



8888 University Drive,  
Burnaby, BC  
Canada V5A 1S6

TEL: 778.782.4636  
FAX: 778.782.5876

avpcio@sfu.ca  
www.sfu.ca/vpacademic

MEMORANDUM

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ATTENTION	Senate	DATE	January 7, 2011
FROM	Bill Krane, Chair Senate Committee on Undergraduate Studies	PAGES	1/1
RE:	Faculty of Applied Sciences (SCUS 11-01)		

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**For information:**

Acting under delegated authority at its meeting of January 6, 2011, SCUS approved the following curriculum revisions:

1. School of Computing Science (SCUS 11-01b)

- (i) New Course Proposal: CMPT 166-3, An Animated Introduction to Programming
- (ii) Pre-requisite change to CMPT 497
- (iii) Updates to CMPT Tables II and III
- (iv) Addition of CMPT 375-3 to the Programming Languages and Software course table and the elective courses/Upper division requirements in the Software Engineering Specialization

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 [shelley\\_gair@sfu.ca](mailto:shelley_gair@sfu.ca)



## FACULTY OF APPLIED SCIENCES

MEMO

Office of the Dean

ASB-9861  
Applied Science BldgTel: 778-782-4724  
Fax: 778-782-5802

www.fas.sfu.ca

<b>ATTENTION</b>	<b>Bill Krane, Chair SCUS</b>
<b>FROM</b>	Rob Cameron, Associate Dean, Faculty of Applied Sciences
<b>RE</b>	Faculty of Applied Sciences Undergraduate Curriculum Changes
<b>DATE</b>	December 21, 2010

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. Computing Science
  - New course proposal - CMPT 166
  - Course prerequisite change - CMPT 497
  - CMPT tables update

**SIMON FRASER UNIVERSITY**  
**Senate Committee for Undergraduate Studies**  
**NEW COURSE PROPOSAL**

Course Number and Credit units: **CMPT 166, 3 credits**

Course Title:

Long - for calendar/schedule no more than 100 characters including spaces/punctuation  
**An Animated Introduction to Programming**

**AND**

Short - for registration/transcript no more than 30 characters including spaces/punctuation  
**Animated Intro to Programming**

Indicate number of hours for Lect ( **3** ) Sem ( ) Tut ( ) Lab ( )

**Course Description (for Calendar). Attach a course outline to this proposal.**

**An informal introduction to programming using examples drawn from animation and graphics. Fundamental programming language features are covered, including variables, expressions, statements, loops, functions, and objects. Class design, event-driven programming or other advanced programming techniques may be introduced as needed. No prior programming experience is assumed.**

Prerequisite:

**BC Math 12, or equivalent, is recommended**

Corequisite:

Special Instructions

That is, 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 pre-requisite.

Course(s) to be dropped if this course is approved:

**Rationale for Introduction of this Course:**

**Many students express interest in learning to program computers, but often find traditional introductory CS courses (such as CMPT 120 and CMPT 125) either too difficult, too theoretical, or too focused on examples from science, engineering,**

and mathematics. This course is intended to appeal to students who would like a gentle, practical, and relatively theory-free introduction to modern object-oriented computer programming. It uses computer graphics and animation as the motivating application throughout the course.

**Scheduling and Registration Information:**

Indicate effective **semester/year** course would be first offered and planned **frequency** of offering thereafter.

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Will this be a required or elective course in the curriculum?

REQUIRED

ELECTIVE

What is the probable enrolment when offered? ESTIMATE 75

Which of your present CFL faculty have the expertise to offer this course?

**Toby Donaldson, John Edgar, Tom Shermer**

Are there any proposed student fees associated with this course other than tuition fees? (if so, attach mandatory supplementary fee approval form) YES 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: **The library has reviewed the course and determined no extra resources are required. See <http://www.lib.sfu.ca/collections/course-assessments>**

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 is in large part designed to be more interesting and relevant to SIAT students, who currently make up about 50% of the students in the CMPT 120 at Surrey. The SIAT UPC has changed their program to require CMPT 166 instead of CMPT 120, effective Fall 2011.**

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc.

**None**

**Approvals**

1. **Departmental approval** indicates that the Department has approved the content of the course, and has consulted with other Departments and Faculties regarding proposed course content and overlap issues.

M. Ester Date: Dec 21, 2010  
Chair, Dept./School Date

R. Cameron Date: Dec. 21, 2010  
Chair, Faculty Curriculum Committee Date

2. **Faculty approval** indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/Department commits to providing the required Library funds.

R. Cameron Date: Dec. 21, 2010  
Dean or Designate

List which other Departments Schools and Faculties have been consulted regarding the proposed course content including overlap issues. *Attach documentary evidence of responses.*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Other Faculties approval** indicates that the Dean(s) or designate of other Faculties affected by the proposed new course support(s) the approval of the new course.

\_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Date: \_\_\_\_\_

3. **SCUS approval** indicates that the course has been approved for implementation subject, where appropriate, to financial issues being addressed.

Course approved by SCUS (Chair of SCUS)

## **An Animated Introduction to Computing**

This course offers a creative, visual, and gentle introduction to programming for people with no previous programming experience. It focuses on writing well-designed programs to draw graphics, run animations, and simulate anything you can imagine. You will learn the Processing language, which is popular with designers, artists, and anyone interested in interactive graphics. Processing is a subset of the immensely popular Java programming language, and so by the end of the course not only will you be well-versed in basic computer graphics and animation, you will be ready to learn languages such as Java, C/C++, or C#.

Coursework will consist of lectures, labs, and projects, along with many small programming exercises, and a larger final project (that you may work on with a partner).

### **Required book:**

Learning Processing by Daniel Shiffman  
(see <http://processing.org/learning/books/>)

### **Recommended books:**

Processing: A Programming Handbook for Visual Designers and Artists, by Casey Reas and Ben Fry  
(see <http://processing.org/learning/books/>)

Reference books:

The Java Tutorial (on-line)

Head First Java (2nd Edition)

Processing: Creative Coding and Computational Art, by Ira Greenberg

### **Sample Syllabus**

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What follows are the basic topics of the course in the approximate order they will be covered. Animation and graphics will be used throughout the course as motivating examples:

- Pixels, colors, and coordinates.
- Using the Processing editor and tools.
- Interacting with the user through the mouse and keyboard.
- Basic computation: numbers, strings, variables, expressions, and statements.
- Control structures: conditionals, loops, and functions.
- Objects and classes. - Arrays, lists, and files.
- Advanced topics chosen from: string processing, algorithms, video/image processing, sound, mathematics for graphics, more object-oriented programming

### **Marking Scheme**

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60% Assignments (approximately 6, including a large project at the end)

20% Midterm exam (closed-book written exam)

20% Final exam (closed-book written exam)



# Proposed calendar changes: CMPT "tables" update

Greg Baker, Director of Undergraduate Programs, School of Computing Science

July 24, 2008/November 25 2010

## Summary of Changes

These changes were approved through the SCUS level as part of a larger change in the Computing Science program requirements. For unknown reasons, the other changes were made but these were not incorporated into the Calendar. This change completes the updates of the tables that categorize Computing Science (and computing-related) courses within our curriculum. The last courses are removed from "Table II", which will no longer be used to fulfill any requirements in CMPT programs.

Table II has been left in the calendar even though it is empty: it is referred to in too many places to hope to remove all of them simultaneously. Removing the table without finding all references to it would cause mass confusion, so it will remain until all references to it can be removed.

Several MATH/MACM courses are updated/added in Table III as well. MACM 442-3 and MATH 340-3 are courses that were added (as of July 2008) by the Math department and belong in the "Computing mathematics courses". All other changes to Table III simply reflect calendar changes made by Math that were not copied to this table: MACM 401-3, MATH 308-3, and MATH 343-3 all had their titles changed, while MACM 416-3 was deleted from the calendar.

## Rationale

The Table I/II distinction previously created two classes of CMPT courses, some of which could be used to meet different requirements than others. This change unifies the core computing courses in the upper division into a single table.

## Programs affected

Apply to computing science major, second degree major, honours program, and information systems in business administration joint major.

## Revised Wording

Table II is revised as follows.

Current	Proposed
<p>Table II – Application Courses</p> <ul style="list-style-type: none"> <li>• CMPT 340-3 Computers in Biomedicine</li> <li>• CMPT 441-3 Introduction to Computational Biology</li> </ul>	<p>Table II – Application Courses</p> <ul style="list-style-type: none"> <li>• <i>Currently no courses.</i></li> </ul>

Table III is revised as follows.

<p>Table III – Computing Mathematics Courses</p> <ul style="list-style-type: none"> <li>• MACM 316-3 Numerical Analysis I</li> <li>• MACM 401-3 Symbolic Computation</li> <li>• MATH 308-3 Linear Programming</li> <li>• MATH 343-3 Combinatorial Aspects of Computing</li> <li>• MACM 416-3 Numerical Analysis II</li> </ul>	<p>Table III – Computing Mathematics Courses</p> <ul style="list-style-type: none"> <li>• MACM 316-3 Numerical Analysis I</li> <li>• MACM 401-3 <i>Introduction to Computer Algebra</i></li> <li>• <i>MACM 442-3 Cryptography</i></li> <li>• MATH 308-3 <i>Linear Optimization</i></li> <li>• <i>MATH 340-3 Algebra II: Rings and Fields</i></li> <li>• <i>MATH 343-3 Applied Discrete Mathematics</i></li> </ul>

## Calendar Changes Requested by the School of Computing Science, November 2010

### Calendar Changes to the Computing Science Major Description

1. Add “CMPT 375-3 Mathematical Foundations of Software Technology” to Table I, section “Programming Languages and Software”.

*Rationale:* When CMPT 375 was created, it was not placed anywhere in this table. It must be in at least one entry.

The following calendar revision reflects this change.

Current	Proposed
<p><b>Programming Languages and Software</b></p> <ul style="list-style-type: none"> <li>• CMPT 373-3 Software Development Methods</li> <li>• CMPT 383-3 Comparative Programming Languages</li> <li>• CMPT 384-3 Symbolic Computing</li> <li>• CMPT 473-3 Software Quality Assurance</li> <li>• CMPT 475-3 Software Engineering II</li> <li>• CMPT 477-3 Introduction to Formal Verification</li> <li>• CMPT 480-3 Foundations of Programming Languages</li> <li>• CMPT 481-3 Functional Programming</li> <li>• CMPT 489-3 Special Topics in Programming Languages</li> </ul>	<p><b>Programming Languages and Software</b></p> <ul style="list-style-type: none"> <li>• CMPT 373-3 Software Development Methods</li> <li>• <i>CMPT 375-3 Mathematical Foundations of Software Technology</i></li> <li>• CMPT 383-3 Comparative Programming Languages</li> <li>• CMPT 384-3 Symbolic Computing</li> <li>• CMPT 473-3 Software Quality Assurance</li> <li>• CMPT 475-3 Software Engineering II</li> <li>• CMPT 477-3 Introduction to Formal Verification</li> <li>• CMPT 480-3 Foundations of Programming Languages</li> <li>• CMPT 481-3 Functional Programming</li> <li>• CMPT 489-3 Special Topics in Programming Languages</li> </ul>

### Calendar Changes to the Specialist Major in Software Engineering

1. Add “CMPT 375-3 Mathematical Foundations of Software Technology” to the list of “Elective courses” under “Upper division requirements”.

*Rationale:* When CMPT 375 was created, it was not placed anywhere in the software engineering specialization. Given that it is a course in software engineering, it should be admissible for students in the specialist program.

The following calendar revision reflects this change.

Current	Proposed
<p><b>Elective Courses</b></p> <p>Students complete five courses chosen from the following list, at least three of which must be at the 400 division.</p> <ul style="list-style-type: none"> <li>• CMPT 301-3 Information Systems Management</li> <li>• CMPT 370-3 Information System Design</li> <li>• CMPT 379-3 Principles of Compiler Design</li> <li>• CMPT 383-3 Comparative Programming Languages</li> <li>• CMPT 401-3 Operating Systems II</li> <li>• CMPT 454-3 Database Systems II</li> <li>• CMPT 459-3 Special Topics In Database Systems</li> <li>• CMPT 470-3 Web-based Information Systems</li> <li>• CMPT 471-3 Networking II</li> <li>• CMPT 477-3 Introduction to Formal Verification</li> <li>• CMPT 487-3 Software Engineering Tools and Environments</li> <li>• CMPT 489-3 Special Topics in Programming Languages</li> <li>• ENSC 351-4 Real Time and Embedded Systems</li> </ul>	<p><b>Elective Courses</b></p> <p>Students complete five courses chosen from the following list, at least three of which must be at the 400 division.</p> <ul style="list-style-type: none"> <li>• CMPT 301-3 Information Systems Management</li> <li>• CMPT 370-3 Information System Design</li> <li>• <i>CMPT 375-3 Mathematical Foundations of Software Technology</i></li> <li>• CMPT 379-3 Principles of Compiler Design</li> <li>• CMPT 383-3 Comparative Programming Languages</li> <li>• CMPT 401-3 Operating Systems II</li> <li>• CMPT 454-3 Database Systems II</li> <li>• CMPT 459-3 Special Topics In Database Systems</li> <li>• CMPT 470-3 Web-based Information Systems</li> <li>• CMPT 471-3 Networking II</li> <li>• CMPT 477-3 Introduction to Formal Verification</li> <li>• CMPT 487-3 Software Engineering Tools and Environments</li> <li>• CMPT 489-3 Special Topics in Programming Languages</li> <li>• ENSC 351-4 Real Time and Embedded Systems</li> </ul>