1S6
Canada

TO: Senate

TEL

FROM Wade Parkhouse, Dean, Graduate Studies**RE** Faculty of Applied Sciences**[GS2012.06]****CC** Rob Cameron**DATE** January 17, 2012**For information**

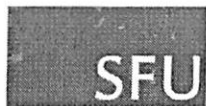
Acting under delegated authority at its meeting of 16 January 2012, the SGSC approved the following curriculum revisions:

Effective Date is September 2012**Faculty of Applied Sciences****[GS2012.06]**School of Engineering Science

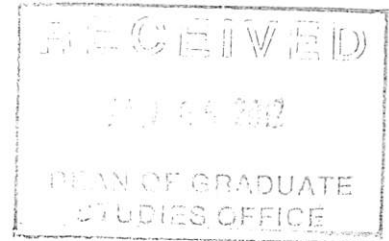
Doctor of Philosophy Program:

- i) Changes to program requirements
- ii) Changes to description: ENSC 820-3 Engineering Management for Development Projects
- iii) Changes to title, description and addition of pre-requisite: ENSC 853-3 Digital CMOS Integrated Circuits

Senators wishing to consult a more detailed report of curriculum revisions may do so by going to DocuShare:
<https://docushare.sfu.ca/dsweb/View/Collection-12682>
If you are unable to access the information, please call [778-782-3168](tel:778-782-3168) or email shelley_gair@sfu.ca.



FACULTY OF APPLIED SCIENCES



MEMO

Office of the Dean
ASB-9861
Applied Science Bldg
Tel: 778-782-4724
Fax: 778-782-5802
www.fas.sfu.ca

ATTENTION	Wade Parkhouse, Dean of Graduate Studies
FROM	Rob Cameron, Associate Dean, Faculty of Applied Sciences
RE	Faculty of Applied Sciences Graduate Curriculum Changes
DATE	January 4, 2012

Please find enclosed the following graduate curriculum changes for the School of Engineering Science approved at the December 20, 2011 meeting of the Faculty of Applied Sciences Graduate Program Committee.

- ✓ 1. Change to the Engineering Science PhD program.

✓ This change allows the course ENSC 820-3 to be used towards the PhD, but not towards the mandatory 6 credits of ENSC technical courses. This is documented with the memo entitled "Major Program Change" of December 2, 2011 as well as the consequent course change form for ENSC 820.

2. Update to the ^{TITLE} description and ^{ADDITION OF} prerequisite for ENSC 853.

Please place these items on the agenda of the next SGSC meeting.

Enclosures



SCHOOL OF ENGINEERING SCIENCE

MEMO

Simon Fraser University
Burnaby Campus
Applied Science Building
Room 9851

Tel: 778-782-4371
Fax: 778-782-4951
www.ensc.sfu.ca

ATTENTION	SGSC
FROM	School of Engineering Science
RE	Major Program Change
DATE	December 2, 2011

1) **Statement here re: proposed program change:**

The School of Engineering Science would like to change the program requirements for the PhD program to include, ENSC 820-3 – Engineering Management for Development Projects, as an optional course for credit.

2) **Statement as to how this change will affect the existing programme:**

* This change will be a benefit to doctoral students currently in the program, as we believe a project management course is an important component of the doctoral learning experience and that our PhD students should have the opportunity, and be encouraged, to take this course.

3) **Justification for change:**

This change will give the opportunity for our PhD students to take, for credit, a course that will provide managerial and reporting practices typical of engineering development projects.

4) **Current Calendar Language:**

Course Requirements

The minimum requirement is 18 units beyond that of the MASc degree. Six of these units will be for prescribed courses in the specialization in which the student is enrolled. Alternatives can be substituted with the approval of the student's supervisory committee. At most, six units may be senior undergraduate courses. At most, six units may be directed studies. At least six units must be within engineering science, **although ENSC 820-3 may not be used towards these six units.** ~~except that~~



SCHOOL OF ENGINEERING SCIENCE

~~ENSC 820-3 may not be used toward the course requirement of the PhD degree.~~ Additional courses may be required to correct deficiencies in the student's background.

5) Proposed Calendar Language:

Course Requirements

The minimum requirement is 18 units beyond that of the MASc degree. Six of these units will be for prescribed courses in the specialization in which the student is enrolled. Alternatives can be substituted with the approval of the student's supervisory committee. At most, six units may be senior undergraduate courses. At most, six units may be directed studies. At least six units must be within engineering science, although ENSC 820-3 may not be used towards these six units. Additional courses may be required to correct deficiencies in the student's background.

A handwritten signature in black ink, consisting of stylized, overlapping loops and a long horizontal stroke extending to the right.

FROM:

Engineering Science Doctor of Philosophy Program

*School of Engineering Science | Faculty of Applied Sciences
Simon Fraser University Calendar 2012 Spring*

Course Requirements

The minimum requirement is 18 units beyond that of the MASc degree. Six of these units will be for prescribed courses in the specialization in which the student is enrolled. Alternatives can be substituted with the approval of the student's supervisory committee. At most, six units may be senior undergraduate courses. At most, six units may be directed studies. At least six units must be within engineering science, **although ENSC 820-3 may not be used towards these six units** ~~except that ENSC 820-3 may not be used toward the course requirement of the PhD degree.~~ Additional courses may be required to correct deficiencies in the student's background.

TO:

Course Requirements

The minimum requirement is 18 units beyond that of the MASc degree. Six of these units will be for prescribed courses in the specialization in which the student is enrolled. Alternatives can be substituted with the approval of the student's supervisory committee. At most, six units may be senior undergraduate courses. At most, six units may be directed studies. At least six units must be within engineering science, although ENSC 820-3 may not be used towards these six units. Additional courses may be required to correct deficiencies in the student's background.

studies committee has been given.

Course Requirements

The minimum requirement is 18 units beyond that of the MASc degree. Six of these units will be for prescribed courses in the specialization in which the student is enrolled. Alternatives can be substituted with the approval of the student's supervisory committee. At most, six units may be senior undergraduate courses. At most, six units may be directed studies. At least six units must be within engineering science, except that ENSC 820-3 may not be used toward the course requirement of the PhD degree. Additional courses may be required to correct deficiencies in the student's background. Change

Previous Credit

If the subject matter of a listed course has been previously completed with graduate credit, the course may not be completed again for credit.

Qualifying Examination

To qualify the student will submit a brief written research proposal and defend it orally to his/her supervisory committee within the first 24 months of admission. The proposal's defence will be judged according to the feasibility and scientific merits of the proposed research, and demonstration of a sophisticated understanding of general material in the student's major area of research. This level of understanding is associated with senior undergraduate and first year graduate course material.

The possible outcomes of the qualifying examination are 'pass,' 'marginal' and 'fail.' A student with 'marginal' will be required to re-submit the research proposal and defend it for the second and final time within six months and/or to complete more courses. A 'failing' grade requires withdrawal.

Thesis

Students define and undertake original research, the results of which are reported in a thesis. An examining committee is formed as defined in graduate general regulation 1.9.3. Students conform to residence requirements (see graduate general regulation 1.7.3). The senior supervisor will be an engineering science faculty approved by the graduate program committee.

The student's progress will be reviewed every 12 months by a supervisory committee of three or more faculty members. At each annual review, the student presents a summary of his/her work to date, with the first review being the research proposal defence described in the section for Qualifying Examination (see above).



SIMON FRASER UNIVERSITY
DEAN OF GRADUATE STUDIES

Graduate Course Minor Change Form

This form is for an SFU department or program to request a minor change to an existing graduate course. After approval and signature by the faculty graduate studies committee, this form should be forwarded to the Dean of Graduate Studies for approval by the Senate Graduate Studies Committee (SGSC). SGSC will forward the approval to Senate for information.

DEPARTMENT

Department / School / Program Engineering Science	Contact name Shawn Stapleton	Contact email shawn@sfu.ca
Please revise the following elements of the indicated graduate course: ☐ Catalogue number ☐ Units ☐ Title ☒ Description ☐ Other: _____		

CURRENT COURSE

Please complete only the fields to be changed.

Program (eg. ECON) ENSC	Number (eg. 810) 820	Units (eg. 4) 3
Course title (max 80 characters) Engineering Management for Development Projects		
Short title (appears on transcripts, max 25 characters)		
Course description for SFU Calendar ☐ see attached This course focuses on the management and reporting activities of typical engineering development projects. Through seminars and workshops it builds the student's skills at estimating project cost and schedule, keeping a project on track, and handing over the completed project to a customer or another team. A writing workshop emphasizes techniques for writing proposals, and writing and controlling documentation. Note that ENSC 820 will not count towards the course work requirement of students enrolled in the MSc and PhD programs.		
Available course components ☒ Lecture ☐ Seminar ☐ Laboratory ☐ Practicum ☐ Online ☐ _____		
Grading basis ☒ Graded ☐ Satisfactory / Unsatisfactory ☐ In Progress / Complete ☐ _____		
Prerequisites (if any)		
This is combined with an undergrad course. ☐ Yes ☒ No		
Course number and units: ENSC 820-3		
Additional course requirements for graduate students		

REVISED COURSE

Please complete only the fields to be changed.

Program (eg. ECON) ENSC	Number (eg. 810) 820	Units (eg. 4) 3
Course title (max 80 characters) Engineering Management for Development Projects		
Short title (appears on transcripts, max 25 characters)		
Course description for SFU Calendar ☐ see attached This course focuses on the management and reporting activities of typical engineering development projects. Through seminars and workshops it builds the student's skills at estimating project cost and schedule, keeping a project on track, and handing over the completed project to a customer or another team. A writing workshop emphasizes techniques for writing proposals, and writing and controlling documentation. Note that ENSC 820 will not count towards the course work requirement of students enrolled in the MSc program.		
Available course components ☒ Lecture ☐ Seminar ☐ Laboratory ☐ Practicum ☐ Online ☐ _____		
Grading basis ☒ Graded ☐ Satisfactory / Unsatisfactory ☐ In Progress / Complete ☐ _____		
Prerequisites (if any)		
This is combined with an undergrad course. ☐ Yes ☒ No		
Course number and units: ENSC 820-3		
Additional course requirements for graduate students		

APPROVALS

ROBERT D. CAMERON
Faculty graduate studies committee name
W. Parkhouse
Senate graduate studies committee name

Signature

Signature

Date

Date

JAN. 4, 2012
Jan 18/12

ENSC 820-3 Engineering Management for Development Projects

This course focuses on the management and reporting activities of typical engineering development projects. Through seminars and workshops it builds the student's skills at estimating project cost and schedule, keeping a project on track, and handing over the completed project to a customer or another team. A writing workshop emphasizes techniques for writing proposals, and writing and controlling documentation. Note that ENSC 820 will not count towards the course work requirement of students enrolled in the MASc/and PhD programs. / *deleted.*



SIMON FRASER UNIVERSITY
DEAN OF GRADUATE STUDIES

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DEPARTMENT

Department / School / Program Engineering Science	Contact name Marek Syrzycki	Contact email syrzycki@sfu.ca
Please revise the following elements of the indicated graduate course: ☐ Catalogue number ☐ Units ☒ Title ☒ Description ☐ Other: _____		

CURRENT COURSE

Please complete only the fields to be changed.

Program (eg. ECON) ENSC	Number (eg. 810) 853	Units (eg. 4) 3
Course title (max 80 characters) Digital Semiconductor Circuits and Devices		
Short title (appears on transcripts, max 25 characters) 		
Course description for SFU Calendar ☐ see attached MOS device electronics. Second Order Effects in MOS transistors. BJT device electronics. Static and transient analysis of inverters. Digital gates, circuits and circuit techniques. Speed and power dissipation. Memory systems. Gate arrays, semicustom and customized integrated circuits. CAD tools. Students are required to complete a project.		
Available course components ☒ Lecture ☐ Seminar ☐ Laboratory ☐ Practicum ☐ Online ☐ _____		
Grading basis ☒ Graded ☐ Satisfactory / Unsatisfactory ☐ In Progress / Complete ☐ _____		
Prerequisites (if any) none		
This is combined with an undergrad course. ☐ Yes ☒ No		
Course number and units: ENSC 853-3		
Additional course requirements for graduate students 		

REVISED COURSE

Please complete only the fields to be changed.

Program (eg. ECON) ENSC	Number (eg. 810) 853	Units (eg. 4) 3
Course title (max 80 characters) Digital CMOS Integrated Circuits		
Short title (appears on transcripts, max 25 characters) 		
Course description for SFU Calendar ☐ see attached MOS FET transistors and models; CMOS technology evolution; basic digital cells in CMOS; static and dynamic logic circuits in CMOS; CMOS functional blocks (adders, multipliers, datapaths, ALUs); semiconductor memories (Read-Only Memories, Programmable Logic Arrays, programmable memories, static and dynamic Random Access Memories, flash memories); CMOS digital layout design and standard-cell based design; Low-power and low-voltage CMOS circuits; CMOS physical design in submicron technologies (interconnects, timing and power design issues). Basic CAD tools for CMOS integrated circuit design. Prerequisite: ENSC 850 or permission of the instructor.		
Available course components ☒ Lecture ☐ Seminar ☐ Laboratory ☐ Practicum ☐ Online ☐ _____		
Grading basis ☒ Graded ☐ Satisfactory / Unsatisfactory ☐ In Progress / Complete ☐ _____		
Prerequisites (if any) ENSC 850 or permission of the instructor		
This is combined with an undergrad course. ☐ Yes ☒ No		
Course number and units: ENSC 853-3		
Additional course requirements for graduate students 		

APPROVALS

ROBERT D. CAMERON
Faculty graduate studies committee name
C. Parkhouse
Senate graduate studies committee name

R. Cameron
Signature
C. Parkhouse
Signature

Jan. 4, 2012
Date
Jan 18/12
Date

ENSC 853-3 Digital Semiconductor Circuits and Devices

MOS device electronics. Second Order Effects in MOS transistors. BJT device electronics. Static and transient analysis of inverters. Digital gates, circuits and circuit techniques. Speed and power dissipation. Memory systems. Gate arrays, semicustom and customized integrated circuits. CAD tools. Students are required to complete a project.