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OFFICE OF THE ASSOCIATE VICE-PRESIDENT, ACADEMIC AND ASSOCIATE PROVOST

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MEMORANDUM

ATTENTION	Senate	**DATE**	February 3, 2012
FROM	Bill Krane, Chair	**PAGES**	1/1
	Senate Committee on		
	Undergraduate Studies		
RE:	Faculty of Applied Sciences (SCUS 12-08)		

For information:

Acting under delegated authority at its meeting of February 2, 2012, SCUS approved the following curriculum revisions effective Fall 2012:

1. School of Engineering Science (SCUS 12-08a)

    (i) Prerequisite changes for ENSC 224, 225, 305W, 320, 331, 406

    (ii) Core course requirement changes to the Biomedical Signals and Instrumentation Concentration of the Biomedical Engineering Honours Program

    (iii) Core course requirement changes to the Rehabilitation and Assistive Devices Concentration of the Biomedical Engineering Honours Program

    (iv) Program requirement changes to the Mechatronics Systems Engineering Major and Honours Programs

2. School of Computing Science (SCUS 12-08b)

    (i) New Course Proposals:
    CMPT 130-3, Introduction to Computer Programming I
    CMPT 135-3, Introduction to Computer Programming II (effective Spring 2013)
    CMPT 213-3, Object Oriented Design in Java (effective Spring 2013)

    (ii) Prerequisite changes for CMPT 125, 126, 128, 212, 373, 479 and MACM 101

    (iii) Program requirement changes to the Software Systems Major

3. Systems One (SCUS 12-08c)

    (i) Core course requirement changes to the Systems One First Year Program

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 or email shelley_gair@sfu.ca.

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MEMO

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ATTENTION	Bill Krane, Chair SCUS
FROM	Rob Cameron, Associate Dean, Faculty of Applied Sciences
RE	Faculty of Applied Sciences Undergraduate Curriculum Changes
DATE	January 23, 2012

The following changes have been approved by the FAS Undergraduate Curriculum Committee and are appended here for approval by SCUS and recommendation to Senate.

1. Course Prerequisite Changes – Engineering Science
2. New Course Proposals – Computing Science
   CMPT 130, 135, 213.
3. Course Prerequisite Changes – Computing Science
   CMPT 125, 126, 128, 212, 373, 479, MACM 101
4. Program Revisions – Biomedical Engineering Honours Program
5. Program Revisions – Systems One First Year Program
6. Program Revisions – Software Systems Major Program
7. Program Revisions – Mechatronics Systems Engineering Major and Honours Programs

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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 224 _____ Course Number _____

Credits (Units)_____ 3 _____ Credits (Units)_____

TITLE

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

Electronic Devices

TO:

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

FROM: TO:

DESCRIPTION DESCRIPTION
FROM: TO:

PREREQUISITE PREREQUISITE
FROM: TO:

ENSC 220 or equivalent. Students who have taken PHYS 365 cannot take this course for further credit.

ENSC 220, MATH 232 and MATH 310 or equivalents, Students who have taken PHYS 365 cannot take this course for further credit

RATIONALE

MATH 232 and 310 are intended prerequisites of this course, implemented as corequisites for ENSC 220. However, some students remain unprepared because they successfully complete ENSC 220 without successfully completing both MATH courses. This change remedies the flaw in the prerequisite structure.

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 _____ September 2012 _____

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 225 _____   Course Number _____

Credits (Units)_____ 4 _____   Credits (Units)_____

TITLE

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

Microelectronics I   TO:

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

FROM: TO:

DESCRIPTION   DESCRIPTION
FROM: TO:

PREREQUISITE   PREREQUISITE
FROM: TO:
                                                ENSC 150 or CMPT 150, ENSC 220, MATH 232 and MATH
ENSC 150 or CMPT 150, and ENSC 220. Quantitative.   310. Students taking ENSC 226 may not take ENSC 225 for
                                                further credit. Quantitative.

RATIONALE

This change addresses two concerns. MATH 232 and 310 are intended prerequisites of this course, implemented as corequisites for ENSC 220.   However, some students remain unprepared because they successfully complete ENSC 220 without successfully completing both MATH courses. This change remedies the flaw in the prerequisite structure. The second concern is to clarify that ENSC 225 and 226 are considered equivalent courses.

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 _____ September 2012 _____

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

Course Number _____ ENSC 305W _____

Credits (Units)_____ 1 _____

TO

Course Number _____

Credits (Units)_____

TITLE

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

Project Documentation and Group Dynamics

TO:

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

FROM:

TO:

DESCRIPTION
FROM:

DESCRIPTION
TO:

PREREQUISITE
FROM:

Corequisite: ENSC 440 or 441.

PREREQUISITE
TO:

Either both of ENSC 101W and ENSC 102 or one of ENSC 105W or CMPT 105W. Corequisite: ENSC 440 or 441.

RATIONALE

This is a third-year ENSC communication course that should be taken in sequence after completion of the first year courses.

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 _____ September 2012 _____

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

Course Number _____ENSC 320_____

Credits (Units)_____3_____

TO

Course Number _____

Credits (Units)_____

TITLE

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

Electric Circuits II

TO:

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

FROM: TO:

DESCRIPTION   DESCRIPTION
FROM: TO:

PREREQUISITE   PREREQUISITE
FROM: TO:

ENSC 220.   ENSC 220, MATH 232 and MATH 310.

RATIONALE

MATH 232 and 310 are intended prerequisites of this course, implemented as corequisites for ENSC 220. However, some students remain unprepared because they successfully complete ENSC 220 without successfully completing both MATH courses. This change remedies the flaw in the prerequisite structure.

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 _____September 2012_____

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

Course Number _____ENSC_____

Credits (Units)_____331_____

TO

Course Number _____

Credits (Units)_____

TITLE

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

Introduction to Microelectromechanical Systems   TO:

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

FROM: TO:

DESCRIPTION
FROM:

DESCRIPTION
TO:

PREREQUISITE
FROM:

ENSC 282, 283, 226.

PREREQUISITE
TO:

ENSC 281, 387 and one of ENSC 231 or ENSC 330.

RATIONALE

The existing prerequisites were based on the initial program design prior to full implementation of the MSE program. The new prerequisties better reflect what the students need to know for the course as developed.

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 _____September 2012_____

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 406 _____   Course Number _____

Credits (Units)_____ 2 _____   Credits (Units)_____

TITLE

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

Engineering Ethics, Law, and Professional Practice   TO:

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

FROM: TO:

DESCRIPTION   DESCRIPTION

FROM: TO:

PREREQUISITE   PREREQUISITE
FROM: TO:

100 units or permission of the instructor.   100 units including one of ENSC 100W, ENSC 106 or CMPT 106.

RATIONALE

This is fourth year professional ethics course that should be completed after the first year engineering and society course.

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 _____ September 2012 _____

Program Revisions - Biomedical Engineering Program

A Biomedical Engineering Honours Program, Biomedical Signals and Instrumentation Concentration

The following changes are proposed to the Biomedical Signals and Instrumentation Concentration of the Biomedical Engineering Honours Program.

Current	Proposed

Core Course Requirements
 	
Students complete all of
 	
    [CHEM, CMPT, ENSC courses]
• GERO 300-3 Introduction to Gerontology
• KIN 201-3 Biomechanics
• KIN 208-3 Introduction to Physiological Systems
• KIN 308-3 Experiments and Models in Physiology
    [MACM, MATH, PHYS, STAT courses]
	Core Course Requirements
	
	Students complete all of
	
	    [CHEM, CMPT, ENSC courses]
	• GERO 300-3 Introduction to Gerontology (or any B-Soc course)
	• KIN 201-3 Biomechanics
	• KIN 208-3 Introduction to Physiological Systems
	• KIN 308-3 Experiments and Models in Physiology
	    [MACM, MATH, PHYS, STAT courses]

Rationale

GERO 300 was included in the Biomedical Engineering Program as a B-Soc course that is also related to an important application of biomedical engineering: assistive technology for the elderly. However, the tight constraints on the program and the limited availability of GERO 300 creates significant problems for timely graduation of students. Therefore, GERO 300 is proposed to be deleted as a mandatory course, allowing any B-Soc course to be used instead.

B Change to Biomedical Engineering Honours Program, Rehabilitation and Assistive Devices Concentration

The following changes are proposed to the Rehabilitation and Assistive Devices Concentration of the Biomedical Engineering Honours Program.

Current	Proposed

Core Course Requirements
 	
Students complete all of
 	
    [CHEM, CMPT, ENSC courses]
• GERO 300-3 Introduction to Gerontology
• KIN 201-3 Biomechanics
• KIN 208-3 Introduction to Physiological Systems
• KIN 308-3 Experiments and Models in Physiology
    [MACM, MATH, PHYS, STAT courses]
	Core Course Requirements
	
	Students complete all of
	
	    [CHEM, CMPT, ENSC courses]
	• GERO 300-3 Introduction to Gerontology (or any B-Soc course)
	• KIN 201-3 Biomechanics
	• KIN 208-3 Introduction to Physiological Systems
	• KIN 308-3 Experiments and Models in Physiology
	    [MACM, MATH, PHYS, STAT courses]

Rationale

GERO 300 was included in the Biomedical Engineering Program as a B-Soc course that is also related to an important application of biomedical engineering: assistive technology for the elderly. However, the tight constraints on the program and the limited availability of GERO 300 creates significant problems for timely graduation of students. Therefore, GERO 300 is proposed to be deleted as a mandatory course, allowing any B-Soc course to be used instead.

Program Revisions – Mechatronics Systems Engineering

A. Mechatronics Systems Engineering Major Program

The following changes are proposed to the Mechatronics Systems Engineering Major program.

Current	Proposed
Program Requirements Students complete all of • CMPT 128-3 Introduction to Computing Science and Programming for Engineers • ... *[ENSC, MACM, MATH courses]* ... • PHYS 140-4 Studio Physics – Mechanics and Modern Physics • PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism • PHYS 231-3 Physics Laboratory II • PHYS 344-3 Thermal Physics	**Program Requirements** Students complete all of • CMPT 130-3 Introduction to Computer Programming I • ... *[ENSC, MACM, MATH courses]* ... • PHYS 140-4 Studio Physics – Mechanics and Modern Physics • PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism • PHYS 344-3 Thermal Physics

B. Change to the Mechatronics Systems Engineering Honours Program

The following changes are proposed to the Mechatronics Systems Engineering Honours program.

Current	Proposed
Program Requirements Students complete all of • CMPT 128-3 Introduction to Computing Science and Programming for Engineers • ... *[ENSC, MACM, MATH courses]* ... • PHYS 140-4 Studio Physics – Mechanics and Modern Physics • PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism • PHYS 231-3 Physics Laboratory II • PHYS 344-3 Thermal Physics	**Program Requirements** Students complete all of • CMPT 130-3 Introduction to Computer Programming I • ... *[ENSC, MACM, MATH courses]* ... • PHYS 140-4 Studio Physics – Mechanics and Modern Physics • PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism • PHYS 344-3 Thermal Physics

Rationale

Two changes are made in each of the Mechatronics Systems Engineering Major and Honours programs. The first is the replacement of CMPT 128 by CMPT 130 reflecting the revision to the Systems One First Year Program. The second is the deletion of PHYS 231. The course PHYS 231 was part of the original MSE program proposal, but was intended to be replaced, first by ENSC 263 and subsequently by ENSC 280. ENSC 280 is now correctly listed as a program requirement, but the calendar incorrectly continues to show PHYS 231 as a requirement.

NEW COURSE PROPOSAL - CMPT 130-3 Introduction to Computer Programming I

CALENDAR INFORMATION

COURSE NUMBER: CMPT 130

COURSE TITLE: Introduction to Computer Programming I

CREDITS: 3 Vector: 3-0-0

COURSE DESCRIPTION

An introduction to computing science and computer programming, using a systems oriented language, such as C or C++. This course introduces basic computing science concepts. Topics will include: elementary data types, control structures, functions, arrays and strings, fundamental algorithms, computer organization and memory management.

PREREQUISITE: BC Math 12 (or equivalent, or any of MATH 100, 150, 151, 154, 157).

COREQUISITE: None.

SPECIAL INSTRUCTIONS: Students with credit for CMPT 102, 120, ~~125,~~ or 126, 128 ~~126, 128 or any course numbered CMPT 200 or higher~~ may not take this course for further credit.

COURSE(S) TO BE DELETED IF THIS COURSE IS APPROVED: None.

RATIONALE FOR INTRODUCTION OF THIS COURSE

This course is designed as part of the Systems One cohort program and will be a required course for both Software Systems and Mechatronic Systems Engineering students. At present, the Systems One program has different introductory courses for Software Systems and Mechatronics students and a shared course will enhance the cohort nature of the Systems One program.

CMPT 130 will be taught using a systems oriented programming language appropriate for both Software Systems and Mechatronics students, and will prepare Software Systems students for further courses in their major program. This course is designed as the first half of a two course sequence with CMPT 135. The CMPT 130 / 135 sequence is a systems oriented introduction to Computing Science in contrast to the application oriented introduction provided by the CMPT 120 / 125 course sequence.

SCHEDULING AND ENROLLMENT INFORMATION

Commencing Fall 2012 and to be offered at least twice per year thereafter.

IS A WAIVER REQUIRED? Yes

REQUIRED OR ELECTIVE COURSE? Required

WHAT IS THE ENROLLMENT ESTIMATE?

Projected enrollment is 250 students per year.

WHICH OF YOUR PRESENT CFL FACULTY HAVE THE EXPERTISE TO OFFER THIS COURSE? Almost all present faculty could teach this course.

ARE THERE ANY PROPOSED STUDENT FEES ASSOCIATED WITH THIS COURSE OTHER THAN TUITION FEES? No

RESOURCE IMPLICATIONS

Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

CAMPUS WHERE COURSE WILL BE TAUGHT: Surrey

LIBRARY REPORT STATUS: No Additional Library Resources Required

PROVIDE DETAILS ON HOW EXISTING INSTRUCTIONAL RESOURCES WILL BE REDISTRIBUTED TO ACCOMMODATE THIS NEW COURSE. *For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.*

This course will use instructional resources currently used for CMPT 120 and CMPT 128, which this course will replace on the Surrey campus.

LIST OUTSTANDING RESOURCE ISSUES TO BE ADDRESSED PRIOR TO IMPLEMENTATION: None

ARTICULATION AGREEMENT REVIEWED? No

CMPT-130 OUTLINE

Coursework will consist of lectures, labs, assignments and exams. The course will cover the following topics.

1. Introduction to programming and computing science: hardware and software, computer organization, programming languages, programming tools

2. Representation of data in a computer program, binary representation, 2's complement notation, ASCII character codes

3. Introduction to programming: values, variables, types, expressions, operators, character-based input and output

4. Functions: function libraries, passing parameters, returning values, the call stack

5. Decisions: Boolean logic, if statements, relational operators

6. Repetition: while loops, for loops, recursion

7. Aggregate data types: arrays, strings, records

8. Debugging strategies: using a debugger, writing tests, common bugs

9. File I/O and error handling: why error-handling is important, reading and writing text files, recognizing errors, signaling errors, handling errors

10. Fundamental algorithms: searching, sorting, numerical algorithms

11. Memory management: pointers and addresses, allocating and de-allocating variables in dynamic memory

New Course Proposal

CMPT 135-3 Introduction to Computer Programming II

Calendar Information

Course number: **CMPT 135**
Course title: Introduction to Computer Programming II
Credits: **3** Vector: **3-0-0**

Course Description

A second course in systems-oriented programming and computing science that builds upon the foundation set in CMPT 130 using a systems-oriented language such as C or C++. Topics: a review of the basic elements of programming; introduction to object-oriented programming (OOP); techniques for designing and testing programs; use and implementation of elementary data structures and algorithms; introduction to embedded systems programming.

Prerequisites: **CMPT 130**

Corequisite: **None.**

Special Instructions: **Students with credit for CMPT 125, 126, 128** ~~or any course numbered CMPT 200 or higher~~ may not take this course for further credit.

Course(s) to deleted if this course is approved: **None.**

Rationale for the Introduction of this Course

This course is designed specifically as the follow-on to CMPT 130, and it replaces CMPT 125/128 at the Surrey campus. Together, CMPT 130 and CMPT 135 form a cohesive two-course sequence designed to give computing science and engineering students a systems-oriented introduction to programming and computer science.

Scheduling and Enrollment Information

Commencing Spring 2013 and to be offered once or twice per year.

Is a waiver required? **Yes**

Required or elective course? **Required**

What is the enrollment estimate? 100

Which of your present CFL faculty have the expertise to offer this course? **Most CMPT faculty could teach this course.**

Are there any proposed student fees associated with this course other than tuition fees? **No**

Resource Implications

Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where the course will be taught: **Surrey**

Library report status: **Done. See http://www.lib.sfu.ca/collections/course-assessments/applied-sciences**

Provide details on how existing instructional resources will be redistributed to accommodate this new course. *For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.*

This course will replace CMPT 125/128 at the Surrey campus, and so will use the resources from those courses.

List outstanding resource issues to be addressed prior to implementation: **None**

Articulation agreement reviewed? **No**

CMPT-135 Outline

Coursework consists of lectures, labs, readings, assignments, projects, and exams. The major topics of the course are as follows:

- **Review of basic programming**: values, variables, types, expressions, statements, decision statements, loops, functions, parameter-passing, templates, recursion, exception handling; static, stack, and heap memory; compilers, linkers, and makefiles.

- **Introduction to object-oriented programming (OOP)**: objects, classes, setters/getters, member visibility, constructors/destructors, inheritance, polymorphism, abstract classes.

- **Techniques for designing and testing programs**: decomposing problems into sub-modules; abstract data types; invariants and assertions; unit testing.

- **Basic data structures and their algorithms**: *using* arrays, strings, hash tables, maps, and sets; *implementing* dynamic arrays, stacks, queues, and matrices; empirical analysis of algorithms.

- **Introduction to embedded systems programming**: examples of embedded systems; basic concepts (correctness, fault-tolerance, predictability, etc.); memory management (pools, stacks); bit manipulation; coding standards.

New Course Proposal

CMPT 213-3 Object oriented design in Java

Calendar Information

Course number: **CMPT 213**
Course title: **Object oriented design in Java**
Credits: **3 Vector: 3-0-0**

Course Description

An introduction to object oriented design using Java. The Java programming language is introduced, with an emphasis on its advanced features. The course covers the building blocks of object oriented design including inheritance, polymorphism, interfaces and abstract classes. A number of object oriented design patterns are presented, such as observer, iterator, and singleton. The course also teaches best-practices in code construction. It includes a basic introduction to programming event-driven graphical user interfaces.

Prerequisites: **CMPT 225.**

Corequisite: **None.**

Special Instructions: Students ~~cannot receive~~ with credit for ~~both~~ CMPT 212 ~~and CMPT 213~~. cannot take this course for further credit.

Course(s) to deleted if this course is approved: **None.**

Rationale for the Introduction of this Course

Students entering upper-division Software Systems courses need a solid grounding in practical object oriented design and code construction in Java. This will be the first course that Software Systems students take that teaches Java, which is essential for later courses which use the language. Additionally, students need a second year course focused on program design and code construction to advance their programming ability beyond the introductory level taught in first year courses. This course will bridge the gap into third year courses where students are expected to be proficient with object oriented design and programming. Finally, the course also serves as an introduction to GUI programming and simple multi-threaded programs.

Scheduling and Enrollment Information

Commencing Spring 2013 and to be offered once per year.

Is a waiver required? **Yes**

Required or elective course? **Required**

What is the enrollment estimate? 50 students.

Which of your present CFL faculty have the expertise to offer this course?
Toby Donaldson, John Edgar, Tom Shermer, Tamara Smyth, and Brian Fraser

Are there any proposed student fees associated with this course other than tuition fees? **No**

Resource Implications

Note: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by a library report and, if appropriate, confirmation that funding arrangements have been addressed.

Campus where the course will be taught: **Surrey**

Library report status: **To be submitted.**

Provide details on how existing instructional resources will be redistributed to accommodate this new course. *For instance, will another course be eliminated or will the frequency of offering of other courses be reduced; are there changes in pedagogical style or class sizes that allow for this additional course offering.*

This course will use instructional resources currently used for CMPT 212, which this course will replace on the Surrey campus.

List outstanding resource issues to be addressed prior to implementation: **None**

Articulation agreement reviewed? **No**

CMPT-213 Outline

Coursework consists of lectures, readings, assignments, and projects. The major topics of the course are as follows:

- Introduction to Java, including advanced features such as enum, generics, mutable vs immutable objects, and threads.

- Inheritance, polymorphism, interfaces and abstract classes.

- Introduction to object oriented design (OOD) and some UML diagrams.

- Introduction to code construction, best practices and coding standards.

- Basic design patterns such as iteration, singleton, observers, and template methods.

- Introduction to refactoring.

- Basic introduction to event-driven user interface programming.

- Software development tools, such as advanced IDE features, build tools, debuggers, and JavaDoc.

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EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number   ☐ Credit   ☐ Title   ☐ Description   ■ Prerequisite   ☐ Course deletion   ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM	TO
Course Subject/Number **CMPT 125**	Course Subject/Number _____
Credits **3**	Credits _____

TITLE

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

FROM: TO:

Introduction to Computing Science and Programming II

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

FROM: TO:

DESCRIPTION FROM:	DESCRIPTION TO:

PREREQUISITE

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.**

FROM:

Prerequisite: BC MATH 12 (or equivalent) and CMPT 120.

LEARNING OUTCOMES

PREREQUISITE

TO: (OR EQUIVALENT)

Prerequisite: BC MATH 12 (or any of MATH 100, 150, 151, 154, 157) and CMPT 120.
STUDENTS WITH CREDIT FOR CMPT 135 MAY NOT TAKE THIS COURSE FOR FURTHER CREDIT.

RATIONALE

Math courses higher than BC Math 12 are acceptable prerequisites to these courses. Current prerequisites in the calendar only allow BC Math 12 or its *exact equivalent.*

Effective term and year September 2012.

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ■ Prerequisite ☐ Course deletion ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM

Course Subject/Number **CMPT 126**

Credits **3**

TO

Course Subject/Number _____

Credits_____

TITLE

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

FROM: TO:

Introduction to Computing Science and Programming

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

FROM: TO:

DESCRIPTION
FROM:

DESCRIPTION
TO:

PREREQUISITE

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.**

FROM:

Prerequisite: BC mathematics 12 (or equivalent).

LEARNING OUTCOMES

PREREQUISITE

TO:

Prerequisite: BC Math 12 (or equivalent, or any of MATH 100, 150, 151, 154, 157).
STUDENTS WITH CREDIT FOR CMPT 130 MAY NOT TAKE THIS COURSE FOR FURTHER CREDIT.

RATIONALE

Math courses higher than BC Math 12 are acceptable prerequisites to these courses.
Current prerequisites in the calendar only allow BC Math 12 or its *exact equivalent.*

Effective term and year September 2012

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ■ Prerequisite ☐ Course deletion ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM

Course Subject/Number **CMPT 128**

Credits **3**

TO

Course Subject/Number _____

Credits _____

TITLE

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

FROM:

Introduction to Computing Science
and Programming for Engineers

TO:

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

FROM:

TO:

DESCRIPTION

FROM:

DESCRIPTION

TO:

PREREQUISITE

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.**

FROM:

Prerequisite: BC mathematics 12 (or equivalent).

LEARNING OUTCOMES

PREREQUISITE

TO:

Prerequisite: BC Math 12 (or equivalent, or any of MATH 100, 150, 151, 154, 157).

STUDENTS WITH CREDIT FOR CMPT 130 MAY NOT TAKE THIS COURSE FOR FURTHER CREDIT.

RATIONALE

Math courses higher than BC Math 12 are acceptable prerequisites to these courses.
Current prerequisites in the calendar only allow BC Math 12 or its *exact equivalent.*

Effective term and year September 2012

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number   ☐ Credit   ☐ Title   ☐ Description   ☒ Prerequisite   ☐ Course deletion   ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM

Course Subject/Number **CMPT 212**

Credits **3**

TO

Course Subject/Number _____

Credits_____

TITLE

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

FROM: TO:

Object-Oriented
Applications Design in C++

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

FROM: TO:

DESCRIPTION   **DESCRIPTION**
FROM: TO:

PREREQUISITE   ## PREREQUISITE

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.**

FROM: TO:

Prerequisite: CMPT 125, 126 or 128.   Prerequisite: CMPT 125, 126 or 128. Recommended: CMPT 225.
Recommended: CMPT 225.   Students with credit for CMPT 213 may not take CMPT 212 for further
                                                               credit.

LEARNING OUTCOMES

RATIONALE

Effective term and year September 2012.

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number   ☐ Credit   ☐ Title   ☐ Description   ☑ Prerequisite   ☐ Course deletion   ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM

Course Subject/Number **CMPT 373**

Credits **3**

TO

Course Subject/Number _____

Credits_____

TITLE

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

FROM:

Software Development Methods

TO:

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

FROM: TO:

DESCRIPTION
FROM:

DESCRIPTION
TO:

PREREQUISITE

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.**

FROM:

Prerequisite: CMPT 276 or 275.

PREREQUISITE

TO:

Prerequisite: CMPT 276 or 275. Students with credit for CMPT 475 may not take this course for further credit.

LEARNING OUTCOMES

RATIONALE

Change current wording on CMPT 373 to match CMPT 475 wording regarding 'repeat' rule. Rationale: SIMS regards the two courses as repeats and the calendar wording on CMPT 373 does not reflect this.

Effective term and year September 2012

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ☒ Prerequisite ☐ Course deletion ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM

Course Subject/Number CMPT 479

Credits 3

TO

Course Subject/Number _____

Credits_____

TITLE

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

Special Topics in
Computing Systems

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

DESCRIPTION
FROM:

DESCRIPTION
TO:

PREREQUISITE

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.
FROM:

Prerequisite: CMPT 401.

PREREQUISITE

TO:

Prerequisite: CMPT 401 or 431.

LEARNING OUTCOMES

RATIONALE

CMPT 401 or 431 are considered acceptable prerequisites to
CMPT 479.

Effective term and year September 2012

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number   ☐ Credit   ☐ Title   ☐ Description   ☒ Prerequisite   ☐ Course deletion   ☐ Learning Outcomes

Indicate number of hours for: Lecture _____   Seminar_____   Tutorial _____   Lab _____

FROM

Course Subject/Number **MACM 101**

Credits **3**

TO

Course Subject/Number _____

Credits _____

TITLE

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

FROM: TO:

Discrete Mathematics I

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

FROM: TO:

DESCRIPTION
FROM:

DESCRIPTION
TO:

PREREQUISITE

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**.

FROM:

Prerequisite: BC high school mathematics 12.

LEARNING OUTCOMES

PREREQUISITE

TO:

Prerequisite: BC Math 12 (or equivalent, or any of MATH 100, 150, 151, 154, 157).

RATIONALE

Math courses higher than BC Math 12 are acceptable prerequisites to these courses. Current prerequisites in the calendar only allow BC Math 12 or its *exact equivalent.*

Effective term and year September 2012

Program Revisions – Software Systems Major

The following revisions are proposed to the Software Engineering Requirements of the Software Systems Major.

Current	Proposed
Software Engineering Requirements Students complete at least 24 units including all of • CMPT 212-3 Object-Oriented Applications Design in C++ • CMPT 225-3 Data Structures and Programming • CMPT 276-3 Introduction to Software Engineering • CMPT 373-3 Software Development Methods • CMPT 379-3 Principles of Compiler Design • CMPT 473-3 Software Quality Assurance and either one of • CMPT 126-3 Introduction to Computing Science and Programming* • CMPT 128-3 Introduction to Computing Science and Programming for Engineers or both of • CMPT 120-3 Introduction to Computing Science and Programming I* • CMPT 125-3 Introduction to Computing Science and Programming II* and one of • CMPT 383-3 Comparative Programming Languages • CMPT 384-3 Symbolic Computing • CMPT 477-3 Formal Verification • CMPT 474-3 Web Systems Architecture	**Software Engineering Requirements** Students complete a total of 27 units including all of • CMPT 130-3 Introduction to Computer Programming I • CMPT 135-3 Introduction to Computer Programming II • CMPT 213-3 Object-Oriented Design in Java • CMPT 225-3 Data Structures and Programming • CMPT 276-3 Introduction to Software Engineering • CMPT 373-3 Software Development Methods • CMPT 379-3 Principles of Compiler Design • CMPT 473-3 Software Quality Assurance and one of • CMPT 375-3 Mathematical Foundations of Software Technology • CMPT 383-3 Comparative Programming Languages • CMPT 384-3 Symbolic Computing • CMPT 477-3 Formal Verification • CMPT 474-3 Web Systems Architecture

Rationale

This change reflects the replacement of first year programming options in the Systems One program with CMPT 130-3. Building on that, CMPT 135-3 is introduced as a second course in C/C++ programming to replace CMPT 120/125 as the normal course sequence for Software Systems Majors. This allows students to consolidate their knowledge of C/C++ programming prior to taking on new languages and higher-level software topics.

A consequence of this change is the removal of exposure to Java in the first year of the Software Systems major. CMPT 213-3 is introduced in second year for this purpose, replacing CMPT 212.

A further change is the addition of CMPT 375-3 as an additional option for the final elective in the Software Engineering curriculum.

Program Revisions – Systems One First Year Program

The following revisions are proposed to the Systems One First Year Program offered by the Faculty of Applied Sciences at the Surrey campus.

Current	Proposed
Within the Systems One common core, students complete a total of 12-15 units, including either both of • CMPT 120-3 Introduction to Computing Science and Programming I • CMPT 125-3 Introduction to Computing Science and Programming II or • CMPT 128 Introduction to Computing Science and Programming for Engineers and • ENSC 182-3 Mechatronics Design I and one of • CMPT 105W-3 Process, Form, and Convention in Professional Genres • ENSC 105W-3 Process, Form, and Convention in Professional Genres and one of • CMPT 106-3 Applied Science, Technology and Society • ENSC 106-3 Applied Science, Technology and Society	Within the Systems One common core, students complete a total of 12 units, including both of • CMPT 130-3 Introduction to Computer Programming I • ENSC 182-3 Mechatronics Design I and one of • CMPT 105W-3 Process, Form, and Convention in Professional Genres • ENSC 105W-3 Process, Form, and Convention in Professional Genres and one of • CMPT 106-3 Applied Science, Technology and Society • ENSC 106-3 Applied Science, Technology and Society

Rationale

These changes simplify the Systems One common core by introducing CMPT 130 as a common first-year programming course for both Mechatronics Systems Engineering majors and Software Systems majors, replacing the CMPT 120/125 sequence currently used for Software Systems and CMPT 128 course currently used for Mechatronics Systems Engineering.