



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 12S Proposed Calendar Entry:</p> <p>Credit Exclusion Lists ... Computer Science ... 7. CPSC 221, 259, 260 ... 12. CPSC 310, EECE 310</p>	<p>URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,414</p> <p>Present Calendar Entry: Credit Exclusion Lists ... Computer Science ... 7. CPSC 216, 221, 252 ... 12. CPSC 310, CPSC 352, EECE 310</p> <p>Action:</p> <p>Remove the credit exclusion between CPSC 216, 221, and 252, and replace it with a credit exclusion between CPSC 221, 259, and 260. Also remove all mention of CPSC 352 as that course is being delisted.</p> <p>Rationale:</p> <p>CPSC 216 and 252 are no longer taught; CPSC 216 was replaced by CPSC 221 in 2005W and CPSC 252 was replaced by CPSC 260 in 2006W. CPSC 259 has been recently introduced to teach a subset of what is currently taught in CPSC 260. The appropriate exclusion is between these two courses and CPSC 221, due to a significant overlap in content among these 3 courses. CPSC 352 is being delisted so it is appropriate to remove it from the credit exclusion list. It has not been taught since 2005W2.</p>



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Faculty: Science Department: Computer Science	Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca
Effective Date for Change: 2012S Proposed Calendar Entry: None.	URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry: CPSC 352 (4) Introduction to Software-Engineering Specification, design, implementation and maintenance of large, multi-module software systems. Principles, techniques, methodologies and tools for software development. [3-2-0] Prerequisite: CPSC 252. Corequisite: EECE 320. Equivalency: CPSC310 Action: Delist this obsolete course. Rationale: The course has not been offered since 2005W2. It was replaced by EECE 310 at that time and has not been offered since.



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<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>CPSC 405 (3) Modelling and Simulation Numeric models of dynamic systems with emphasis on discrete stochastic systems. State description of models, common model components and entities. A thorough description of a common simulation language. Simulation using algebraic languages. Methodology of simulation: data collection, model design, analysis of output, optimization, validation. Elements of queuing theory and its relationship to simulation. Applications to models of computer systems. [3-0-0] <i>Prerequisite:</i> Either (a) one of CPSC 216, CPSC 221 or (b) CPSC 260; and either (a) STAT 241 or (b) STAT 200 and one of MATH 302, STAT 302.</p>	<p>URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry:</p> <p>CPSC 405 (3) Modelling and Simulation Numeric models of dynamic systems with emphasis on discrete stochastic systems. State description of models, common model components and entities. A thorough description of a common simulation language. Simulation using algebraic languages. Methodology of simulation: data collection, model design, analysis of output, optimization, validation. Elements of queuing theory and its relationship to simulation. Applications to models of computer systems. [3-0-0] <i>Prerequisite:</i> Either (a) one of CPSC 216, CPSC 221, CPSC 252 or (b) CPSC 260; and either (a) STAT 241 or (b) STAT 200 and one of MATH 302, STAT 302.</p> <p>Action:</p> <p>Remove the prerequisite of CPSC 252.</p> <p>Rationale:</p> <p>CPSC 252 is obsolete and has been removed from the course listing. This completes its removal from the calendar.</p>



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Effective Date for Change: 2012S Proposed Calendar Entry: None.	URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,412,0 Present Calendar Entry: Diploma in Computer Science The Department of Computer Science offers a Diploma in Computer Science. The program is designed for students without previous experience in programming and for mature students whose knowledge of programming is no longer current. The program provides students with the opportunity to acquire the specific skills and work experience needed to start a career in information technology. A Diploma in Computer Science will be awarded to candidates upon successful completion of the program. The diploma program provides an opportunity for individuals with skills and expertise in areas outside traditional computer science to acquire the specific technical skills and work experience needed to start a career in information technology. The program is an internship program that combines university courses (46 credits) and supervised work experience (6 or 9 credits). The program normally takes 24 to 28 months to complete. The program includes four academic terms, an eight-month internship (i.e., work term) after the third academic term, and an optional four-month work term in the summer prior to the third academic term. Applicants must possess a bachelor's degree and have a strong academic record. The bachelor's degree must not be in a computer-



~~science related area (unless the applicant's knowledge is out of date).
Students are selected based on academic background, work history, letters of reference, and an interview. Excellent communication skills are required for acceptance into the program.
Contact the Department of Computer Science for application material. There will be a preliminary application fee of CAD \$100.00. Once admitted to the program, students are assigned a student number and are given eligibility to register.~~

Action:

Remove the description of this obsolete Diploma program.

Rationale:

This Diploma option has been obsolete for years. Students interested in such an educational experience are invited to complete the B.C.S. program instead.



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<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>CPSC: Computer Science Students with no previous exposure to computers may consider a more general introduction to computers and computer science provided by CPSC 101. Students who have credit for, or are currently registered in either of CPSC 110 or CPSC 111 or have Computer Science credit from another institution, may not take CPSC 100 or CPSC 101 or APSC 160 for credit in Science Programs. Students with sufficient background in the concepts presented in CPSC 110 and an advisor's approval are encouraged to challenge the CPSC 110 course for credit by taking an examination. Enrolment restrictions apply to certain CPSC courses. In order to register into CPSC 210, 213, 221, 310, 313, and 320, students should have an overall average greater than or equal to a threshold set by the Department of Computer Science. Students who are currently in a CPSC program but are prevented from registering in any of these courses may not be able to continue in a CPSC program. Those students should consider transferring to another program. Additional fees are charged for some courses. For more information students are advised to contact the Department of Computer Science or visit the Computer Science undergraduate program website: (http://www.cs.ubc.ca/ugrad/program/index.html). For information on credit exclusion between CPSC and other courses, please consult the Faculty of Science Credit</p>	<p>URL: <i>http://www.calendar.ubc.ca/vancouver/courses.cfm?code=CPSC</i></p> <p>Present Calendar Entry:</p> <p>CPSC: Computer Science Students with no previous exposure to computers may consider a more general introduction to computers and computer science provided by CPSC 101. Students who have credit for, or are currently registered in either of CPSC 110 or CPSC 111 or have Computer Science credit from another institution, may not take CPSC 100 or CPSC 101 or APSC 160 for credit in Science Programs. Students with sufficient background in the concepts presented in CPSC 110 and an advisor's approval are encouraged to challenge the CPSC 110 course for credit by taking an examination. Enrolment restrictions apply to certain CPSC courses. In order to register into CPSC 210, 211, 213, 221, 310, 313, and 320, students should have an overall average greater than or equal to a threshold set by the Department of Computer Science. Students who are currently in a CPSC program but are prevented from registering in any of these courses may not be able to continue in a CPSC program. Those students should consider transferring to another program. Additional fees are charged for some courses. For more information students are advised to contact the Department of Computer Science or visit the Computer Science undergraduate program website: (http://www.cs.ubc.ca/ugrad/program/index.html).</p>



Exclusion List.

html). For information on credit exclusion between CPSC and other courses, please consult the Faculty of Science Credit Exclusion List.

Action:

Replace the discussion of the challenge examination for CPSC 111 with the new one for CPSC 110. Remove the reference to enrolment restrictions for CPSC 211.

Rationale:

CPSC 111 has been replaced by a new course, CPSC 110 and the challenge examination for CPSC 110 has been established to replace the old one for 111. CPSC 211 is no longer taught, so discussing enrolment restrictions for it is moot.



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Arts Department: Computer Science Faculty Approval Date:</p> <p>Effective Session S Term 1 Year 2012 for Change</p>	<p>Date: 13 September 2011 Contact Person: Norm Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Proposed Calendar Entry:</p> <p>The Department of Computer Science offers opportunities for study leading to a bachelor's degree in Arts. Admission to the Major is not automatic and must be approved by the Department. Students may apply for admission to the Major in Computer Science upon attaining second year status (completion of 27 credits). Applying for the Major as soon as possible is suggested.</p> <p>The Department accepts applications year-round from current UBC Arts students. For application forms and further information regarding admission and continuation requirements, please see Computer Science Undergraduates.</p> <p>For information on advanced degrees, see graduate Computer Science.</p> <p>First Year</p> <ul style="list-style-type: none"> • CPSC 110 or CPSC 111 • CPSC 121 • MATH 100 or 102 or 104 (or 180 or 184 or 120) • MATH 101 or 103 or 105 (or 121) <p>Second Year</p> <ul style="list-style-type: none"> • CPSC 210 or CPSC 211 • CPSC 213, 221 • 6 credits from MATH 200, 221, STAT 200, 241 <p>Third and Fourth Years</p> <ul style="list-style-type: none"> • CPSC 310, 313, 320 • 12 credits of CPSC courses numbered 300 or higher • 9 credits of CPSC courses numbered 400 or higher <p>.....</p>	<p>URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,197,282,1333</p> <p>Present Calendar Entry:</p> <p>The Department of Computer Science offers opportunities for study leading to a bachelor's degree in Arts.</p> <p>The Department accepts applications year-round from current UBC Arts students for entry into the Major. Admission to the program must be approved by the Department. Arts students who are eligible to declare a specialization should apply to the Department of Computer Science for admission into the program. Eligibility to declare a specialization requires completion of at least 54 credits and not more than 75 credits. For application forms and further information regarding admission and continuation requirements, please see Computer Science Undergraduates.</p> <p>For information on advanced degrees, see graduate Computer Science.</p> <p>Major in Computer Science Note: Students in Arts majoring in Computer Science are required to satisfy all of the Faculty of Arts Degree Requirements (i.e., English language, literature, another language, and science), plus at least 18 additional credits in Arts courses as set out below.</p> <p>First Year</p> <ul style="list-style-type: none"> • CPSC 111 and 121 • MATH 100 or 102 or 104 (or 180 or 184 or 120) • MATH 101 or 103 or 105 (or 121) <p>Second Year</p> <ul style="list-style-type: none"> • CPSC 211, 213, and 221 • 6 credits from MATH 200, 221, STAT 200, 241 • at least 6 elective credits in Arts courses <p>Third and Fourth Years</p> <ul style="list-style-type: none"> • at least 12 elective credits in Arts courses numbered 300 or above



- CPSC 310, 313, 320
- 12 credits of CPSC courses numbered 300 or higher
- 9 credits of CPSC courses numbered 400 or higher

.....

Type of Action: Change the wording about declaring the Major to recommend that students do so after first year. Replace references to the obsolete courses CPSC 111 and CPSC 211 with their replacements CPSC 110 and CPSC 210 respectively. Remove references to Faculty of Arts requirements (redundant).

Rationale:

Computer Science students in Science routinely declare the Major after first year, and it would be best if the BA students had consistent expectations. CPSC 111 and CPSC 211 were replaced with new courses 3 and 2 years ago respectively. Faculty of Arts requirements are already available in the Calendar.



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<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>Prerequisites Candidates for admission must have completed a recognized bachelor's degree in a field that does not overlap with computer science. The following high school and university-level courses are required (BC high school and UBC courses are listed; the equivalents from any recognized high school or post-secondary institution will be accepted):</p> <ol style="list-style-type: none"> 1. BC Principles of Mathematics 12 1. English, 3 credits (any one of ENGL 110, 111, 112, 120, 121) 2. a computer literacy course or equivalent experience <p>...</p> <p>Degree Requirements</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Third Year</td> </tr> <tr> <td>CPSC 110 or 111, 121, 210 or 211, 221, 213¹</td> <td style="text-align: right;">20(15)</td> </tr> <tr> <td>ENGL 100-level²</td> <td style="text-align: right;">3</td> </tr> <tr> <td>ENGL 301³</td> <td style="text-align: right;">3</td> </tr> <tr> <td>MATH 180 (or 100 or 102 or 104 or 184 or 120)¹</td> <td style="text-align: right;">4(3)</td> </tr> <tr> <td>STAT 203¹</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Upper-level electives⁴</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Minimum Credits</td> <td style="text-align: right;">30</td> </tr> <tr> <td colspan="2">Fourth Year</td> </tr> <tr> <td>CPSC 310, 313, 320</td> <td style="text-align: right;">10</td> </tr> <tr> <td>CPSC courses numbered 300 or above</td> <td style="text-align: right;">6</td> </tr> <tr> <td>CPSC courses numbered 400 or above</td> <td style="text-align: right;">6</td> </tr> </table>	Third Year		CPSC 110 or 111, 121, 210 or 211, 221, 213 ¹	20(15)	ENGL 100-level ²	3	ENGL 301 ³	3	MATH 180 (or 100 or 102 or 104 or 184 or 120) ¹	4(3)	STAT 203 ¹	3	Upper-level electives ⁴	3	Minimum Credits	30	Fourth Year		CPSC 310, 313, 320	10	CPSC courses numbered 300 or above	6	CPSC courses numbered 400 or above	6	<p>URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,816,1299</p> <p>Present Calendar Entry:</p> <p>Prerequisites Candidates for admission must have completed a recognized bachelor's degree in a field that does not overlap with computer science. The following high school and university-level courses are required (BC high school and UBC courses are listed; the equivalents from any recognized high school or post-secondary institution will be accepted):</p> <ol style="list-style-type: none"> 2. BC Principles of Mathematics 12 3. English, 3 credits (any one of ENGL 110, 111, 112, 120, 121) 4. a computer literacy course or equivalent experience <p>...</p> <p>Degree Requirements</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Third Year</td> </tr> <tr> <td>CPSC 11+¹, 121, 21+, 221, 213</td> <td style="text-align: right;">20(15)</td> </tr> <tr> <td>ENGL 100-level²</td> <td style="text-align: right;">3</td> </tr> <tr> <td>ENGL 301³</td> <td style="text-align: right;">3</td> </tr> <tr> <td>MATH 180 (or 100 or 102 or 104 or 184 or 120)¹</td> <td style="text-align: right;">4(3)</td> </tr> <tr> <td>STAT 203¹</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Upper-level electives⁴</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Total Credits</td> <td style="text-align: right;">36(30)</td> </tr> <tr> <td colspan="2">Fourth Year</td> </tr> <tr> <td>CPSC 310, 313, 320</td> <td style="text-align: right;">10</td> </tr> <tr> <td>CPSC courses numbered 300 or above</td> <td style="text-align: right;">6</td> </tr> <tr> <td>CPSC courses numbered 400 or above</td> <td style="text-align: right;">6</td> </tr> </table>	Third Year		CPSC 11+ ¹ , 121, 21+, 221, 213	20(15)	ENGL 100-level ²	3	ENGL 301 ³	3	MATH 180 (or 100 or 102 or 104 or 184 or 120) ¹	4(3)	STAT 203 ¹	3	Upper-level electives ⁴	3	Total Credits	36(30)	Fourth Year		CPSC 310, 313, 320	10	CPSC courses numbered 300 or above	6	CPSC courses numbered 400 or above	6
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CPSC courses numbered 400 or above	6	Upper-level electives ⁴	12
Upper-level electives ⁴	12	Total Credits	34
Total Credits	34	Minimum Credits for Degree	64
Minimum Credits for Degree	64		
<p>¹ Requirements completed prior to commencement of the degree may not be repeated and must be replaced after consultation with an advisor. With permission from a B.C.S. advisor, a 4-credit course completed prior to commencement of the degree may be replaced with a 3-credit course. In these cases the degree credits would decrease by one credit for each substituted course.</p> <p>² ENGL 112 is recommended for the first-term English requirements.</p> <p>³ ENGL 301 may be deferred to a later term.</p> <p>⁴ Upper-level elective credits must be approved by an advisor. These credits should be either additional credits in the previous degree area or in another area the student wishes to combine with computer science.</p> <p>...</p>		<p>¹ Requirements completed prior to commencement of the degree may not be repeated and must be replaced after consultation with an advisor. With permission from a B.C.S. advisor, a 4-credit course completed prior to commencement of the degree may be replaced with a 3-credit course. In these cases the degree credits would decrease by one credit for each substituted course.</p> <p>² ENGL 112 is recommended for the first-term English requirements.</p> <p>³ ENGL 301 may be deferred to a later term.</p> <p>⁴ Upper-level elective credits must be approved by an advisor. These credits should be either additional credits in the previous degree area or in another area the student wishes to combine with computer science.</p> <p>...</p>	
<p>Promotion Requirements</p> <p>Students are admitted into third year. Promotion to fourth year requires the completion of or exemption from at least 24 credits, including the following:</p> <ul style="list-style-type: none"> • CPSC 110 or 111, 121 • 3 credits of first year ENGL • MATH 180 or equivalent • STAT 203 or equivalent • 3 credits of upper-level electives <p>Students must gain fourth-year standing before attempting 42 credits while registered in the B.C.S. program.</p> <p>Students must complete degree requirements within 90 attempted credits while registered in the program.</p>		<p>Promotion Requirements</p> <p>Students are admitted into third year. Promotion to fourth year requires the completion of or exemption from at least 24 credits, including the following:</p> <ul style="list-style-type: none"> • CPSC 111, 121 • 3 credits of first-year ENGL • MATH 180 or equivalent • STAT 203 or equivalent • 3 credits of upper-level electives <p>Students must gain fourth-year standing before attempting 42 credits while registered in the B.C.S. program.</p> <p>Students must complete degree requirements within 90 attempted credits while registered in the program.</p> <p>Action: Replace obsolete CPSC 111 and CPSC 211 with their replacement CPSC 110</p>	



and 210; adjust the description of credits required for the degree. Fix a typo.

Rationale:

Computer Science has replaced CPSC 111 and 211 with CPSC 110 and 210. The other changes are to make the description more readable. The requirement that students take ENGL 301 makes moving to the Faculty of Science Communication Requirement problematic.



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<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p>	<p>URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,421</p> <p>Present Calendar Entry:</p>
<p>Combined Honours (0021): Computer Science and Mathematics (CPSC, MATH)</p> <p>First Year</p> <p>Communication Requirement¹ 6</p> <p>CPSC 110 or 111 4</p> <p>CPSC 121 4</p> <p>MATH 120 (or 100 or 102 or 104 or 180 or 184)² 4</p> <p>MATH 121 (or 101 or 103 or 105) 4</p> <p>PHYS 107 (101) 3</p> <p>Laboratory and physical sciences requirements^{3,4} 3</p> <p>BIOL or ASTR or EOSC or GEOB⁵ 3</p> <p>Electives⁶ 2</p> <p>Total Credits 33</p> <p>Second Year</p> <p>CPSC 210 or 211 4</p> <p>CPSC 213, 221 8</p> <p>MATH 215, 223 (221), 226⁷ (200), 227 (317) 12</p> <p>Arts elective 6</p> <p>Electives^{6,7} 3</p> <p>Total Credits 33</p> <p>Third Year</p> <p>CPSC 302 or 303⁸ 3</p> <p>CPSC 310, 313, 320 10</p> <p>MATH 316, 320, 321 9</p> <p>6 credits from MATH 300, 301, 322, 331 6</p> <p>Electives⁶ 5</p>	<p>Combined Honours (0021): Computer Science and Mathematics (CPSC, MATH)</p> <p>First Year</p> <p>ENGL 100-level¹ 6</p> <p>CHEM 111² 0-4</p> <p>CPSC 110 or 111 4</p> <p>CPSC 121 4</p> <p>MATH 120 (or 100 or 102 or 104 or 180 or 184)³ 4(3)</p> <p>MATH 121 (or 101 or 103 or 105) 4(3)</p> <p>PHYS 100⁴ 0-3</p> <p>PHYS 107 (101) 3</p> <p>Laboratory and physical sciences requirements⁵ 3-4</p> <p>BIOL, ASTR, EOSC, GEOB, PSYC⁶ 3</p> <p>Electives 3-6</p> <p>Total Credits⁷ 32-36</p> <p>Second Year</p> <p>CPSC 210 or 211 4</p> <p>CPSC 213, 221 8</p> <p>MATH 215, 223 (221), 226⁸ (200), 227 (317) 12</p> <p>Arts elective 6</p> <p>Electives⁸ 3</p> <p>Total Credits⁷ 33</p> <p>Third Year</p> <p>CPSC 302 or 303⁹ 3</p> <p>CPSC 310, 313, 320 10</p> <p>MATH 316, 320, 321 9</p>



Total Credits	33	6 credits from MATH 300, 301, 322, 331	6
Fourth Year		Electives	9
CPSC 420 or 421	3	Total Credits ⁷	37
CPSC courses numbered 300 and above	9	Fourth Year	
12 credits from MATH 400-405, 412, 416-429, 433-440, 443, 449, CPSC 402, 403, 406	12	CPSC 420 or 421	3
Arts elective	6	CPSC courses numbered 300 and above	9
Elective ⁶	3	12 credits from MATH 400-405, 412, 416-429, 433-440, 443, 449, CPSC 402, 403, 406	12
Total Credits ⁷	33	Arts elective	6
Minimum Credits for Degree	132	Elective	3
		Total Credits ⁷	33
		Minimum Credits for Degree	135

¹ For a full list of acceptable courses see [Communication Requirement \[link to Communications Requirement http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1463#18434\]](http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1463#18434) . ENGL 112 and SCIE 113 are recommended. Three credits of the Communication Requirement may be deferred until second year. SCIE 113 cannot be counted towards the required 18 credits of Arts courses; students who elect to take it may need to take additional Arts courses to satisfy the Faculty of Science Arts requirement.

² See UBC-SFU-UVIC-UNBC Calculus Examination Certificate. Also, MATH 110 may substitute for any of the specified courses by decreasing the electives by 3 credits.

³ Students without Chemistry 12 must complete CHEM 111. Students without Physics 12 must complete PHYS 100.

⁴ See Lower-Level Requirements ([link to Lower-level Requirements http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1465](http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1465)) for details.

⁵ Students without credit for Biology 11 or 12 must use 3 credits of 100-level BIOL.

⁶ Students are permitted to move elective credits between years. Students who take

¹ ~~ENGL 112 is recommended. Qualified students are encouraged to consider ENGL 120 and/or 121. 3 credits of first-year English may be deferred until second year.~~

² ~~Students without Chemistry 12 must complete CHEM 111.~~

³ See UBC-SFU-UVIC-UNBC Calculus Examination Certificate. Also, MATH 110 may substitute for any of the specified courses by decreasing the electives by 3 credits.

⁴ ~~This requirement applies only to students without credit for Physics 12.~~

⁵ ~~See Lower-Level Requirements (reference not found) for details.~~

⁶ ~~Students without credit for Biology 11 or 12 must use 3 credits of 100-level BIOL. Only science credit PSYC courses may be used.~~

⁷ ~~Honours programs require a minimum overall 68% average in each academic session, the completion of all attempted courses, and at least 30 credits in each Winter Session. See Program Requirements (reference not found) for details.~~

⁸ ~~Students who do not obtain 68% or higher in MATH 226 must take MATH 220. In order to be promoted to third year, students must complete one of MATH 220, 226.~~



<p>courses in MATH, PHYS, or CHEM with extra credits will require fewer elective credits in later years. Electives must be taken to ensure that all Faculty of Science requirements [link to Faculty of Science requirements http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,408] are met.</p> <p>⁷ Students who do not obtain 68% or higher in MATH 226 must take MATH 220. In order to be promoted to third year, students must complete one of MATH 220, 226.</p> <p>⁸ May be deferred to the following year.</p>	<p>⁹ May be deferred to the following year.</p> <p>Action: Introduce the communication requirement, reduce the total credits to 132 by eliminating electives, link to Faculty of Science requirements, simplify and clarify footnotes.</p> <p>Rationale: The requirement for ENGL has been broadened to allow a wider range of communication courses including SCIE 113. The proposed changes in the description and the footnotes accommodate the communication requirement, reduce the credits required to 132, and adjust the footnotes to fit the current requirements. Link to the Faculty of Science General Degree Requirements rather than restating them.</p>
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<p>Faculty: Science Department: Computer Science</p>	<p>Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>																																																																														
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¹ For a full list of acceptable courses see **Communication Requirement [link to Communications Requirement <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1463#18434>]** . ENGL 112 and SCIE 113 are recommended. Three credits of the Communication Requirement may be deferred until second year. SCIE 113 cannot be counted towards the required 18 credits of Arts courses; students who elect to take it may need to take additional Arts courses to satisfy the Faculty of Science Arts requirement.

² Students pursuing a Co-op program in Computer Science are advised to also take CPSC 210 in their first year or in the summer following their first year. Co-op students will then be in a position to take one or both of CPSC 221 and CPSC 213 in term 1 of second year before going out on a Co-op work term.

³ **Other subject area credits** are selected with consultation of an advisor of the other subject.

⁴ Students should note that the courses taken in the first and second year must satisfy the **Faculty of Science Lower-Level Requirements [link to Lower-level Requirements <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1465>]**.

⁵ Students are permitted to move elective credits between years. Electives must satisfy the Faculty of Science upper-level and Arts requirements [link to Minimum Program Requirements <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,408#18798>]. **If the other subject is Mathematics or Statistics, electives must also be chosen to satisfy the Breadth Requirement [link to Breadth Requirement <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1464#18444>]**.

~~⁴ ENGL 112 is recommended. Qualified students are encouraged to consider ENGL 120 and/or 121. 3 credits of first-year English may be deferred until second year.~~

² Students pursuing a Co-op program in Computer Science are advised to also take CPSC 210 ~~or 211~~ in their first year or in the summer following their first year. Co-op students will then be in a position to take one or both of CPSC 221 and CPSC 213 in term 1 of second year before going out on a Co-op work term.

³ ~~Courses in these entries~~ are selected with consultation of an advisor of the other subject.

⁴ Students should note that the courses taken in the first and second year must satisfy the ~~B.Sc. requirements listed in the Lower-Level Requirements section of the Faculty of Science degree requirements.~~

~~⁵ 3 of these 6 credits may be deferred to third year. In some cases BIOL 300 may substitute for a STAT selection.~~

~~⁶ Electives (21 credits or more) must include the following: a) At least 12 credits must be in the Faculty of Arts (Arts electives); b) If the other subject is mathematics or statistics, the remaining 9 elective credits (i.e., other than the Arts electives), must be either in Arts or in science courses other than computer science, mathematics, and statistics; c) If the other subject is other than mathematics and statistics, the remaining 9 credits may be in any faculty; d) At least 6 or the 21 elective credits must be in courses numbered 300 or higher.~~

Action: Replace first year English with the Communication Requirement. Reduce total credits to 120. Link to rather than restate Faculty of Science requirements. Improve the wording and clarity of the footnotes.



3 of these 6 credits may be deferred to third year.

Rationale: The requirement for ENGL has been broadened to allow a wider range of communication courses including SCIE 113. The proposed changes in the description and the footnotes accommodate the communication requirement, reduce the credits required to 120, and adjust the footnotes to fit the current requirements. Link to the Faculty of Science General Degree Requirements rather than restating them.



UBC Curriculum Proposal Form Change to Course or Program

Category: (2)

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 15 September 2011 Contact Person: Eric Vatikiotis-Bateson Phone: 827-5468 Email: evb@mail.ubc.ca</p>																																																																														
<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>B.Sc. Major in Cognitive Systems (1226): Computational Intelligence and Design</p> <p>For program information and admission requirements, see Cognitive Systems (Science) [link to Cognitive Systems (Science)] http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,681#7737.</p> <p>First Year</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Communication Requirement¹</td> <td style="text-align: right;">6</td> </tr> <tr> <td>BIOL (or ASTR or EOSC or GEOB²)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>CPSC 110 or 111³</td> <td style="text-align: right;">4</td> </tr> <tr> <td>CPSC 121³</td> <td style="text-align: right;">4</td> </tr> <tr> <td>MATH 100 or 102 or 104 (or 120 or 180 or 184)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>MATH 101 or 103 or 105 (or 121)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>PHYS 101⁴ (or 107)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>CHEM 121⁵ (or PHYS 102 or PHYS 108⁶)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Electives^{7,8}</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Total Credits</td> <td style="text-align: right;">30</td> </tr> </table> <p>Second Year</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>COGS 200</td> <td style="text-align: right;">3</td> </tr> <tr> <td>CPSC 210 or 211³</td> <td style="text-align: right;">4</td> </tr> <tr> <td>CPSC 221</td> <td style="text-align: right;">4</td> </tr> <tr> <td>LING 100⁹</td> <td style="text-align: right;">3</td> </tr> <tr> <td>PHIL 220 (or PHIL 320¹⁰)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>STAT 200 or 241¹¹</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Electives^{7,8}</td> <td style="text-align: right;">10</td> </tr> <tr> <td>Total Credits</td> <td style="text-align: right;">30</td> </tr> </table> <p>Third and Fourth Years</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>COGS 300, 303, 401, 402</td> <td style="text-align: right;">12</td> </tr> </table>	Communication Requirement¹	6	BIOL (or ASTR or EOSC or GEOB²)	3	CPSC 110 or 111 ³	4	CPSC 121 ³	4	MATH 100 or 102 or 104 (or 120 or 180 or 184)	3	MATH 101 or 103 or 105 (or 121)	3	PHYS 101 ⁴ (or 107)	3	CHEM 121 ⁵ (or PHYS 102 or PHYS 108 ⁶)	3	Electives ^{7,8}	1	Total Credits	30	COGS 200	3	CPSC 210 or 211 ³	4	CPSC 221	4	LING 100 ⁹	3	PHIL 220 (or PHIL 320 ¹⁰)	3	STAT 200 or 241 ¹¹	3	Electives ^{7,8}	10	Total Credits	30	COGS 300, 303, 401, 402	12	<p>URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,421</p> <p>Present Calendar Entry:</p> <p>B.Sc. 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numbered 300 or above ^{8,12,13}	12	Electives ^{6,7,13}	21
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¹ For a full list of acceptable courses see Communication Requirement [link to Communications Requirement <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1463#18434>] . ENGL 112 and SCIE 113 are recommended. Three credits of the Communication Requirement may be deferred until second year. SCIE 113 cannot be counted towards the required 18 credits of Arts courses; students who elect to take it may need to take additional Arts courses to satisfy the Faculty of Science Arts requirement.

² Students without credit in Biology 11 or Biology 12 must take BIOL 111.

³ Students pursuing a Co-op program are advised to also take CPSC 210 in their first year or in the summer following their first year. Co-op students will then be in a position to take CPSC 221 in Term 1 of second year before going out on a Co-op work term.

⁴ Students without credit for Physics 12 must also complete PHYS 100.

⁵ Students without credit for Chemistry 12 must take CHEM 111 and either CHEM 113 or PHYS 102 (or PHYS 108). These students may delay 3 credits of CHEM or PHYS until second year.

⁶ Students who choose to take PHYS 108 need to take PHYS 109 or other lab courses to complete the Laboratory Science requirement.

⁷ Students attempting the COGS major should choose electives to obtain prerequisites to appropriate third and fourth-year courses. Note that the B.Sc. requires at least 72 credits of science courses. **Students taking more than 6 credits of first year MATH can reduce the number of elective credits required in second or third year accordingly. MATH**

⁺ ~~Students who do not have credit for Biology 11 or 12 take 3 credits of 100-level BIOL. Students with credit for Biology 11 or 12 complete 3 credits of an ASTR, BIOL, EOSC, or science credit GEOG or PSYC lecture course.~~

² Students pursuing a Co-op program are advised to also take CPSC 210 ~~or 211~~ in their first year or in the summer following their first year. Co-op students will then be in a position to take CPSC 221 in Term 1 of second year before going out on a Co-op work term.

³ Students without credit for Physics 12 must also complete PHYS 100.

⁴ ~~Students who choose to take PHYS 108 need to take PHYS 109 or other lab courses to complete the Lower-Level Laboratory Science requirement.~~

⁵ Students without credit for Chemistry 12 must take CHEM 111 and either CHEM 113 or PHYS 102 (or PHYS 108). These students may delay 3 credits of CHEM or PHYS until second year.

⁶ Students attempting the COGS major should choose electives to obtain prerequisites to appropriate third and fourth year courses. Note that the B.Sc. requires 72 credits of science courses, and 12 credits of Arts electives.

⁷ Cognitive Systems module courses are recommended as electives for each year of study. Modules are sets of recommended courses that are directly relevant to Cognitive Systems. For the list of module courses, see Cognitive Systems. Courses explicitly listed as required cannot also be credited as module courses.

⁸ Students ~~attempting the COGS major~~ should take LING 100 as soon as possible, preferably before taking COGS 200.

⁹ The prerequisite PHIL 220 may be waived for PHIL 320 with the consent of the instructor.

⁺⁰ Students must achieve a grade of greater than 72% in this course, or else must take another 3



L10 may substitute for any of the specified differential calculus courses listed by decreasing the electives by 3 credits. Students are permitted to move elective credits between years. Students who take courses in MATH, PHYS, or CHEM with more or less credits than those recommended will require a different number of elective credits.

8 Cognitive Systems module courses are recommended as electives for each year of study. Modules are sets of recommended courses that are directly relevant to Cognitive Systems. For the list of module courses, see Cognitive Systems. Courses explicitly listed as required cannot also be counted as module courses.

9 Students should take LING 100 as soon as possible, preferably before taking COGS 200.

10 The prerequisite PHIL 220 may be waived for PHIL 320 with the consent of the instructor.

11 Students must achieve a grade of greater than 72% in this course, or else must take another 3 credits of MATH or STAT in order to be admitted to CPSC 320. Students interested in further STAT courses must take STAT 200, as STAT 241 does not serve as a prerequisite for higher level STAT courses.

12 At least 3 credits must be 400-level CPSC module courses and 9 credits must be non-CPSC module courses.

13 BIOL 455 and 458 can also be counted towards this requirement so long as PSYC 360 or PSYC 304 has not been taken.

14 At least 48 credits of courses numbered 300 or above are required for the B.Sc. degree, of which at least 30 must be science credits.

credits of MATH or STAT in order to be admitted to CPSC 320. Students interested in further STAT courses must take STAT 200, as STAT 241 does not serve as a prerequisite for higher level STAT courses.

11 At least 3 credits must be 400-level CPSC module courses and 9 credits must be non-CPSC module courses.

12 BIOL 455 and 458 can also be counted towards this requirement so long as PSYC 360 or PSYC 304 has not been taken.

13 At least 48 credits of courses numbered 300 or above are required for the B.Sc. degree, of which at least 30 must be science credits.

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Type of Action: Reduced overall program credit hour requirement to 120 hours. Replaced ENGL 100 level course requirement with more comprehensive “Communication Requirement,” and added descriptive footnote #1. Subsequent footnotes renumbered. Footnote 7 describing electives substantially reworded to be more clear.

Rationale: The requirement for ENGL has been broadened to allow a wider range of communication courses including SCIE 113. The proposed changes in the description and the footnotes accommodate the communication requirement, reduce the credits required in the specialization to 120, and adjust the footnotes to fit the current requirements.



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>CPSC 110 (4) Computation, Programs, and Programming Fundamental program and computation structures. Introductory programming skills. Computation as a tool for information processing, simulation and modeling, and interacting with the world. [3-3-0]</p>	<p>URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry:</p> <p>CPSC 110 (4) Computation, Programs, and Programming Fundamental program and computation structures. Introductory programming skills. Computation as a tool for information processing, simulation and modeling, and interacting with the world. [3-3-0] <i>Prerequisite: Principles of Mathematics 12 or Pre-calculus 12.</i></p> <p>Action:</p> <p>Remove the prerequisite of Grade 12 Mathematics.</p> <p>Rationale:</p> <p>The course is designed to be suitable for any UBC student from any faculty, and is based on a curriculum that explicitly requires only grade school algebra as a mathematical foundation.</p>



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

Faculty: Science Department: Computer Science	Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca
Effective Date for Change: 2012S Proposed Calendar Entry: CPSC 189 (1) Systematic Program Design in Python Systematic design of small programs using the Python programming language. [1-1-0] Prerequisite: CPSC 110, Principles of Mathematics 12 or Pre-calculus 12.	URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry: CPSC 189 (1) Systematic Program Design in Python Systematic design of small programs using the Python programming language. [1-1-0] Prerequisite: CPSC 110. Action: Add the prerequisite of Grade 12 Mathematics. Rationale: Grade 12 Mathematics has been removed as a prerequisite from CPSC 110, but is required for the students taking CPSC 189 so is added here explicitly.



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>CPSC 310 (4) Introduction to Software Engineering Specification, design, implementation and maintenance of large, multi-module software systems. Principles, techniques, methodologies and tools for computer aided software engineering (CASE); human-computer interfaces, reactive systems, hardware-software interfaces and distributed applications. [3-2-0] <i>Prerequisite:</i> CPSC 210.</p>	<p>URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry:</p> <p>CPSC 310 (4) Introduction to Software Engineering Specification, design, implementation and maintenance of large, multi-module software systems. Principles, techniques, methodologies and tools for computer aided software engineering (CASE); human-computer interfaces, reactive systems, hardware-software interfaces and distributed applications. [3-2-0] <i>Prerequisite:</i> Either (a) all of CPSC 213, CPSC 221 or (b) one of CPSC 210, CPSC 211 and all of CPSC 213, CPSC 260, EECE 320.</p> <p>Action:</p> <p>Remove the prerequisite of CPSC 213 and CPSC 221 and replace it with the weaker prerequisite of CPSC 210.</p> <p>Rationale:</p> <p>The course does not use the knowledge of hardware and operating systems that students gain by taking CPSC 213 nor the data structures implementation experience that students gain from CPSC 221. Having these courses as prerequisites is preventing some well-qualified non-major students from learning about this important aspect of Computer Science.</p>



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 21 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 2012S</p> <p>Proposed Calendar Entry:</p> <p>CPSC 311 (3) Definition of Programming Languages Comparative study of advanced programming language features. Statement types, data types, variable binding, parameter passing mechanisms. Methods for syntactic and semantic description of programming languages. [3-0-1] Prerequisite: One of CPSC 210, CPSC 211.</p>	<p>URL:</p> <p>Present Calendar Entry:</p> <p>CPSC 311 (3) Definition of Programming Languages Comparative study of advanced programming language features. Statement types, data types, variable binding, parameter passing mechanisms. Methods for syntactic and semantic description of programming languages. [3-0-1] Prerequisite: Either (a) CPSC 221 or (b) one of CPSC 210, CPSC 211 and all of CPSC 260, EECE 320.</p> <p>Action: Relax the prerequisite.</p> <p>Rationale: The prerequisite of CPSC 221, which teaches about data structures and algorithms, is not required for the way the CPSC 311 is now being taught. This change will make the course available to many more students who are not in a Computer Science specialization.</p>



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 13 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 2012S Proposed Calendar Entry:</p> <p>CPSC 344 (3) Introduction to Human Computer Interaction Methods Basic tools and techniques, teaching a systematic approach to interface design, task analysis, analytic and empirical evaluation methods. [2-2-2] Prerequisite: CPSC 210.</p>	<p>URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry:</p> <p>CPSC 344 (3) Introduction to Human Computer Interaction Methods Basic tools and techniques, teaching a systematic approach to interface design, task analysis, analytic and empirical evaluation methods. [2-2-2] Corequisite: CPSC 310.</p> <p>Action:</p> <p>Remove the corequisite of CPSC 310 and replace it with a prerequisite of CPSC 210.</p> <p>Rationale:</p> <p>The course does not use the knowledge of software engineering that students gain by taking CPSC 310, and having it as a prerequisite is preventing some well-qualified non-major students from learning about this important aspect of Computer Science. CPSC 210 provides sufficient preparation for students.</p>



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 8 June 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 2011S Proposed Calendar Entry:</p> <p>CPSC 448 (3/6) c Directed Studies in Computer Science Open ordinarily to students in Computer Science with at least a 72% average and the permission of the Head of the Department or designate. The course may consist of supervised reading, participation in a seminar, and one or more programming projects.</p>	<p>URL: <i>(needed for <u>programs only</u>)</i> Present Calendar Entry:</p> <p>CPSC 448 (3/6) c Directed Studies in Computer Science Open ordinarily to Honours students in Computer Science, with the permission of the department head. The course may consist of supervised reading, participation in a seminar, and one or more programming projects.</p> <p>Action:</p> <p>Remove the (untrue) comment about this course ordinarily being available only to honours students, and replace it with a more accurate description of the approval process.</p> <p>Rationale:</p> <p>This course has been available to non-honours students with good GPAs for many years and the old description may be discouraging qualified students from taking this course.</p>



UBC Curriculum Proposal Form Change to Course or Program

Category: 2

<p>Faculty: Science Department: Computer Science</p>	<p>Date: 20 September 2011 Contact Person: Norman Hutchinson Phone: 2-8188 Email: norm@cs.ubc.ca</p>
<p>Effective Date for Change: 2012S</p> <p>Proposed Calendar Entry:</p> <p>Computer Science</p> <p>The Department of Computer Science offers opportunities for study leading to bachelor's, master's, and doctoral degrees. For information on the Bachelor of Arts in Computer Science, see the Computer Science entry in the Arts section. For information on advanced degrees, see graduate Computer Science. All students who intend to take honours in Computer Science must consult the head of the Department.</p> <p>High school or college transfer students can apply directly to the Computer Science degree program when they apply for admission to UBC by selecting the Bachelor of Science, Computer Science Major as their choice of program on the UBC application form. Students with first year standing in Science who did not apply for admission directly from high school or college must apply at the end of first year (see [link to Moving from First to Second Year in Science: http://science.ubc.ca/students/degree/secondyear]). The Department of Computer Science accepts applications year-round from current UBC Science students with 2nd year standing or higher. For application forms and information regarding</p>	<p>URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,421</p> <p>Present Calendar Entry:</p> <p>Computer Science</p> <p>The Department of Computer Science offers opportunities for study leading to bachelor's, master's, and doctoral degrees. For information on the Bachelor of Arts in Computer Science, see the Computer Science entry in the Arts section. For information on advanced degrees, see graduate Computer Science. All students who intend to take honours in Computer Science must consult the head of the Department.</p> <p>High school or college transfer students can apply directly to the Computer Science degree program when they apply for admission to UBC by selecting the Bachelor of Science, Computer Science Major as their choice of program on the UBC application form. The Department of Computer Science accepts applications year-round from current UBC Science students. For application forms and information regarding admission and continuation requirements, students are advised to review the Computer Science undergraduate information.</p> <p>Admission to a degree program in Computer Science is a prerequisite for receiving a B.Sc. in Computer Science.</p> <p>Action: Clarify the admission process for</p>



<p>admission and continuation requirements, students are advised to review the Computer Science undergraduate information.</p>	<p>existing Science students who must wait until the end of their first year to apply for admission.</p>
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<p>Admission to a degree program in Computer Science is a prerequisite for receiving a B.Sc. in Computer Science.</p>	<p>Rationale: The admission practices of the Department changed when the Faculty introduced a centralized mechanism for declaring specializations at the end of first year. This change brings the calendar into agreement with current practice.</p>
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