

MEMO

ATTENTION	Senate
FROM	Bill Krane, Chair Senate Committee on Undergraduate Studies 
RE	Faculty of Applied Sciences (SCUS 09-57)
DATE	December 7, 2009

**For information:**

Acting under delegated authority at its meeting of December 3, 2009, SCUS approved the following curriculum revisions:

**(1) School of Engineering Science**

- (i) Description/Pre-requisite change to ENSC 495
- (ii) Modification of prerequisites for ENSC 460-4, 461-4 and 462-4
- (iii) Changes in electives for Engineering Science Systems option

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Web at [http://www.sfu.ca/senate/Senate\\_agenda.html](http://www.sfu.ca/senate/Senate_agenda.html) following the posting of the agenda. If you are unable to access the information, please call 778-782-3168 or email [bgrant@sfu.ca](mailto:bgrant@sfu.ca).



**EXISTING COURSE, CHANGES RECOMMENDED**

Please check appropriate revision(s):

- Course number
- Credit
- Title
- Description
- Prerequisite
- Course deletion

Indicate number of hours for: Lecture \_\_\_\_\_ Seminar \_\_\_\_\_ Tutorial \_\_\_\_\_ Lab \_\_\_\_\_

**FROM** **TO**

Course Number       ENSC 495       Course Number \_\_\_\_\_

Credits (Units) \_\_\_\_\_ Credits (Units) \_\_\_\_\_

**TITLE**

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

**DESCRIPTION**  
 This provides an introduction to the practice and theory . . . . . CMOS and bipolar IC's. This course is directed at any student with a basic background in transistor operation and is also an optional course for those in engineering physics.

**DESCRIPTION**  
 Lectures provide the theory of integrated circuit fabrication. Students fabricate diodes, transistors and test structures in the laboratory. Topics: clean room practice, thermal oxidation and diffusion, photolithography, thin film deposition, etching, ion implantation, packaging, CMOS and bipolar processes.

**PREREQUISITE**  
 ENSC 225 and permission of the instructor.

**PREREQUISITE**  
 ENSC 225 or ENSC 226, and permission of the instructor. ~~The ENSC cleanroom can accommodate only limited number of students. Visit course web page for enrollment details.~~

**RATIONALE**  
 The new course ENSC 226 provides sufficient background for students to take this course. Notify student of the enrollment limit.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses?  
 If so, this should be **noted in the prerequisite.**

Effective term and year       spring 2010



SENATE COMMITTEE ON  
UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

Course number     Credit     Title     Description     Prerequisite     Course deletion

Indicate number of hours for: Lecture \_\_\_\_\_ Seminar \_\_\_\_\_ Tutorial \_\_\_\_\_ Lab \_\_\_\_\_

FROM TO  
Course Number ENSC 460-462-4 Course Number ENSC 460-4  
Credits (Units) \_\_\_\_\_ Credits (Units) \_\_\_\_\_

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION

DESCRIPTION

PREREQUISITE  
Permission of the Instructor

PREREQUISITE  
~~Visit course webpage for enrollment details.~~

RATIONALE

ENSC-UCC approved that instructors are not allowed to impose specific requirements for courses; exceptions can only be made by formal UCC approval.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses?  
If so, this should be **noted in the prerequisite**.

Effective term and year spring 2010



SENATE COMMITTEE ON  
UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

Course number     Credit     Title     Description     Prerequisite     Course deletion

Indicate number of hours for: Lecture \_\_\_\_\_ Seminar \_\_\_\_\_ Tutorial \_\_\_\_\_ Lab \_\_\_\_\_

FROM TO  
Course Number       ENSC 460-462-4       Course Number       ENSC 461-4        
Credits (Units) \_\_\_\_\_ Credits (Units) \_\_\_\_\_

TITLE

(1) Long title for calendar and schedule, no more than 100 characters including spaces and punctuation.

(2) Short title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

DESCRIPTION

DESCRIPTION

PREREQUISITE  
Permission of the Instructor

PREREQUISITE  
~~Visit course webpage for enrollment details.~~

RATIONALE

ENSC-UCC approved that instructors are not allowed to impose specific requirements for courses; exceptions can only be made by formal UCC approval.

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses?  
If so, this should be **noted in the prerequisite.**

Effective term and year       spring 2010



#### ENSC-Item 4: MSE Calendar Changes (Terms 5-7)

Calendar Change form:

From: SFU Calendar 2009/10, p. 86	To: SFU Calendar 2010/11
<p><i>Term Five (Fall)</i></p> <p><del>ENSC 311-3 The Business of Engineering I: Fundamentals</del>            ENSC 329-4 Introduction to Digital Logic            ENSC 381-3 Systems Modelling and Simulation            ENSC 382-3 Machine Design  <del>PHYS 344-3 Thermal Physics</del>            ENSC 387-4 Introduction to Electromechanical Sensors and Actuators            20 units</p>	<p><i>Term Five (Fall)</i></p> <p>ENSC 329-4 Introduction to Digital Logic            ENSC 381-3 Systems Modelling and Simulation            ENSC 382-3 Machine Design*  <u><b>ENSC 388-3 Engineering Thermodynamics and Heat Transfer*</b></u>            ENSC 387-4 Introduction to Electromechanical Sensors and Actuators            17 units</p>
<p><i>Term Six (Summer)</i></p> <p><del>ENSC 312-3 The Business of Engineering II: Applications and Commercialization</del>            ENSC 331-3 Introduction to MEMS            ENSC 332-4 Microprocessors and Interfacing            ENSC 383-4 Feedback Control Systems            ENSC 384-4 Mechatronics Design II            18 units</p>	<p><i>Term Six (Summer)</i></p> <p><u><b>ENSC 311-3 The Business of Engineering I: Fundamentals*</b></u>            ENSC 331-3 Introduction to MEMS            ENSC 332-4 Microprocessors and Interfacing            ENSC 383-4 Feedback Control Systems            ENSC 384-4 Mechatronics Design II            18 units</p>
<p><i>Term Seven (Spring)</i></p> <p>ENSC I-4 First Engineering elective            ENSC II-4 second Engineering Science elective            ENSC 305-1 Project Documentation and Team Dynamics            ENSC 451-4 Real Time and Embedded Systems            ENSC 441-3 Capstone Design Technical Project I            16 units</p>	<p><i>Term Seven (Spring)</i></p> <p><b>ENSC I-4 First Engineering elective</b>  <b>ENSC II-4 second Engineering Science elective</b>  <u><b>ENSC 312-3 The Business of Engineering II: Applications and Commercialization</b></u>            ENSC 305-1 Project Documentation and Team Dynamics            ENSC 451-4 Real Time and Embedded Systems            ENSC 441-3 Capstone Design Technical Project I            19 units</p>

**Rationale:** The changes are proposed in order to be able to offer ENSC 312 in conjunction with BUS 477 during Term 7, similar to the arrangement for offering ENSC 201 and BUS 477. To do this, it is necessary to move ENSC 311 from Term 5 to Term 6.

Replacing PHYS 344-3 with ENSC 388-3 was approved in 2008/2009 but the change was not reflected in the calendar.

**ENSC-Item 5: Systems Option Electives**

Calendar Change form:

From (2009/2010 P85)	To (2010/2011 Calendar)
<p><b>Systems Option</b> [...]</p> <p>3<sup>rd</sup> Column, Footnote 2:  <sup>2</sup>chosen from ENSC 424, 425, 426, 427, 428, 429, 450, 481, <del>483, 488, 489</del>, 495. Special topics courses in the 400 division that have been approved by the undergraduate curriculum committee chair and the director can be counted here. With permission of the undergraduate curriculum committee chair, students may replace one engineering science elective with an engineering science directed studies course or a special project laboratory course. Such replacements for an engineering science elective must have four units and be 400 division courses.</p>	<p><b>Systems Option</b> [...]</p> <p>Footnote 2:  <sup>2</sup>chosen from ENSC 424, 425, 426, 427, 428, 429, 450, <del>452, 472, 474, 476, 481, 484</del>, 495. Special topics courses in the 400 division that have been approved by the undergraduate curriculum committee chair and the director can be counted here. With permission of the undergraduate curriculum committee chair, students may replace one engineering science elective with an engineering science directed studies course or a special project laboratory course. Such replacements for an engineering science elective must have four units and be 400 division courses.</p>

**Rationale:**

**For added courses:** ENSC has recent fourth-year courses, such as those added for the Biomed curriculum, but none of those courses have been added to the list of ENSC electives in the Systems Option.

**For courses removed:** These courses are mandatory in the System's curriculum.

## ENSC-Item 6: Minimum 12 Units

Calendar Change form:

From (2009/2010 P83)	To (2010/2011 Calendar)
Second Column, [...] BASc Requirements [....]	Second Column, [...] BASc Requirements [....]
Although there is no strict requirement to follow [...]. <del>Any term with fewer than 15 units requires prior approval by the director.</del>	Although there is no strict requirement to follow [...]. <u>Students who wish to take less than 12 credits in a term require prior approval of the ENSC Director; students on Co-op and first-year students taking courses in their first summer term are exempted.</u>

### Rationale:

The proposed 12 units brings the maximum completion time of ENSC programs to about 5 years for General and 5 years and 1 semester for Honor degrees.