
Consent Renewal Application

Seneca College

**Bachelor of Applied
Technology
(Software Development)**

Monday, December 18, 2006

The Honourable Christopher Bentley
Minister of Training, Colleges and Universities
c/o Postsecondary Education Quality Assessment Board
2 Carlton Street, Suite 1511
Toronto, Ontario
M5B 1J3

Dear Minister Bentley:

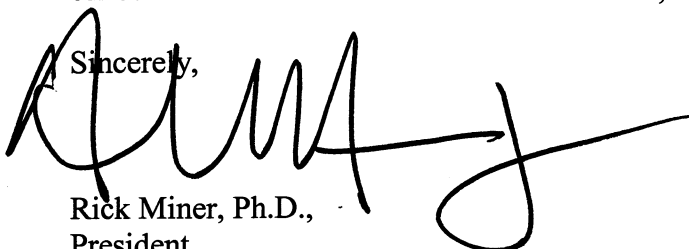
Consistent with the provisions of the **Consent Renewal Application For Ontario Colleges (Programs with consent expiry dates from December 31, 2007 to October 20 2008)**, I am pleased to submit Seneca College's application for renewal of Ministerial Consent to continue offering the *Bachelor of Applied Technology – Software Development* program.

The BAT - Software Development (BSD) program was part of the second group of Ontario College applied degree pilots to be granted Ministerial Consent in 2002, and began with its first intake of students in September, 2003. We are extremely proud of this new degree program, and the faculty, staff and industry advisors who have worked diligently over the past four years to ensure that the academic and service commitments made to our students are honoured throughout the program. The first cohort of students is scheduled to graduate this coming Spring, 2007.

The provision of advanced, applied education in this area builds on Seneca's strategic goals and demonstrated sector leadership for over a decade in the School of Computer Studies. Coming out of the recent IT downturn, industry increasingly is seeking software developers who are technically superior while able to think critically, analyze and solve complex problems, and manage projects collaboratively and effectively in multi-disciplinary work teams.

As outlined in the *Directives and Guidelines for Applying for Ministerial Consent*, I have attached a signed copy of the relevant Applicant Acknowledgement and Agreement form. If you have any questions or need further information, please do not hesitate to contact my office or that of our Vice-President Academic, Cindy Hazell.

Sincerely,



Rick Miner, Ph.D.,
President

Applicant Acknowledgement and Agreement

(To accompany every application for ministerial consent under the Post-secondary Education Choice and Excellence Act, 2000)

This form must be completed by a representative of the applicant who is authorized to bind the applicant, and must be included with the materials accompanying an application to the Minister for a consent under the Post-secondary Education Choice and Excellence Act, 2000.

Name of applicant: **Seneca College of Applied Arts and Technology**

Purpose of application: **Bachelor of Applied Technology (Software Development)**

___ Please indicate if this application relates to use of the term *university*.

1. The applicant hereby acknowledges that, in making this application, it understands that:
 - 1.1 The granting of a consent by the Minister of Training, Colleges and Universities under the act is a privilege, not a right.
 - 1.2 A consent by the Minister of Training, Colleges and Universities under the act is normally granted for a specified period of time and remains in force only during that specified period.
 - 1.3 A Minister's consent does not include any express or implied entitlement to:
 - a renewal of such consent; or
 - a consent for additional or different activities regulated by the act.
 - 1.4 A Minister's consent does not entitle the consent holder to any funding from the Government of Ontario, including but not limited to operating, capital, or research funding.
 - 1.5 A private organization from outside Ontario will be treated no less favourably, in like circumstances, than a private organization from Ontario.
 - 1.6 A private organization, whether from Ontario or from outside the province, is not entitled to treatment that is no less favourable, in like circumstances, than the treatment accorded by the Minister to a public institution.
 - 1.7 A Minister's consent is not transferable, directly or indirectly, to a third party.
 - 1.8 If the applicant fails to comply with any legislative requirements or with the terms and conditions of the consent, the Minister may amend or change the terms and conditions of the consent or suspend or revoke the consent.
 - 1.9 A Minister's consent does not make the consent holder's students eligible to apply for government financial assistance, grants, or awards that are provided directly to students (e.g., assistance under the Ontario Student Assistance Program). Approval of organizations and programs for the purposes of Ontario student loans is established pursuant to the Ministry of Training, Colleges and Universities Act and regulations thereunder, as amended from time to time.
 - 1.10 The Minister's criteria and policy statements related to the review of applications for a ministerial consent may change from time to time.
 - 1.11 All information provided to the Minister or the Postsecondary Education Quality Assessment Board in applications and related documentation may be subject to disclosure under the Freedom of Information and Protection of Privacy Act.
 - 1.12 No consent shall take effect until the applicant provides confirmation, in a written form approved by the Minister, that the applicant understands and agrees to comply with all of the terms and conditions attached to the consent.

(continued)

- 1.13 Should the Minister grant a consent, the consent holder will be required to ensure that the following statement appears on promotional and other materials, in any media, that relate to the program offered under the consent:

This program is offered under the written consent of the Minister of Training, Colleges and Universities for the period from (day/month/year) to (day/month/year). Prospective students are responsible for satisfying themselves that the program and the degree will be appropriate to their needs (e.g., acceptable to potential employers, professional licensing bodies, or other educational institutions).

- 1.14 The consent holder has a positive obligation under the Post-secondary Education Choice and Excellence Act, 2000, to notify the Minister of Training, Colleges and Universities promptly if the consent holder has reason to believe that not all of the terms and conditions of a consent may be met.

2. The applicant hereby agrees to provide the Minister or the Postsecondary Education Quality Assessment Board with any additional material required by the Minister or the board to assess the application.
3. The applicant hereby confirms and warrants that:
- 3.1 All information and representations provided by the applicant as part of this application, including information given in the Organization Review Submission and the Quality Assessment Review Submission, are true.
- 3.2 This application was duly approved by the applicant's governing body or by another representative duly authorized to bind the applicant on

Monday, December 18, 2006

(date of approval)

at

Seneca College, Newnham Campus

(place of approval).

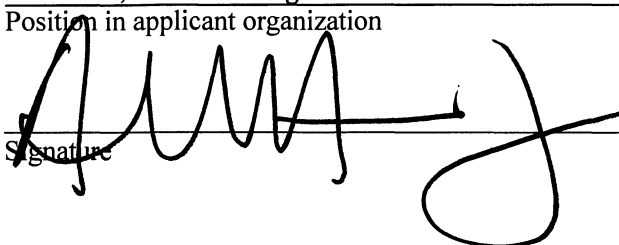
Rick Miner

Name of authorized representative

President, Seneca College

Position in applicant organization

Signature



December 18, 2006

Date

Part A

Report On The Delivery Of The Current Consent Program

Submission Checklist for Part A

Item Name and Binder Tab	Status
Submission Checklist for Part A	[√] Attached
Appendix 1 College and Program Information	[√] Attached
Appendix 2 Abstract of Proposed Program	[√] Attached
Appendix 3 Delivery of Current Consent Program Checklist	[√] Attached
Degree Level Standard	
Appendix 4.1 Degree Level Standard Summary	[√] Attached
Program Content	
Appendix 6.1.1 Program Advisory Committee	[√] Not required
Appendix 6.2.1 Professional/Accreditation or Other Requirements	[√] Not applicable
Appendix 6.2.2 Letters of Support: Professional/Accreditation or Other Requirements	[√] Not applicable
Appendix 6.3.1 Program Level Learning Outcomes (Met)	[√] Attached
Appendix 6.3.1.1 Program Level Learning Outcomes (Not Met)	[√] Not required
Appendix 6.3.3.1 Program Hour/Credit Conversion Justification	[√] Not required
Appendix 6.3.3.2 Academic Course Schedule	[√] Not required
Appendix 6.4.A. Explanation of Added or Dropped “P” Courses	[√] Attached
Appendix 6.4.A.1 Added “P” Course Outlines	[√] Attached
Appendix 6.4.B. Explanation of Added or Dropped “O” Courses	[√] Attached
Appendix 6.4.B.1 Added “O” Course Outlines	[√] Not required
Appendix 6.5.1. Program Structure Requirement	[√] Not required
Appendix 6.5.2 Support for Work Experience	[√] Not required
Appendix 6.5.3 Work Experience Outcomes and Evaluation	[√] Not required
Appendix 6.6, Summary of Program Changes	[√] Attached
Appendix 5.1.1 Admission Requirements Direct Entry	[√] Not required
Appendix 5.1.2 Admission Policies and Procedures for Mature Students	[√] Not required
Appendix 5.2.1 Credit Transfer/Recognition Policies and Procedures	[√] Not required
Appendix 5.2.2 Advanced Placement Policies	[√] Not required
Appendix 5.2.3 Degree Completion Arrangements	[√] Not required

Appendix 5.2.4 Gap Analysis	[√] Not required
Appendix 5.2.5 Bridging Courses	[√] Not required
Attach as Appendix 5.2.6 Admissions Information	[√] Attached
Appendix 5.3, Promotion and Graduation Requirements	[√] Not required
Attach as Appendix 5.3.1, Student Retention Information	[√] Attached
Program Delivery Standard	
Appendix 7.1.1 Quality Assurance Policies	[√] Not required
Appendix 7.1.2 Policy on Student Feedback	[√] Not required
Appendix 7.1.3 Student Feedback Instruments	[√] Not required
Appendix 7.2.1 On-line Learning Policies and Practices	[√] Not required
Appendix 7.2.2 Academic Community Policies	[√] Not required
Appendix 7.2.3 Expansion of On-Line Learning	[√] Not required
Appendix 7.2.4 Introduction of On-Line Learning Policies	[√] Not required
Capacity to Deliver Standard	
Attach as Appendix 8.2.1 Library Resources	[√] Attached
Attach as Appendix 8.2.2 Computer Access	[√] Attached
Attach as Appendix 8.2.3 Improvements/Expansion of Classroom Space	[√] Attached
Attach as Appendix 8.2.4 Laboratories/Equipment	[√] Attached
Attach as Appendix 8.3 Resource Renewal and Upgrading	[√] Attached
Appendix 8.4 Support Services	[√] Not required
Appendix 8.5 Policies on Faculty	[√] Not required
Appendix 8.6.2.A Exception Statements Approved by the President	[√] Not required
Appendix 8.6.2 B, Faculty Qualifications: Discipline Related Courses	[√] Attached
Appendix 8.6.2 C, Faculty Qualifications: Breadth Courses	[√] Attached
Appendix 8.7, Enrolment Projections and Staffing Implications	[√] Attached
Credential Recognition	
Appendix 10.1.1 Current Regulatory or Licensing Requirements	[√] Not applicable
Appendix 10.1.2 Letters of Support From Regulatory/Licensing Bodies	[√] Not applicable
Appendix 9.1.a. Credential Recognition	[√] Attached
Appendix 9.1.b. Credit Transfer Recognition	[√] Not required

Appendix 9.1.c. Policy on Informing Students on Recognition	[√] Not required
Program Evaluation	
Appendix 11.1 Periodic Review Policy and Schedule	[√] Not required
Appendix 11.2 Update on Program Evaluation Measures	[√] Attached
Appendix 12.1 Additional Information – Accreditation Update	[√] Attached
Appendix 12.1 Additional Information – Mozilla Corporation Partnership	[√] Attached

Appendix 1: College and Program Information

Full Legal Name of Organization: Seneca College of Applied Arts and Technology
Operating Name of Organization: Seneca College
Common Acronym of Organization (if applicable): (Not applicable)
URL for Organization Homepage (if applicable): http://www.senecac.on.ca
Degree program for which consent renewal is being sought: Bachelor of Applied Technology (Software Development)
Location (specific address) where program is delivered: Seneca College, Seneca@York Campus 70 The Pond Rd Toronto, ON M3J 3M6
Date on which the program commenced: 08/09/2003 (day/month/year)
Date when the initial class of students will complete the program: The semester ends on: 20/04/2007 (day/month/year) Convocation will be on: 27/06/2007 (day/month/year)
Contact Information Person Responsible for this Submission: Name/Title: LauraJo Gunter, Dean Full Mailing Address: Seneca College Faculty of Information Arts and Technology 70 The Pond Road Toronto, ON M3J 3M6 Telephone: (416) 491-5050 x3725 E-mail: laurajo.gunter@senecac.on.ca
Site Visit Coordinator (if site visit is required and if different from above): Name/Title: Evan Weaver, Chair Full Mailing Address: Seneca College School of Computer Studies 70 The Pond Road Toronto, ON M3J 3M6 Telephone: (416) 491-5050 x3211 E-mail: evan.weaver@senecac.on.ca

Appendix 2: Abstract of Proposed Program

The Bachelor of Applied Technology, Software Development, addresses the industry need for technically superior software developers who can operate effectively within the business context. Students work on a variety of computing platforms using a broad range of programming technologies, obtaining a solid theoretical background while acquiring up-to-date technical proficiency. An emphasis on the business perspective ensures that graduates will be able to contribute to furthering the goals of the organizations for which they work.

The learning outcomes of the program are designed to enable the graduate to:

- develop software solutions by designing and creating standalone, enterprise and internet applications
- perform productively upon graduation, due to extensive exposure to a variety of current software development tools and platforms as well as practical and relevant work experience gained through a required co-operative work term
- be able to adapt quickly to new technology by transferring existing knowledge and skills to new situations
- communicate effectively with both technical and non-technical audiences
- progress through an organization as experience is gained, by applying understanding of business principles, operations and procedures

Although the Bachelor of Applied Technology, Software Development, provides the student with the opportunity to select areas of specialization, all graduates must prove expertise in a wide array of topic areas, providing the necessary flexibility to meet the demands of a rapidly changing workplace – expertise that is portable across industries, market sectors, and the globe. Graduates will also be eligible to pursue graduate studies in related disciplines.

Graduates will be prepared to pursue numerous and varied opportunities in the business technology sector, the financial services sector, the health care sector, and in the entertainment industry. Careers include business systems analysts; business technology designers; client/server application developers; database application specialists; Internet designers and developers; information security analysts; and project managers.

Appendix 3: Delivery of Current Consent Program Checklist

Given that your institution has not offered the program for a full four-year cycle, is the institution confident that it is on track to meeting the intended learning and performance outcomes of the full program?	[✓] Yes
If 'yes', attach as Appendix 4.1. Degree Level Standard Summary, a concise statement that explains how the institution is able to make this positive determination (e.g., use of internal progress assessments by the program advisory board or committee; external assessments; periodic faculty or program committee meetings examining student performance and progress; employer reports of the level of student preparedness for work placement terms; et cetera)	[✓] Attached
There is an appropriately qualified and representative Program Advisory Committee (or Program Development Advisory Committee if more appropriate) and it is ensuring that the curriculum is current, reflecting the state of knowledge in the field and the needs of the field of practice.	[✓] Yes
The program has adhered to the requirements set by professional or accrediting bodies.	[✓] Not app.
The intended learning outcomes of the individual courses in the program have been met (up to the current point of delivery).	[✓] Yes
If 'yes', attach as Appendix 6.3.1, Program Level Learning Outcomes (Met), a concise statement that explains how the institution is able to make this positive determination (e.g., use of internal progress assessments by the program advisory board or committee; external assessments of particular courses; periodic faculty or program committee meetings examining student performance in specific courses, student performance on examinations; et cetera).	[✓] Attached
The Program Hour/Credit Conversion has remained the same.	[✓] Yes
The Academic Course Schedule has remained essentially the same.	[✓] Yes
Have any "P" ("professional field of study") courses been added or dropped from the program?	[✓] Yes
If "yes", attach as Appendix 6.4.A , Explanation of Added or Dropped "P" Courses, an explanation of why the course(s) was added <u>or</u> dropped, and a description of the process used to make the change, with particular reference to how the change(s) related to maintenance of program currency or to improvements as the result of formal program evaluation; and	[✓] Attached
If there were additions, attach as Appendix 6.4.A.1 , Added "P" Course Outlines, the outlines of all courses that were added.	[✓] Attached

Have any “O” (outside field of study”) courses been added to the program that are not a part of the current program consent or that are not courses that were approved in consents for other programs?	[✓] Yes
If “yes”, attach as Appendix 6.4.B. , Explanation of Added “O” Courses, an explanation of why the course(s) was added <u>or</u> dropped, and a description of the process used to make the change, with particular reference to how the change(s) related to maintenance of program currency or to improvements as the result of formal program evaluation.	[✓] Attached
The Program Structure has remained essentially the same.	[✓] Yes
Have there been instances when students were unable to secure a required work experience?	[✓] No
Have there been any revisions, deletions, or additions to the work experience outcomes and /or the method of evaluating students during their placements?	[✓] No
Have there been changes to the program since the original consent?	[✓] Yes
Attach as Appendix 6.6, Summary of Program Changes, a brief summary of the changes in the program content from the time of the original consent to the present. Since specific details about any content changes that were made have been reported in various appendices under 6.3, 6.4 and 6.5.1, this summary should focus on the most salient of these and on the broader picture of how the program has changed to enhance its appropriateness, currency and quality.	[✓] Attached
The direct entry admission requirements approved under the current consent have been lowered.	[✓] No
The admissions policy or procedures for mature students approved under the current consent or under the consent for a subsequent program has been followed without material change.	[✓] Yes
The advanced standing admissions policy for “Credit Transfer/Recognition Policies and Procedures” relating to an individual student approved under the current consent or under the consent for a subsequent program has been followed without material change.	[✓] Yes
The advanced standing admissions policy for “Prior Learning Assessment” relating to an individual student approved under the current consent or under the consent for a subsequent program has been followed without material change.	[✓] Yes
The advanced standing admissions policy for “Degree Completion Arrangements” on a “block” basis approved under the current consent has been followed without material change.	[✓] Not app.
The advanced standing admissions policy for “Bridging Courses” approved under the current consent has been followed without material change.	[✓] Not app.
Attach as Appendix 5.2.6 , Admissions Information	[✓] Attached
The promotion and/or graduation requirements approved under the current consent have been lowered.	[✓] No
Attach as Appendix 5.3.1 , Student Retention Information	[✓] Attached
Have there been any revisions, deletions, or additions to the policies pertaining to program delivery quality assurance?	[✓] No

Have there been any revisions, deletions, or additions to the policies pertaining to student feedback?	[<input checked="" type="checkbox"/>] No
Have there been any revisions, deletions, or additions to the student feedback instruments?	[<input checked="" type="checkbox"/>] No
1. Does your consent include the authority to offer parts of the program through internet, asynchronous, distance or distributed delivery?	[<input checked="" type="checkbox"/>] Yes
2. If “yes” to 1, have there been any revisions, deletions, or additions to the On-line Learning Policies and Procedures?	[<input checked="" type="checkbox"/>] No
3. If “yes” to 2, attach Appendix 7.2.1 , On-line Learning Policies and Practices, an explanation of (i) why there was a change, (ii) when the change occurred and (iii) why the change was made without seeking a change of consent from the Minister.	
4. If “yes” to 1, have there been any revisions, deletions, or additions to the Academic Community Policies?	[<input checked="" type="checkbox"/>] No
5. If “yes” to 4, attach as Appendix 7.2.2 , Academic Community Policies, an explanation of (i) why there was a change, (ii) when the change occurred and (iii) why the change was made without seeking a change of consent from the Minister.	
6. If “yes” to 1, has there been an increase that either (i) has more than doubled the number of courses using the alternate delivery methods, or (ii) has increased the number of alternate delivery courses that more than 50% of the program requirements can be taken in this manner?	[<input checked="" type="checkbox"/>] No
7. If “yes” to 6, attach as Appendix 7.2.3 , Expansion of On-line Learning, an explanation of (i) why there was a change, (ii) when the change occurred and (iii) why the change was made without seeking a change of consent from the Minister.	
8. If “no” to 1, have internet, asynchronous, distance or distributed delivery courses been introduced into the program?	
9. If “yes” to 8, attach as Appendix 7.2.4 , Introduction of On-line Learning Policies: (i) a list of the course/s to which the alternate form of delivery has been added; (ii) an explanation of (a.) why there was a change, (b.) when the change occurred and (c.) why the change was made without seeking a change of consent from the Minister.	

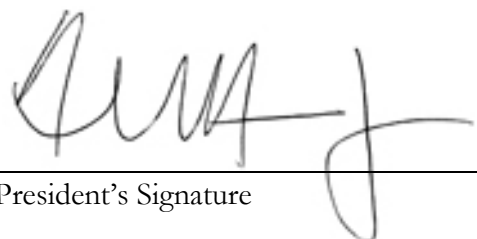
Attach as Appendix 8.2.1 Library Resources	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 8.2.2 Computer Access	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 8.2.3 Improvements/Expansion of Classroom Space	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 8.2.4 Laboratories/Equipment	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 8.3 Resource Renewal and Upgrading, a description of how the information in Appendices 8.2.1-4 relates to the Resource Renewal and Upgrading Plans that were submitted in your initial consent proposal.	[<input checked="" type="checkbox"/>] Attached

Have there been any revisions, deletions, or additions to the support services available to students?	[<input checked="" type="checkbox"/>] No
Has there been a revision in the policy that was part of your original consent that resulted in a reduction in the qualifications of faculty?	[<input checked="" type="checkbox"/>] No
Have faculty been hired for the program who do not have at least one degree higher in a related field than the degree level of the program for which the college is seeking renewal?	[<input checked="" type="checkbox"/>] No
Attach as Appendix 8.6.2 B Faculty Qualifications: Discipline Related Courses	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 8.6.2 C Faculty Qualifications: Breadth Courses	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 8.7 Enrolment Projections and Staffing Implications, a description of how the information in Appendices 5.2.6, 5.3.1, 8.6.2 B, and 8.6.2.C relates to the Enrolment Projections and Staffing Implications that were submitted in your initial consent proposal.	[<input checked="" type="checkbox"/>] Attached

Have there been any revisions or additions to the requirements set by regulatory bodies associated with this program?	[<input checked="" type="checkbox"/>] Not app.
Have any additional provisions (formal or informal) been made for the credentials of the graduates of your program to be recognized by other postsecondary institutions?	[<input checked="" type="checkbox"/>] Yes
If “yes”, attach as Appendix 9.1.a , Credential Recognition, a description of the formal and informal arrangements.	[<input checked="" type="checkbox"/>] Attached
Have any additional provisions (formal or informal) been made for the courses or curricular elements in the program to be recognized for credit transfer by other postsecondary institutions?	[<input checked="" type="checkbox"/>] No
Have there been any revisions in your policy of informing students of any provisions for credential recognition and credential transfer; that students confirm their understanding of these provisions in writing; and that the Applicant will advise students of changes to credential recognition or transfer in a timely manner?	[<input checked="" type="checkbox"/>] No

Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to program evaluation?	[<input checked="" type="checkbox"/>] No
Attach as Appendix 11.2 , Update on Program Evaluation Measures, a description of the measures that have already been taken to monitor the quality and appropriateness of the consent program.	[<input checked="" type="checkbox"/>] Attached

The applicant hereby confirms and warrants that all information and representations provided by the applicant as part of Appendix 3 Checklist and the accompanying appendices are true.



President's Signature

December 18, 2006

Date

Appendix 4.1 Degree Level Standard Summary

Seneca is confident that this program is on track to meeting the intended learning and performance outcomes of the full program.

This program is continuously monitored using both internal and external processes. The following paragraphs describe these efforts.

Depth of knowledge in the Software Development program is achieved both in the level and complexity of the course learning outcomes, and in the evaluation requirements. Learning outcomes have been carefully written and reviewed using Bloom's Taxonomy to ensure that they are at the appropriate level, with a focus on critical thinking, evaluation and analysis. Course grading requirements ask students to demonstrate knowledge and comprehension through synthesis and the advanced application of that knowledge. The learning outcomes and the evaluation strategies firmly establish the proposed program at the undergraduate degree level.

The Software Development program's curriculum has been delivered essentially as proposed in 2002. The delivery of each course adheres to its outline, including its description, learning outcomes, delivery method, and evaluations, while keeping the topic content current and relevant. Every time a course is offered, its course outline is reviewed, and updated or edited as required, by following the principles of appropriateness, currency, and quality. This process is very important to Seneca's School of Computer Studies, and it is performed by the faculty member or team that teaches the course, and approved by the Chair of the School.

The program has a dedicated coordinator, who interacts with students, faculty, and staff on a daily basis. The coordinator also teaches in the program. The Chair of the School of Computer Studies also actively and regularly manages the program.

Periodic meetings involving the program's teaching faculty take place during the semester. In addition, faculty members are consulting with students and administrators on a regular basis. These efforts all contribute to active monitoring of the program's delivery.

Student progress is monitored during each semester. At-risk students are identified informally, and appropriate interventions are devised to affect the students' success. During these activities, there is also an effort to determine and ensure that the course and/or program are being delivered as intended. Students meet with faculty and/or the program coordinator as appropriate, and are invited or urged to implement recommendations that will result in their success.

As required by Seneca Academic Policy, there is a Promotion Committee which meets at the end of every semester to administer and determine student progress within the program. During the meeting, there is also discussion of a wide range of issues, with the goal of continuously improving program delivery and quality. The committee includes all faculty teaching in the program, as well as the program's coordinator.

Seneca surveys students twice per year, asking for feedback on faculty, as well as course, program, and college issues. This program's results are favourable, and are used by the School's chair during the administration of the program. In addition, there is an annual Key Performance Indicator (KPI) survey, asking students about program and college issues. Again, this program's results are favourable, and are reviewed, analyzed, and discussed by the program's delivery team.

Regular and periodic status reports are provided to the Computer Studies Advisory Committee (for computer programming curricula). This committee meets at least twice per year, and every meeting includes agenda items that affect all of our delivered programs, with periodic focus on this program.

The summer of 2006 was the program's first co-op work experience placement. All students who were seeking co-op employment were placed. During the work placement, employers provide feedback to the dedicated co-op coordinator about the performance of the students, and are surveyed at the end of the work placement. The following shows the rankings earned by the students in the program, and a sample of the employer comments and feedback, for the summer of 2006:

<u>Evaluation Ranking</u>	<u>Number of Students</u>
Outstanding or Very Good	26
Satisfactory	1
Unsatisfactory	0

Sample of employer comments and feedback

I keep [the student] very busy and he finished on time and budget. The project he was assigned had many changes on requirements but he was able to do it perfectly. I appreciated his positive and high collaborative attitude. We had a great time and experience with him, hopefully we may see him next year.

...possesses excellent analytical, problem solving, technical & leadership skills. He helped us resolve several outstanding technical issues which our full time staff could not do. His work was excellent, and quality of deliverables was much better than our expectations. An outstanding resource to have on the team.

[the student] has demonstrated that she is up to any task that is presented to her. She also demonstrates leadership skills that will benefit her greatly in her future career path. I believe that [the student] is a great [resource] for [our company] and I would recommend her for permanent employment following graduation.

Overall [the student] has done an outstanding job. He works in a cooperative and collaborative manner with other team members, and he's also flexible, reliable, displays initiative in any situation. [the student] will be an excellent candidate for permanent employment at [our company], he works well under pressure with little or no guidance, he always goes beyond what is required of him, his error free work, excellent judgment makes him a potential candidate for [our company].

[the student] has done extremely well within the team. She has developed a number of support tools to aid in problem determination. I would recommend that this student be considered for full time employment with [our company] upon graduation.

I hired [the student] for his Windows programming skills. He has absolutely amazed me with what he can do, and how fast he does it. Every time they do presentations for me, the entire group ends up applauding [the student] for the work he's done – it's always that good and so impressive. We did a demo for the company a few weeks ago and they were blown away by the graphics he had done. Without getting into all the technical details, what [the student] has written is nothing short of brilliant. His Windows code does very complicated stuff; very complicated.

Our program is an active participant in Seneca's Degree Program Implementation Committee. This committee meets at least six times per year, and includes standing members from every Seneca degree program and Seneca's senior academic leadership, and *ad hoc* members/participants from other academic and service areas of the college. In the usual course of the committee's business, information about each program's status is exchanged, which enables the College to promote consistency and quality among its diverse degree programs, and develop a range of best practices. Input is also sought from outside the College, by active monitoring and participation in groups in the region, the province, nationally, and internationally. We also have a good working relationship with PEQAB and Ministry representatives, and actively consult with and exchange information intended to ensure program success.

The efforts described here all contribute to our assertion that the Software Development program is on track to meeting its intended program outcomes.

Appendix 6.3.1 Program Level Learning Outcomes (Met)

The intended learning outcomes of the individual courses in the program have been met (up to the current point of delivery). Seneca is able to make this positive determination through many of the same efforts outlined above in Appendix 4.1.

The delivery of each course adheres to its outline, including its description, learning outcomes, delivery method, and evaluations, while keeping the topic content current and relevant. Every time a course is offered, its course outline is reviewed, and updated or edited as required, by following the principles of appropriateness, currency, and quality. Accordingly, course outlines were updated to maintain currency in the course description, and to clarify and/or improve the descriptions of some course outcomes. In other cases, the evaluations or assessments were updated to be more appropriate for the course's topics and mastery of its learning outcomes. This process is very important to Seneca's School of Computer Studies, and it is performed by the faculty member or team that teaches the course, and approved by the Chair of the School.

For example, in the second year of the program, we offer two computer programming courses, BTP400 and BTI420. Each is an introductory course, covering the foundational concepts and techniques involved in each technology. The original course outlines were created in early 2002, and since that time, the state-of-the-art and industry/marketplace-accepted implementations have evolved through technology improvements. Accordingly, some of the course description language was updated to reflect current technology, terminology, and practice, and a few of the expressed learning outcomes required edits for the same reasons, although the appropriate taxonomy was retained.

Periodic meetings involving the program's teaching faculty take place during the semester. In addition, faculty members are consulting with students and administrators on a regular basis. These efforts all contribute to active monitoring of the program's delivery.

Student progress is monitored during each semester. At-risk students are identified informally, and appropriate interventions are devised to affect the students' success. During these activities, there is also an effort to determine and ensure that the course and/or program are being delivered as intended. Students meet with faculty and/or the program coordinator as appropriate, and are invited or urged to implement recommendations that will result in their success.

Notes, materials, and evaluations that are prepared by the faculty member or team are retained for use or review in subsequent semesters. Periodic review is done on an informal basis by program team members to ensure that the delivery and quality of the course is appropriate. When required, an informal team is struck to review and revise if necessary the topic coverage and content in a course, to ensure that it improves and is of high quality.

The School of English and Liberal Studies, which is responsible for the development and delivery of all the breadth courses in the Software Development degree program, is widely represented within the College on various cross-College committees, ranging from Academic Council to Degree Implementation. It is also required by the College's Quality Assurance Process to be represented and to actively participate in the formal program review process where issues relating to program standards are discussed and recommendations made to the Vice-President Academic.

Furthermore, the School of English and Liberal Studies has also established an English and Liberal Studies committee that meets regularly throughout the academic year, to discuss curricular issues as well as make recommendations to the relevant College Councils regarding policies and procedures that govern the development and delivery of breadth courses in all our program areas. Lastly, school, program and faculty meetings take place regularly to ensure that information regarding breadth course development and delivery is consistent with Ministry and Program standards.

As required by Seneca Academic Policy, there is a Promotion Committee which meets at the end of every semester to administer and determine student progress within the program. During the meeting, there is also discussion of a wide range of issues, with the goal of continuously improving program delivery and quality, and the courses within. The committee includes all faculty teaching in the program, as well as the program's coordinator.

Seneca surveys students twice per year, asking for feedback on faculty, as well as course, program, and college issues. This program's results are favourable, and are used by the School's chair during the administration of the program.

Regular meetings are held with the Computer Studies Advisory Committee (for computer programming curricula). The committee meets at least twice per year, to advise the School on the development, maintenance, and community acceptance of our programs. The committee fulfils a number of functions or roles in support of this program, including:

- Participation in the quality assurance review process
- Suggestions and recommendations on program curricula revisions
- Advisement on current and future employment opportunities, industry trends, and employer needs

During every meeting, the committee receives a status report on this program, and provides consultation and discussion consistent with our program delivery goals.

One of the foundational themes in the Software Development program is the four-semester sequence of courses focusing on (computer programming) systems analysis, design, and implementation. Achieving success in this stream indicates that the student has synthesized and demonstrated mastery of a range of outcomes from a large number of their courses in the program to that point. Every student who has completed the final course in the sequence has passed the course. The students' capstone project in that course is peer-reviewed, and also reviewed and commented on by other members of the program's faculty team.

In 2005, the School of Computer Studies began a relationship with the Mozilla Corporation, a world leader in open-source software (and creator of the widely-used Firefox internet browser application). Many of our program's third- and fourth-year students work alongside Mozilla people during their studies, including course work and applied research projects. Some have been employed by Mozilla in summer work placements and/or part-time in-semester positions, and have made significant and recognized contributions. Appendix 12.2 details some of these contributions.

In November 2006, Professor David Humphrey was selected to receive the inaugural Excellence In Seneca Award for Innovation. This award recognizes the value of the efforts Professor Humphrey has made in the program to build quality into the curriculum that is valued both inside Seneca and in the marketplace.

Appendix 6.4.A Explanation of Added or Dropped “P” Courses

The contents of this appendix are not included in this version of this document.

Appendix 6.4.A.1 Added “P” Course Outlines

DPS901 - 3D Game Programming (No Change)

Year 3 or 4 Professional Option

Subject Description

High performance programs that make extensive real-time use of multimedia capabilities, such as simulators and modern computer games, are among the most demanding programs to write. This intensive programming subject explores the issues and techniques of combining responsive animation and sound with analog user input, using current personal computer technology.

Method of Instruction:

Four hours interactive lecture per week

Topic Outline:

- Overview of Windows Programming and COM - 5%
- Overview of DirectX - 5%
- DirectX Graphics - 15%
 - Display Modes
 - Surfaces
 - Using GDI
 - Blitting and Page Flipping
- Direct3D - 30%
 - Mathematics of Rendering 3D Objects
 - Matrix Multiplication
 - Translation
 - Rotation
 - Scaling
 - Projection
 - Vertices and Transformation Matrices
 - Textures
 - Depth Buffers
 - Lighting
- DirectX Audio - 15%
 - DirectSound Playback
 - DirectSound 3D Effects
 - Overview of DirectMusic

- DirectInput - 10%
 - Mouse Input
 - Joystick Input
 - Keyboard Input
- Overview of DirectSetup - 1%
- Overview of DirectPlay - 2%
- Overview of DirectShow - 2%
- Introduction to OpenGL - 15%

Method of Evaluation:

Term Test	20%
Programming Assignments - minimum 3	50%
Final Exam	30%

Prescribed Text:

- documentation supplied by Microsoft that comes with the DirectX 9.0c SDK, available for download from www.microsoft.com/directx

Reference Material:

- Microsoft Visual C++
- Ownership of a fast PC with a 3-D accelerator video card, sound card and joystick
- Special Effects Game Programming with DirectX 8.0; by Mason McCuskey; Premier Press; ISBN 1931841063
- Tricks of the 3D Game Programming Gurus, Advanced 3D Graphics and Rasterization; by Andre LaMothe; SAMS; ISBN 0-672-31835-0

Supplies:

- None

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Explain the purpose and features of the following other components of DirectX:
 - DirectPlay
 - DirectShow
 - DirectSetup
- Read and modify C++ programs that use OpenGL
- Design and write C++ programs that use the following components of Microsoft's DirectX:

-
- DirectX Graphics
 - DirectX Audio
 - DirectInput
 - Research and select appropriate formulae for manipulating 3D objects
 - Design and document the plan for an interactive 3D game

DPS902 - Principles of Extreme Programming (New)

Year 3 or 4 Professional Option

Subject Description

In this course students will work as a single project team to develop an open source application using the principles of Extreme Programming (XP). In doing so, the students will learn and use "The 12 Practices" of XP, including refactoring, metaphor, collective ownership, continuous integration, pair-programming, no-overtime, small releases, etc. The students will also use various open source development tools, such as CVS, that allow them to plan, develop, test, and integrate their code. Under the direction of the professor, students will code and run builds during class time. Students will also be required to do research to complete their in-class coding and development tasks.

Method of Instruction:

One hour interactive lecture per week, and three hours activity-based learning per week (four hours total).

Topic Outline:

- Free Software and Open Source Concepts - 5%
 - what is free software?
 - what is open source software?
 - licenses
- Open Source Tools - 10%
 - CVS
 - JUnit
 - Sourceforge.net
 - OpenGL
 - JOGL (Java OpenGL) API
- The Principles of XP - 15%
 - simplicity
 - collective code ownership
 - metaphor
 - changing what doesn't work
 - constant customer availability
 - roles
 - coach
 - customer
 - manager
 - tracker
- The Practises of XP - 70%
 - planning

- accepting tasks
- choosing a system metaphor
- creating spike solutions to reduce risk.
- dividing the project into iterations
- estimating tasks
- finding the vocabulary
- limitation of metaphor
- measuring the project velocity
- types of metaphor
- user stories
- using CRC cards for design sessions
- Writing, estimating and prioritizing stories
- coding standards
- pair programming
- the 40 hour week
 - no overtime
- refactoring, refactoring, refactoring
- stand up meetings
- unit test first
- optimization last
- frequent code integration
 - daily (hourly) builds
- small releases
 - zero feature release
- publishing acceptance test results
- workspaces layout
- handling bugs
 - developing new acceptance and unit tests

Method of Evaluation:

Exam	20%
In class work (8)	64%
Research assignments (2)	16%

Prescribed Text:

- Extreme Programming Explored, William C. Wake, Addison-Wesley

Reference Material:

- Any of the books in the XP Series from Addison-Wesley
- Extreme Programming: A gentle introduction(<http://www.extremeprogramming.org/>)

Supplies:

- None

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Write unit tests as described in the XP model
- Apply the practices of XP to develop an open source system with the rest of the class
- Analyze, understand, debug and successfully modify other students' code
- Explain several of the major licenses for free and open software
- use pair programming to implement user stories
- Describe the theory, methodology, and advantages of pair programming
- Generate programming code using collaborative open source tools, such as CVS, with other members of the class
- Describe free software and open source software, and distinguish between them
- Use an OO language and its pre-existing classes to develop an open source system
- Contribute successfully to other XP group activities, like daily builds and monthly releases, estimating and prioritizing stories, etc.
- Describe the principles and practices of XP

DPS903 - Enterprise Development with Java and EJB (No Change)

Year 3 or 4 Professional Option

Subject Description

The course introduces the distributed object programming model and briefly explains some important object distributed computing technologies. Web computing trends are also discussed, including the development of Servlets, JSP, JSF and EJB standards in the context of Java Enterprise Technologies. While Web and EJB components are distributed objects, they must be studied in the context of J2EE architecture. One of the main goals of this course is to emphasize J2EE architectural model as a new type of distributed computing in today's Internet world.

Method of Instruction:

Four hours interactive lecture per week

Topic Outline:

- J2EE Architecture - 30%
 - JDBC Java Database Connectivity
 - JMS Java Message Service
 - Servlets in Enterprise
 - JSPs in J2EE context

- EJB Architecture, Design and Implementation - 40%
 - EJB Container
 - EJB Specifications
 - Session Beans Stateless and Stateful
 - Entity Beans CMP and BMP
 - Message Driven Beans
 - JDBC connection and EJB
 - EJB Design Strategies
 - Common EJB Design Pattern
 - UML Modeling and EJBs

- Designing Enterprise Applications with J2EE - 30%
 - EJB as Web Services
 - Anatomy of an Enterprise Application
 - Enterprise JavaBeans Query Language (EJB QL)
 - Exposing J2EE Application as a Service
 - J2EE BluePrints and Reference Implementation Software
 - Web Servers and Application J2EE Servers
 - Application Deployment Tools

Method of Evaluation:

Midterm Tests (1) 20%
Final Exam 30%
Final Project (1) 20%
Assignments (3) 30%

Prescribed Text:

- J2EE Applications and BEA Weblogic Server by David Carlson, Prentice Hall; ISBN 0-13-101552-4.

Reference Material:

- Professional EJB, Wrox Press; ISBN 1-861005-08-3
- On line: <http://java.sun.com/products/ejb>
- EJB & JSP Java On The Edge, M&T Books, ISBN: 0-7645-4802-6

Supplies:

- None

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Explain the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans.
- Design Servlets, JSPs, JSFs with EJB and Databases in J2EE application.
- Design and implement components like: Session, Entity, MDB EJBs.
- Describe and implement the deployment descriptor and enterprise application deployment.

DPS904 - Java Database Connectivity (New)

Year 3 or 4 Professional Option

Subject Description

The student will be introduced to connectivity issues that business deals with in today's environment, in creating a GUI front end to a back-end database. In this course students will connect to Oracle database from various back-end environments and will manipulate the data by SQL or database objects. Issues of connectivity across a wide variety of platforms and also through the internet, will be discussed, practiced and implemented.

Method of Instruction:

Three hours interactive lecture per week, and one hour activity-based learning per week (four hours total)

Topic Outline:

- Accessing the Database with JDBC - 10%
 - Steps for using JDBC to execute a SQL statement. Connecting to different databases.
 - Registering the driver
 - Getting a database connection
 - Executing a SQL statement
 - Handling exceptions
- Advanced JDBC features - 5%
 - Managing JDBC transactions.
 - Java in the Database, the Oracle JVM and java stored procedures.
 - Transactions by SQLJ.
- Architecting J2EE Applications - 5%
 - Overall review of J2EE Applications
 - J2EE design patterns
 - MVC Architecture
 - The Model
 - The View
 - The Controller
 - Tomcat Structure and running first simple Tomcat Application
- Creating the web tier: Servlets - 10%
 - Servlet Lifecycle
 - Handling Input using forms
 - Exception handling
 - Debugging a servlet
 - Creating a servlet in JDeveloper
 - Servlet Mapping

- Deploying a servlet
- Access the database with Servlets - 10%
 - Review of JDBC
 - Servlet Connection Types
 - Registering a driver
 - Connection pooling
- Utilizing additional Servlet techniques - 15%
 - Sending and Retrieving HTTP headers
 - Creating cookies on the client
 - Preserving State in Servlets
 - Servlet filters
 - Event Listeners
 - ServletContext events
 - HttpSession events
- Maintaining state within J2EE Applications - 10%
 - Sessions in Servlets
 - URL Rewriting
 - HttpSession
 - HttpSessionBindingListener interface
 - Session objects
 - Sessions and events
 - Multi-threading aspects
- Creating the web tier: JavaServer Pages - 10%
 - JSP Lifecycle
 - Directives
 - Scriptlets
 - Expressions
 - Implicit objects
 - JSP and JavaBeans
 - Creating and reusing a bean
 - JSP XML Documents
- Modularizing JavaServer Pages Development with Tags - 15%
 - Creating custom tags
 - Creating custom tag libraries
 - The JSP Standard Tag Library (JSTL)
 - Expression Language in JSTL
 - Introduction to Java Server Faces (JSF)
- Introduction to Oracle and XML - 10%
 - XML essentials.
 - The basic structure in DOM and SAX .
 - Transform XML to XHTML.
 - Extracting data from database.

Method of Evaluation:

Assignments (Minimum 3)	30%
Final Exam	40%
Lab Assignments	10%
Midterm test	20%

Prescribed Text:

- JavaServer Pages Developer's Handbook by Todd, Szolkowski; ISBN 0-672-32438-5 published by Sams

Reference Material:

- JDBC API Tutorial and Reference, Second Edition, Java Series ISBN: 0-201-43328-1
- Core Servlets and JavaServer Pages by Marty Hall (Prentice Hall), ISBN: 0-13-009229-0
- Java Programming with Oracle JDBC by Donald Bales published by O'Reilly; ISBN: 0-596-00088-X

Supplies:

- None

Learning Outcomes:**Upon successful completion of this subject students should be able to:**

- Create multi-threaded JSP and Servlet application.
- Compare various architectural models for developing JSP and Servlet applications.
- Explain the difference between Two-Tier and Three-Tier models as it relates to JDBC
- Summarize the details of how and when the Servlet is loaded, methods to receive information and can generate HTML.
- Create JavaBeans for use with JSP.
- Understand SQLJ and Java Stored Procedures of ORACLE database with internal connection and decide/apply one of those technologies to retrieve data in fastest manner in the J2EE web applications.
- Explain how Servlets can be used for database connectivity.
- Describe Java Web applications and their components: Servlets and JSPs, External classes , JavaBeans , Tag libraries, Configuration files
- Analyze the multi-tier architecture of web-based enterprise applications containing JDBC, Servlets and JavaServer Pages (JSP) and design robust J2EE web application by using all these technologies.
- Create code to handle SQL exceptions, perform database updates and handle transactions
- Use the JDBC API to access databases from a Java application or applet
- Design and develop J2EE web applications by using Oracle XML Developer's Kit for building dynamic XML pages from the output of SQL queries.

DPS905 - 3D Game Programming Techniques (New)

Year 3 or 4 Professional Option

Subject Description

This course continues the study of game programming techniques begun in DPS901. Topics include force feedback, multitexturing, advanced lighting techniques, networked gameplay, and pixel and vertex shaders.

Method of Instruction:

Four hours interactive lecture per week (four hours total)

Topic Outline:

- Force Feedback using DirectInput
- Advanced Graphics Techniques
 - Meshes
 - Multitexturing
 - Mipmaps
 - Environment maps
 - Billboards
 - Skyboxes
 - Shadow techniques
 - Noise generation
 - 3D space partitioning schemes
 - Shaders (Vertex & Pixel)
- Network programming
 - Overview of DirectPlay
 - Overview of Socket Programming
 - Data exchange strategies for games
- Selected topics researched and presented by students

Method of Evaluation:

Assignments (minimum 3)	50%
Term Test	20%
Final Exam	30%

Prescribed Text:

- Introduction to 3D Game Programming with DirectX 9.0 by Luna; ISBN 1-55622-913-2

published by Word Ware Publishing

Reference Material:

- Tricks of the 3D Game Programming Gurus; Andre LaMothe, SAMS, 2003, 0-672-31835-0
- Special Effects Game Programming with DirectX; Mason McCuskey, Premier Press, 2002, 1-931841-06-3
- Real-time Rendering Tricks and Techniques in DirectX; Kelly Dempki, Premier Press, 2002, 1-931841-27-6

Supplies:

- None

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Research and incorporate new features into game programs
- Design and write networked, graphically appealing games that make use of force feedback
- Justify design decisions when selecting between alternative ways to implement an effect
- Effectively present detailed technical information to an audience

DPS906 - Simulation Techniques for Game Programming (New)

Year 3 or 4 Professional Option

Subject Description

Physics and mathematics concepts that are useful for simulating real-world objects are examined. Besides such standard physics topics as force, acceleration and friction, game programming topics such as collision detection and terrain traversal are discussed. Artificial intelligence concepts are also introduced.

Method of Instruction:

Four hours interactive lecture per week (four hours total)

Topic Outline:

- Introduction and Review of Fundamental Concepts - 5%
 - Mathematical concepts for physical applications
 - Cartesian coordinate systems - right-hand and left hand
 - differential and integral calculus
 - points, line segments, polygons, polyhedra
 - summation and difference notation
 - transformations - translation, rotation, scaling
 - trigonometric functions
 - vectors, matrices, tensors
 - Physical unit systems and measures - English and SI units; dimensional analysis.
 - Customization of sample code from DPS901
 - introduction of multiple view points
 - modularization
 - systematic definition of program constants
- Kinematics - 10%
 - Particle motion
 - displacement
 - linear acceleration - average and instantaneous
 - linear velocity - average and instantaneous
 - relationships amongst them
 - Rigid body motion
 - angular acceleration - tangential linear acceleration, centripetal acceleration
 - angular velocity
 - orientation - yaw, pitch, roll, Euler angles
- Kinetics - 20%
 - Newton's laws of motion, universal law of gravitation, acceleration due to gravity
 - Particle kinetics
 - centre of mass

- forces - impulse and continuous
 - mass
 - Rigid body kinetics
 - moment of inertia - principal axes, parallel-axis theorem
 - moments
 - Friction: static and kinetic
 - Free-body diagrams
 - Forces involved in modelling cars, ships, planes and rockets
 - Conservation of Momentum - linear and angular
 - Conservation of Energy
 - coefficient of restitution
 - elastic and inelastic collisions
 - kinetic energy
- Collision Detection - 10%
 - Linear collisions
 - point-plane, point-polygon, point-polyhedron
 - sphere-plane, sphere-polygon, sphere-sphere
 - Bounding boxes
 - axis-aligned (AABBs)
 - oriented (OBBs)
 - Octrees
- Computational Issues - 5%
 - Rotations
 - normalization
 - quaternions
 - Integration
 - adaptive step-sizing
 - improved Euler method
 - Runge-Kutta method
 - Evaluation of 'Turtle' functions
 - approximations
 - reformulations
- Introduction to Artificial Intelligence and Intelligent Agents - 5%
- Classical AI - 15%
 - Game trees and the minimax algorithm
 - Alpha - beta pruning
 - Uncertainty
- Searching - 15%
 - Searching as a means of finding a solution
 - Uninformed search
 - Greedy searches
- Scripting and rule based decision making - 10%
 - Logical decision making

- Fuzzy logic
- Intelligent agents
- Machine Learning - 5%
 - Learning algorithms

Method of Evaluation:

Term Test	30%
Programming Assignments - minimum 3	40%
Final Exam	30%

Prescribed Text:

- None

Reference Material:

- Bourg, David M.(2002). Physics for Game Developers. O'Reilly Media, Inc.. Sebastopol, CA, U.S.A.
- Bourg, David M. and Seemann (2004). AI for Game Developers. O'Reilly Media, Inc.. Sebastopol, CA, U.S.A.
- Russell, Stuart J. and Norvig, Peter (2003). Artificial Intelligence A Modern Approach (second edition). Pearson Education, Inc.. Upper Saddle River, NJ, U.S.A

Supplies:

- None

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Design and code programs that simulate the motion of simple three-dimensional objects, including small particles and rigid bodies of finite size.
- Design and code programs that simulate frictional contact and collisions of varying degrees of elasticity between three-dimensional objects of finite size.
- Explain and document the physical and mathematical concepts implemented in C++ code that models the motion and interaction of simple objects.
- Research a particular field, identify the set of forces that are considered important by experts in that field, and describe how to implement the results of the research in a simulation.
- Explain the approximate methods commonly used to detect a point of collision between two objects and identify C++ code that implements these methods.
- Identify in a C++ program potential sources of numerical error that may distort the motion of an object and propose refinements that minimize such distortions.
- Identify terms and language commonly used in the field of artificial intelligence
- Explain how information can be used to guide a search

-
-
- Design and code programs that will make decisions on what to do based on current conditions

DPS907 - Web Services Architecture (New)

Year 3 or 4 Professional Option

Subject Description

Web services are Web-based enterprise applications that use open, XML-based standards. Emerging web services standards such as SOAP, WSDL and UDDI will enable system-to-system integration. This course specifically addresses the skills needed to understand basic concepts like XML (Extensible Markup Language), WSDL (Web Services Description Language), UDDI (Universal Description, Discovery and Integration) and SOAP (Simple Object Access Protocol). The Java API for XML Web Services (JAX-WS) is the centerpiece of a newly rearchitected API stack for Web services that includes JAX-WS, JAXB, and SAAJ. This course describes the integrated stack that represents a logical rearchitecture of Web services functionality in the Java WSDP.

Method of Instruction:

Four hours interactive lecture per week

Topic Outline:

- The Web Services Overview
 - Introduction to distributed technologies: CORBA, DCOM, RMI
 - Service-Oriented Architecture
 - XML Web Service Architectures and Service-Oriented Architecture
 - Roles in an XML Web Services Architecture
 - The XML Web Services Programming Model
 - Introduction to the major web services technologies: XML-RPC, SOAP, UDDI, WSDL
- XML Basics
 - XML Schema Definitions
 - Document Type Definitions (DTDs)
 - Understanding the concept of well-formed documents
 - Understanding valid documents
 - Transforming XML business data with XSLT
 - Introduction to parsing XML using the W3C SAX and DOM API's
 - The underlying technologies of XML Web Services
- Introduction to the Simple Object Access Protocol (SOAP)
 - SOAP Fundamentals
 - Describe the structures of a SOAP request and response
 - SOAP with Attachments
 - SOAP RPC, Binding, Security
- Web Service Description Language (WSDL)
 - Describing the abstract
 - WSDL document definitions

- Types, message, port type, binding, service
- WSDL as a collection of ports - endpoints
- UDDI (Universal Description, Discovery, and Integration)
 - Overview of UDDI
 - How to publish a web service using UDDI and WSDL
 - Searching a UDDI registry to locate XML Web services
 - How UDDI and WSDL work
 - IBM Web services Product Roadmap
 - Microsoft .NET framework for Web services.
 - BEA Weblogic Integration
- Platforms for Web Services
 - Overview of Java API for XML - JAXP
 - Java API for XML Messaging (JAXM)
 - The Java API for JAX-WS
 - Java WSDP (Web Services Developer Pack)
 - J2EE Platform for Web services.

Method of Evaluation:

Tests (minimum 2) 50%

Assignments 20%

Final Exam 30%

Prescribed Text:

- Web Services Platform Architecture by Weerawarana; ISBN 0-131-48874-0 published by Prentice Hall

Reference Material:

- Java Web Services for Experienced Programmers Authors: Dietel, Gadzik, Lomeli, Santry, Zhang ISBN: 0130461342
- Building Web Services with Java - 2nd Edition by Steve Graham, SAMS Publishing; ISBN 0-672-32641-8

Supplies:

- None

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Explain Web Services Architecture and Web Services Fundamentals
- Describe and write code that uses the Simple Object Access Protocol

-
- Evaluate the use of XML Technologies for Web Services
 - Create software with the Java Web Services Developer Pack and Java technologies and tools for Web Services
 - Describe the network services of any particular application using Web Services Description Language for concepts that include ports, messages, bindings and services
 - Create software to publish and discover Web Services with Universal Description, Discovery and Integration

DPS908 - Operating Systems for Programmers - iSeries (New)

Year 3 or 4 Professional Option

Subject Description

This subject provides an overview of the iSeries architecture and its integrated facilities. Students will be introduced to the iSeries work management concepts, CL programming to provide application control, Query/400, and interactive programming using RPG IV. This course will be taught using both the GUI and native interfaces of the iSeries and will also cover topics related to the iSeries relational database management system and Websphere Development Studio Client (WDSC) for the iSeries.

Method of Instruction:

Four hours interactive lecture per week

Topic Outline:

- iSeries introduction and foundations
 - The machine interface
 - The user interface
 - iSeries Control Language (CL)
 - Objects and object management
 - Process management
 - Libraries and members

- Programming the iSeries
 - Programming Development Manager
 - iSeries Navigator for programmers
 - WebSphere Development Studio
 - Data description utilities
 - RPG IV language and syntax
 - iSeries Query/400

Method of Evaluation:

Tests (minimum 2) 40%
Assignments 30%
Final Exam 30%

Prescribed Text:

- Fortress Rochester: The Inside Story of the IBM iSeries, by Frank G. Soltis, ISBN:1583040838

Reference Material:

- TBA

Supplies:

- TBA

Learning Outcomes:

Upon successful completion of this subject students should be able to:

- Describe the object-based architecture of the iSeries platform
- Perform library system operations, including navigation and device, file member, and library maintenance
- Use the existing iSeries menus and command language and menus to develop applications under OS/400; and create new menus
- Analyze problems, and design and create iSeries command language and RPG IV programs to solve them
- Use the following application development tools to develop programs: SEU, PDM, DFU, DDS, SDA, RPG IV
- Use Operations Navigator, Client Access for PC connection to the iSeries, WebSphere Development Studio Client, and Query/400 to display or print business reports
- Perform operating system configuration and management activities
- Create and use DB2 Universal Database for iSeries database objects
- Apply iSeries security features to grant users different levels of access to libraries and objects
- Transfer data files between iSeries and other platforms using the Integrated File System
- Run and manage business applications using batch and interactive jobs
- Apply the appropriate terminology relevant to operating systems and the iSeries OS, in communication with other programmers and non-technical audiences

DPS909 - Topics in Open Source Development (New)

Year 3 or 4 Professional Option

Subject Description

This course introduces students to the technological, social, and pragmatic aspects of developing open source software through direct involvement in a real open source project/projects. Students will learn to use the tools, techniques, and strategies of OS developers. This is a project-based programming course. The particular open source project(s) to be studied will vary with each offering and be announced at the beginning of the semester.

Method of Instruction:

Two hours interactive lecture per week, and two hours activity-based learning per week (four hours total)

Topic Outline:

The topic outline will vary with each offering and be announced at the start of the course. As a sample, here are the topics that were covered in Fall 2006:

- Course Introduction, Introduction of Mozilla
- What is Open Source? - "The Cathedral and The Bazaar" Eric Raymond
- Mozilla as Open Source Project: Mozilla Foundation vs. Corporation, Netscape, etc.
- Mozilla Community: Understanding how open source development functions through collaboration
- Building Mozilla from source
- How the Mozilla build system works
- Using Revision Control software (CVS, SVN)
- Understanding Patches: diff and patch
- Overview of Mozilla Technologies
- Life-cycle of a Bug - Understanding how bugs are reported and fixed
- Open Source Communication Tools and Methods: IRC, Newsgroups, Mailing Lists
- Collaborative Documentation using Wikis - Intro to using MediaWiki
- Navigating/Understanding Large Source Code trees - Intro to the Mozilla Trees and LXR
- Bugzilla as project management system - How Mozilla organizes all activity around Bugzilla
- Open Source Software Releases - Examining the Firefox 2.0 release process
- Bug Triage - Confirming bugs reported on the Calendar project
- QA in Open Source - using Litmus and other testing tools
- Examining Open Source as Business Model - How Mozilla, Sun, Apple, IBM, etc. use Open Source
- Reflections on Open Source Development - How Open Source differs from Proprietary Development

Method of Evaluation:

Quizzes and Tests 40%

Assignments 60%

Prescribed Text:

- TBA - Prescribed texts will be set in accordance with the chosen topic, and will be announced at the start of the course.

Reference Material:

- TBA

Supplies:

- TBA

Learning Outcomes:**Upon successful completion of this subject students should be able to:**

- Discuss the issues and currents in open source and open source (OS) development
- Describe the history and philosophy of an open source project (or projects)
- Analyze the various open source licenses, and understand the implications for users, developers, and the software community in general
- Use the communication modes particular to the open source world through participation in such things as mailing lists, IRC, wikis, etc.
- Create software using the tools of open source development particular to the OS project being studied. For example: distributed revision control; documentation tools; automated build and test systems; debuggers; source code utilities; tracking systems; on-line resources, etc.
- Appraise, critique, and modify a pre-existing large source code base
- Write software that integrates with the existing OS project's code. For example: add-ons; bug fixes; new features; etc. The specifics of this will be determined in accordance with the OS project being studied
- Performs collaborative work with fellow students and, where possible, members of the open source community

Appendix 6.4.B Explanation of Added or Dropped “O” Courses

The contents of this appendix are not included in this version of this document.

Appendix 6.6 Summary of Program Changes

The changes to this program have been very minor in nature. While we have maintained the same program structure and course schedule through the curriculum, quality improvements in many courses were made to meet current and future needs in the marketplace/industry and academia.

As noted earlier, this program has five one-semester course slots for options in the professional field of study. Options are designed to give the students an opportunity for new learning, or to enhance foundational knowledge, or to seek specialization in a focused area. The expectation was that new option courses would be added in response to current market/industry and academic conditions. The ability to add (or modify) option courses is a contributing factor in keeping the program up-to-date and current without the need to perform other widespread changes to the program.

In summary, the combined efforts of all involved in the delivery of this program are continuously validated in a number of internal and external ways. In addition to the professionalism displayed by the program's faculty, external observers from our Program Advisory Committee, or from industry partners like the Mozilla Corporation, or participants in the School's annual Free Software and Open Source Symposium have indicated that our program is meeting industry needs in a high-quality manner.

Appendix 5.2.6 Admissions Information

Number of students entering program by academic year

Number of New Students Highest Certification	New Intakes into Program in 2003-04 Academic Year	New Intakes into Program in 2004-05 Academic Year	New Intakes into Program in 2005-06 Academic Year	New Intakes into Program in 2006-07 Academic Year
1. Secondary School Graduates	48	65	51	27
2. College Graduates	0	0	0	0
3. University Graduates	0	0	0	0
4. Mature Students	0	11	27	5
5. Total Students Commencing Program	48	76	78	32
6. Average Secondary School G.P.A. of students listed in (1) above	*	72.5	73.5	74.0
7. Number of Total Students (5) granted Advanced Standing into the Program	0	11	27	5
8. Number of Total Students (5) who are International Students (i.e., on a Student Visa)	3	6	6	3

Table 1. Number of students entering program by academic year

* Historical data for 2003-04 is currently not available in our existing database but will be determined manually upon request.

The following is relevant information on row 7, “Number of Total Students granted Advanced Standing”:

- All students were from category 4, and were from diploma or international university programs with a high affinity to this program
- The amount of advanced standing awarded did not exceed the standard benchmark limits
- Advanced standing was determined using Seneca Academic Policy and was consistent with all required standards and benchmarks

Appendix 5.3.1 Student Retention Information

Retention Rates for Each Potential Four-Year Cohort (this program commenced in 2003-2004)

	Row	Academic Year	Fulltime	Parttime
2002-2003 starting cohort	1	Total who commenced program in 2002–2003 academic year		
	2	Total from row 1 who re-enrolled in 2003–2004 academic year		
	3	Total from row 2 who re-enrolled in 2004–2005 academic year		
	4	Total from row 3 who re-enrolled in 2005–2006 academic year		
	5	Total from the 2002-2003 starting cohort who graduated		
	6	Total from row 4 who are still in program		
2003-2004 starting cohort	7	Total who commenced program in 2003–2004 academic year	48	
	8	Total from row 7 who re-enrolled in 2004 – 2005 academic year	34	
	9	Total from row 8 who re-enrolled in 2005 – 2006 academic year	37	
	10	Total from row 9 who re-enrolled in 2006 – 2007 academic year	34	
	11	Total from the 2003-2004 starting cohort who graduated		
	12	Total from row 10 who are still in program	34	
2004-2005 starting cohort	13	Total who commenced program in 2004–2005 academic year	67	
	14	Total from row 13 who re-enrolled in 2005–2006 academic year	57	
	15	Total from row 14 who re-enrolled in 2006–2007 academic year	35	
	16	Total from row 15 who re-enrolled in 2007–2008 academic year		
	17	Total from the 2004-2005 starting cohort who graduated		
	18	Total from row 15 who are still in program (if reporting before the beginning of the 2007-2008 academic year)	35	
2005-2006 starting cohort	19	Total from row 16 who are still in program (if reporting after the beginning of the 2007-2008 academic year)		
	20	Total who commenced program in 2005–2006 academic year	55	
	21	Total from row 20 who re-enrolled in 2006–2007 academic year	29	
	22	Total from row 21 who re-enrolled in 2007–2008 academic year		
	23	Total from the 2005-2006 starting cohort who graduated		
	24	Total from row 21 who are still in program (if reporting before the beginning of the 2007-2008 academic year)	29	
2006-2007 starting cohort	25	Total from row 22 who are still in program (if reporting after the beginning of the 2007-2008 academic year)		
	26	Total who commenced program in 2006–2007 academic year	27	
	27	Total from row 26 who re-enrolled in 2007–2008 academic year		
	28	Total from the 2006-2007 starting cohort who graduated		
	29	Total from row 26 who are still in program (if reporting before the beginning of the 2007-2008 academic year)	27	
	30	Total from row 27 who are still in program (if reporting after the beginning of the 2007-2008 academic year)		

Table 2. Retention Rates by Academic Year

Notes:

- Row 8: Includes 9 direct entries
- Row 9: Includes 17 direct entries
- Row 14: Includes 6 direct entries
- Row 15: Includes 4 direct entries
- Row 21: Includes 1 direct entry

Appendix 8.2.1 Library Resources

In terms of Seneca Libraries' overall collection at all campuses, some key data is provided in the chart below:

Total Collection Size (Print) at all Seneca Campuses	106,653
Total Collection Size (Print) at Seneca@York Campus	13,016
Total Number of Electronic Databases	66
Budget Spent on Print Books (2006-07)	\$458,963 annually
Budget Spent on Print Serials (2006-07)	\$151,000 annually
Budget Spent on Electronic Resources (2006-07)	\$368,375 annually
Budget Spent on Multimedia (2006-07)	\$ 30,000 annually
Total Annual Collection Budget (2006-07)	\$1,008,338 annually

Since many library holdings (both print and eResources) are accessed by students in a number of programs it is difficult to attribute a specific dollar amount to a particular program. A **Library Acquisition History** related to the Software Development program is included in Table 3 on the next page.

In order to provide a way of judging the size of the program relative to the size of the campus, the 2005/2006 (Fall 05, Winter 06, Summer 06) enrolment for the Software Development program and the total campus enrolment during the same period is shown below:

2005/2006 Enrolment Software Development	2005/2006 Enrolment Seneca@York Campus	Program size relative to campus size based on enrolment
311	10,519	3%

Library Acquisition History – Software Development

Directly Related to the Consent Program	Number at the Time of Consent	Current Number
Holdings – Books (print)	Core curriculum: 2,542 Total campus collection: 8,500	Core curriculum: 3,184 ⁽¹⁾ Total Core Curriculum accessible from other campuses: 4,237 ⁽²⁾ Total campus collection: 13,016
Holdings – Journals (print)	12	14
Holdings – Books (electronic)	2868	7377 ⁽³⁾
Holdings – Journals (electronic)	Not available	(12 out of 66) collections of electronic resources ⁽⁴⁾
Expenditures during this period for purchase/access to ADDITIONAL library resources pertaining specifically to this program.		\$ 35,446 plus a portion of the \$1,008,338 spent annually on college eResources

Table Notes:

- (1) It is the policy of Seneca College Libraries to collect current, curriculum-supported resources. Currently over 78% of the relevant core curriculum print collection has been added since 2000 and 35% has been added since 2003.
- (2) Besides access to other Seneca College Campus Libraries via inter-campus loan the program has access to: 24 Ontario Community Colleges (CAAT Interlibrary Loan agreement) and Universities (Inter-Library loan agreements; and Faculty have borrowing privileges at York University).
- (3) Future plans are to migrate significant funding allocations from print resources to electronic, to increase the electronic books collection size, to meet demand.
- (4) The number of electronic journal titles, directly related to the consent program is not available. The total number of titles available across all 66 collections of resources is 21 592 journals.

Appendix 8.2.2 Computer Access

Since most electronic classrooms and computer labs in the college are shared by a number of programs, it is difficult to attribute a specific dollar amount to a particular program. **Computers and Computer Access** for the Seneca@York campus and the Faculty of Information Arts and Technology have been included in Table 4 at the bottom of this page.

In order to provide a way of judging the size of the program relative to the size of the campus, the 2005/2006 (Fall 05, Winter 06, Summer 06) enrolment for the Software Development program and the total campus enrolment during the same period is shown below:

2005/2006 Enrolment Software Development	2005/2006 Enrolment Seneca@York Campus	Program size relative to campus size based on enrolment
311	10,519	3%

**** Note: all Seneca computers have Internet access and are replaced on a 3 year cycle at an approximate cost of \$2,100.**

Directly Related to the Consent Program	Number at Time of Consent	Current Number
Number of Students in Program (Cumulative)		311 (Fall 05, Winter 06, Summer 06)
Number of Computers without Internet Access available solely (i.e., they have priority of use) to Students in Program	N/A	N/A
Number of Computers with Internet Access available solely to Students in Program	160 ¹	595 ²
Expenditure during this period for purchase/rental of ADDITIONAL computer equipment pertaining specifically to this program.		\$1,249,500
Number of Computers without Internet Access reasonably accessible to Students in Program	N/A	N/A
Number of Computers with Internet Access reasonably accessible to Students in Program	660 ³	908 ⁴

Table 4. Computers and Computer Access

¹ 160 Original Computer Studies labs at Seneca@York

² 595 Current Computer Studies labs at Seneca@York plus the Open Labs all purchased since program began

³ 660 Original all Seneca@York labs including computing Commons

⁴ 908 Current Computer Studies labs at Seneca@York plus the Open Labs all purchased since program began

Appendix 8.2.3 Improvements/Expansion of Classroom Space

Since most classrooms and the common areas of the college are shared by a number of programs, it is difficult to attribute a specific dollar amount to a particular program. Our complete **Capital Investments History** is included in the chart at the bottom of the page.

In order to provide a way of judging the size of the program relative to the size of the campus, the 2005/2006 (Fall 05, Winter 06, Summer 06) enrolment for the Software Development program and the total campus enrolment during the same period is shown below:

2005/2006 Enrolment Software Development	2005/2006 Enrolment Seneca@York Campus	Program size relative to campus size based on enrolment
311	10,519	3%

Directly Related to the Consent Program	Number at time of consent	Current Number
Expenditure for construction/rental of ADDITIONAL classroom space pertaining specifically to this program.		\$ <i>see figures below</i>

Table 5. Improvements/Expansion of Classroom Space

Capital Investments History at 4 Seneca Campuses (for period 2003-2006)

Newnham Campus	\$30,862,028.00
Seneca @ York Campus	\$10,444,632.00
Markham Campus	\$43,523,758.00
Buttonville Campus	\$2,635,205.00

Includes improvements in facilities and classroom/lab furniture and equipment.

Appendix 8.2.4 Laboratories/Equipment

Not applicable to this program.

Directly Related to the Consent Program	Number at time of Consent	Current Number
Number of Specifically-Equipped Work Stations and/or Specialized Equipment	Not applicable	Not applicable
Expenditure for construction/rental of ADDITIONAL laboratories and equipment pertaining specifically to this program.		Not applicable

Appendix 8.3 Resource Renewal and Upgrading

Related to 8.2.1 Library Resources

The Seneca College Library and Computing Commons, which incorporates the Library, the Learning Centre, Audio Visual Services, and the Computing Commons, is vital to the success of our students. The acquisition of up-to-date print and multi-media resources, supplemented by an extensive collection of electronic books, electronic journals and electronic databases has been the focus of our collection development policies. Electronic resources can be accessed on site or remotely from home. The Virtual Library is always open 24x7 at our web site: <http://library.senecacollege.ca/>

The Library has a unique plan for the acquisition and renewal of library print and audio visual resources. The development of what is called “Collection Profiles” is a five-year plan of collection renewal. Over the course of five years we develop up-to-date, relevant, curriculum driven collections.

The College has also made a commitment to the Library to provide annual funding for electronic resources through its Academic IT Plan fund.

Research by Subject

The library is committed to supporting Degree Programs by ensuring that registered students have adequate, relevant and current resources available to them. We insure that they know how to find all relevant resources by providing a starting point, a “Research by Subject” page on our website. This page directs students to all our electronic resources, our book, periodical and AV catalogue, and to valued and reviewed sites on the Internet. There is a Research by Subject page for every program in the curriculum. The subject index is located at: http://senecac.on.ca/library/Research_by_Subject/index.html

Related to 8.2.2 Computer Access

Seneca College introduced a College-wide Academic IT Plan in 1995. This plan was based on the principle that all students should have access to computing and information technology resources and the cost of these resources should not become a barrier to a Seneca College education. As well, the College considered that a high level of technological literacy should be a requirement of college graduates. Accordingly, Seneca's plan supports use of information technology by students in all programs as well as supporting resource requirement in programs requiring a high level of computing.

In general, the College developed the following goals:

- Provide consistent improvements in computing hardware (with annual upgrades to follow according to a long-term plan)
- Provide a generic hardware "platform" common to every laboratory
- Ensure full familiarity with the Windows environment; easy learning of new applications in that environment and up-to-date operating systems
- Provide site-licenses for industry-leading software

-
- Use industry-leading software, with opportunities for students to learn additional applications beyond those used in their programs
 - Provide centralized e-mail services enabling all students to communicate within Seneca and around the world
 - Provide internet access in all labs
 - Use and develop Internet based learning resources
 - Provide increased technical support
 - Provide increased access from home

Related to 8.2.3 Improvements/Expansion of Classroom Space

In Seneca's Strategic Plan (2004-2009) one of strategic goals is to provide a **superior quality education experience** for students at Seneca. To support this goal we are committed to:

Ongoing assessment, acquisition and enhancements (environmental, aesthetic and others) of state-of-the-art facilities, resources, and technologies to retain a competitive advantage and to accommodate growth (*Core Strategy 1.1, page 8 in the Strategic Plan*).

We also strive to provide a **model of access opportunities**, which includes a commitment that our facilities and services meet or exceed legislated requirements for students, faculty and staff with disabilities (*Core Strategy 2.2, page 9 in the Strategic Plan*).

Overall Conclusion

Resource renewal and upgrading exceed the commitments reflected in the original Software Development proposal.

Appendix 8.6.2 B Faculty Qualifications: Discipline Related Courses

Faculty holding Academic Degrees higher than a Bachelor in field of study related to subject to be taught

	1 st Academic Year of Delivery 2003 to 2004		2 nd Academic Year of Delivery 2004 to 2005		3 rd Academic Year of Delivery 2005 to 2006		4 th Academic Year of Delivery 2006 to 2007	
Highest Qualification	Number with credential	Number of Courses Taught	Number with credential	Number of Courses Taught	Number with credential	Number of Courses Taught	Number with credential	Number of Courses Taught
Doctorate Degree	2	4	2	6	2	8	2	3
Master Degree	3	8	10*	21	16*	42	14*	21

Table 7A. Faculty Qualifications: Discipline Related Courses (higher than a Bachelor)

** Includes one faculty member who is in a Master's program. This faculty member was included in this program's original proposal and consent, and in a subsequent Seneca program (Informatics and Security) proposal and consent.*

Faculty not holding Academic Degrees higher than a Bachelor in field of study related to subject to be taught

	1 st Academic Year of Delivery 2003 to 2004		2 nd Academic Year of Delivery 2004 to 2005		3 rd Academic Year of Delivery 2005 to 2006		4 th Academic Year of Delivery 2006 to 2007	
	Instructor qualification	Course(s) Taught	Instructor qualification	Course(s) Taught	Instructor qualification	Course(s) Taught	Instructor qualification	Course(s) Taught
1.			Dip (CPA)*	BTI220				

Table 7B. Faculty Qualifications: Discipline Related Courses (not higher than a Bachelor)

* The faculty member who taught BTI220 did so in the Summer 2005 semester. This faculty member was qualified to teach the material in this first-year course, on the strength of his subject matter expertise, experience teaching a similar subject in our high-affinity diploma programs, consistent responsibility teaching diploma students (in our high-affinity programs) in their capstone courses, and decades of industry consulting experience. We view this single teaching assignment episode as an anomaly, which will not be repeated.

Appendix 8.6.2 C Faculty Qualifications: Breadth Courses

Faculty holding Academic Degrees higher than a Bachelor in field of study related to subject to be taught

Highest Qualification	1 st Academic Year of Delivery 2003 to 2004		2 nd Academic Year of Delivery 2004 to 2005		3 rd Academic Year of Delivery 2005 to 2006		4 th Academic Year of Delivery 2006 to 2007	
	Number with credential	Number of Courses Taught	Number with credential	Number of Courses Taught	Number with credential	Number of Courses Taught	Number with credential	Number of Courses Taught
Doctorate Degree	2	3	3	7	6	8	3	5
Master Degree	2	3	5	7	5	11	3	3

Table 8A. Faculty Qualifications: Discipline Related Courses (higher than a Bachelor)

Faculty not holding Academic Degrees higher than a Bachelor in field of study related to subject to be taught

	1 st Academic Year of Delivery 2003 to 2004		2 nd Academic Year of Delivery 2004 to 2005		3 rd Academic Year of Delivery 2005 to 2006		4 th Academic Year of Delivery 2006 to 2007	
	Instructor qualification	Course(s) Taught	Instructor qualification	Course(s) Taught	Instructor qualification	Course(s) Taught	Instructor qualification	Course(s) Taught
1.			BFA, published writer, and 25 years professional comm.-unications experience	BTC340				
2.					BA – see Part B, Appendix 16.2	CPP600	BA – see Part B, Appendix 16.2	CPP700

Table 8B. Faculty Qualifications: Discipline Related Courses (not higher than a Bachelor)

Appendix 8.7 Enrolment Projections and Staffing Implications

The original 2002 consent application planned for there to be 641 students (cumulative) enrolled in the Bachelor of Applied Technology (Software Development) program across all four years of the program by the 2006/2007 academic year. The actual number registered in the Fall 2006 semester was 132, (averaging 33 students in each year of the program) with a projected cumulative figure of 321 for the entire 2006/2007 year. This means that student enrolment is about half of what was originally anticipated.

One reason for this shortfall was a steady downturn in the IT sector that had actually started in 2001 with the “dot-com” stock market crash, and was exacerbated by a trend toward outsourcing IT services abroad. Enrolments were below original targets due, as well, to the newness of the college degrees in Ontario’s post secondary education system. The introduction of degrees in colleges was also hampered by the initial branding as an “applied degree” and the subsequent confusion about the eligibility for graduate studies. The short lead time between consent and the start of the program plus the restrictions on advertising added to the difficulty in meeting the originally projected student numbers.

In the future, there will be a number of faculty retirements expected in the department over the next few years, which will allow the hiring of replacements possessing a Ph.D in areas where a Ph.D is desirable.

Appendix 9.1.a Explanation of Steps

Seneca Institutional Efforts

Since the launch of our degree program, we have approached all of our university partners to confirm if they would accept our degree programs as meeting the ‘degree’ requirement for admission to Master’s level programs. Most of these institutions responded positively, some with specific articulated pathways. Where possible, we have attempted to gather cross-endorsements for all of our 9 degree programs that have a total of 37 letters of support. Some institutions have given verbal confirmation that our degrees meet admission criteria for all relevant graduate level programs. These include University Canada West and University of Western Sydney.

Specifically, our business degrees have been given confirmation by University of Windsor’s Odette School of Business that our degrees will meet their admission requirement of an undergraduate degree. A formal agreement is in progress. In other cases, the universities were restricted due to admission criteria requiring institutional membership in the Association of Universities and Colleges of Canada. A new policy statement (due in December 2006) from the Council of Ontario Universities may reduce some of these restrictions, and will allow us to further develop the recognition of our degree programs throughout Ontario.

A complete listing of the pathways to graduate studies programs currently available for our graduates can be found on Seneca’s Transfer Guide website at: www.senecac.on.ca/universitytransfer

Graduates of Seneca’s degree programs who plan to apply and enrol in Master’s programs upon graduation will be assisted by the College’s Degree and Credit Transfer Office in Student Services. The college began offering this one-stop advising and assistance to students in 2001 and currently maintains a guide of over 200 agreements with 52 university partners. The Degree and Credit Transfer Office now has a dedicated manager and degree transfer advisor to assist students in this capacity.

This Program’s Efforts

There have been a number of additional informal provisions made for the graduates of this program to have their credentials recognized by other postsecondary institutions for the purpose of graduate-level (i.e. Master’s) study. As we get closer to the graduation date of our first cohort, we anticipate even more formal and informal provisions to be made.

The provisions made to date include the following:

- York University (Ontario): The School of Information Technology is planning to begin a new Master’s program with a software development focus. We have met several times, and are confident that some of our graduates would be interested in this program.
- Southern New Hampshire University: The Master of Science of Information Technology program is currently evaluating our program’s affinity level. The discussions to date have been positive and productive.
- Griffiths University (Australia): Griffiths has Master’s-level programs that offer opportunity for our graduates to specialize in the software development field. We have met several times, and identified two program streams that our graduates would be eligible for.

Our School of Computer Studies offers another degree program, the Bachelor of Applied Technology (Informatics and Security). During the process of identifying and securing credential recognition opportunities for graduates of that program, a list of institutions (listed below) was developed, many of which have graduate programs that would be of interest to our graduates. Our plan is to continue developing additional provisions from institutions on this list and from elsewhere.

- University at Buffalo
- University College of Cape Breton
- Carnegie Mellon University
- George Mason University
- University of Liverpool
- Memorial University of Newfoundland
- University of New Brunswick – St. John
- Sobey School of Business – St. Mary’s University

Appendix 11.2 Update on Program Evaluation Measures

Seneca's Quality Assurance Policy

Policy: Quality Assurance Policy
Approved: Senior Executive Committee, October 20, 2004
Board of Governors, November 24, 2004

It is the policy of Seneca College to ensure that all of its program and services regularly undergo Quality Assurance review. Quality Assurance "...relates to mechanisms and procedures used to assure or measure the level or existence of quality in a system or property" (Quality Assurance in Ontario's Colleges of Applied Arts & Technology, MTCU/CCVPA Discussion Paper November 30, 2003, p. 4). This includes but is not limited to the following in **scope**:

- i) **Academic Program review** at all levels, (i.e., certificate, diploma and degree programs), both full time and part time and addresses vocational, general education/liberal studies and essential employability skills outcomes at the program level.
- ii) **English, Liberal Studies and Essential Employability Skills** curriculum content mapped across the college programs.
- iii) The **College's capacity to deliver college-wide services**, such as: infrastructure and supporting services such as libraries, learning centers, computer labs, appropriately equipped classrooms, cafeterias, student services and student work areas, human resources policies and practices, donor accountabilities and stewardship, financial practices, marketing, and institutional communications.
- iv) **Seneca Residences** which includes practices specific to that environment.

Quality assurance review is mandatory for all programs and services.

All programs and services will perform ongoing (formative) review. Subject to availability of resources, a full, formal (summative) review will normally be conducted every 7 to 10 years, or more frequently if indicated (i.e., consistent with evidence based practice).

Specific policies and procedures for implementing quality assurance in the areas identified in the **scope** above will be developed by the faculty and administrative and support staff directly responsible for those programs and services and approved by the responsible Senior Executive.

Where an appropriate external accreditation process is available, this may be used in lieu of the College's review process.

The College will dedicate a reasonable amount of Quality Assurance funds in the budget for each fiscal year. These funds are to be used for the implementation of recommendations arising out of formal quality assurance processes, with distribution to be based on current college priorities.

Academic Program review

The **Academic Program review process** includes ongoing formative assessment and intervention as appropriate and as described in the 3 Tier process below.

Tier 1 – Early Identification System – this includes:

- i) ongoing and at least annually, reports on performance indicators (primarily quantitative data) provided by the staff of Institutional Research to the program chair
- ii) if the performance indicators remain above or at acceptable levels, no further action is taken until the next Tier 1 review
- iii) any performance indicators that drop below acceptable ranges will be flagged by the chair and the review process will be moved to Tier 2 or Tier 3 review as appropriate
- iv) the chair will report a summary of the findings of the Tier 1 review to the dean and faculty (each Fall)

Tier 2 – Probing of indicators identified at Tier 1 - this includes:

- i) exploration of factors influencing the drop in performance indicators
- ii) examination of both quantitative and qualitative data as appropriate
- iii) appropriate and timely response to address the issue(s) identified
- iv) if the performance indicators in subsequent Tier 1 reviews remain at or above acceptable levels, no further action is required
- v) the chair will report a summary of the findings of the Tier 2 review to the dean and faculty (each Fall)
- vi) if the program appears sustainable and it is deemed appropriate by the chair and dean in collaboration with faculty, the review process may be moved immediately to a Tier 3 full program review (i.e., not wait until the normal 7 year review)

Tier 3 - Full Program Review:

- i) Program Review Teams
 - a) Every academic program will establish a review team(s) responsible for overseeing the program review and writing the final report of their findings and recommendations.
 - b) The membership and committee size will vary according to program nature, needs, locations and delivery modes.
 - c) The review team will ensure that the review achieves the purpose and intent of the College's Quality Assurance policies.

-
- d) Internal Review Team for Program Self-Assessment
- e) All members of the review team will receive training in the Quality Assurance process to be provided collaboratively with the Centre for Professional Development (CPD), Institutional Research (IR), and the Office of Research & Innovation (ORI).
- f) Throughout the review process, centralized support, guidance collection tools will be provided to the review team through CPD, IR and ORI.
- g) The program review team will report regularly on their progress to their faculty and staff, to the appropriate chair(s), and to the program advisory committee.
- h) The program review team will establish a communication plan and ensure that all stakeholders, including the program advisory committee are informed on an ongoing basis
- i) External Review Team

In addition and as appropriate (e.g., for degree programs) the program review process will include an external review panel consisting of at least

- 3 external academic peers with relevant expertise and free of any conflict of interest. Academic peers may be peers from similar programs outside the College or representatives from relevant accrediting associations and related industries.

The external review will include a site visit.

- j) Where an appropriate external accreditation or program recognition process is available, this may be used in lieu of the College's program review process.

Note: A flowchart of the 3 Tier Review process has been included on the last page of this section.

Tier 3 Review Schedule for Degrees

All degree programs have been conducting regular formative assessment (Tier 1) and will undergo full (Tier 3) program reviews on a 5 year cycle.

Financial Services Management is scheduled to begin a Tier 3 review in January 2007. Software Development, Integrated Environmental Site Remediation and the Flight Program are scheduled for January 2008.

Audit of Seneca's Quality Assurance Processes

In June 2006, Seneca participated in an external audit of its Quality Assurance processes. **The Program Quality Assurance Process Audit (PQAPA)** is an audit process that involves the regular and cyclical review of each college's program quality assurance processes.

The PQAPA focuses on college-wide policies and practices and drills down on selected programs to verify that practices are implemented, that recommendations lead to improvement, and that program quality is assured.

The PQAPA requires the following actions:

1. The establishment of an independent, arms-length oversight body to coordinate the PQAPA.
2. The implementation of program quality assurance processes by, and internal to, each college.
3. An audit of each college's program quality assurance processes by an external panel.
4. A review of each audit report by the oversight body to ensure that the panel's process has conformed to the approved guidelines and the report has treated each college fairly and consistently.
5. The provision of an appeal process prior to the release of the final Audit Report.

Note: more information on the PQAPA audit process can be located at:

<http://www.acaato.on.ca/home/ontario/credential/primaryInternalContentParagraphs/012/document/PQAPA%20Orientation%20Manual.pdf>

The executive summary, and overall findings, from Seneca's PQAPA final report have been included below.

Executive Summary From The Seneca PQAPA Audit Report

The work that Seneca has undertaken over the years to implement, refine and re-develop its Quality Assurance Policies and Procedures is commendable. More recently, the work undertaken to ensure that there is adequate support for the implementation of its Quality Assurance Policy is having a positive impact on the programs and services offered by Seneca. Faculty and students are excited, energized and encouraged by the knowledge and experience they have acquired through this process and indicate that this is beneficial for program change and enhancement. Additionally, it is providing a form of professional development for faculty, staff and students, encouraging a dialogue regarding pedagogical issues amongst faculty, and facilitating communication and work across areas (e.g., library and faculty) in the development and offering of programs and services to students.

Seneca has met all the requirements for its initial audit review.

Overall Findings Of Panel

Criterion	Met	Partially Met	Not Met
Criterion 1 Admission, credit for prior learning, promotion, graduation, and related academic policies support student achievement of program learning outcomes.	X		
Criterion 2 Programs conform to the <i>Framework for Programs of Instruction</i> and the Credentials Framework, are consistent with accepted college system nomenclature / titling principles, and maintain relevance.	X		
Criterion 3 Methods of program delivery and student evaluation are consistent with the program learning outcomes.	X		
Criterion 4 Human, physical, financial, and support resources to support student achievement of program learning outcomes are available and accessible.	X		
Criterion 5 Regular program quality assessment that involves faculty, students, industry representatives, and others as appropriate for the purpose of continual improvement is in place and happens.	X		

This program's (Software Development) Tier 1 Review

Some of the following measures have been discussed in sections 4.1 and 6.3.1 above, and may be referenced or repeated here, along with some additional information.

This program is continuously monitored using both internal and external processes. The following paragraphs describe these efforts.

The Software Development program's curriculum has been delivered essentially as proposed in 2002. The delivery of each course adheres to its outline, including its description, learning outcomes, delivery method, and evaluations, while keeping the topic content current and relevant. Every time a course is offered, its course outline is reviewed, and updated or edited as required, by following the principles of appropriateness, currency, and quality. This process is very important to Seneca's School of Computer Studies, and it is performed by the faculty member or team that teaches the course, and approved by the Chair of the School.

The program has a dedicated coordinator, who interacts with students, faculty, and staff on a daily basis. The coordinator also teaches in the program. The Chair of the School of Computer Studies also actively and regularly manages the program.

Periodic meetings involving the program's teaching faculty take place during the semester. In addition, faculty members are consulting with students and administrators on a regular basis. These efforts all contribute to active monitoring of the program's delivery.

Many faculty members have some level of ongoing industry involvement. This keeps them, and the program, updated with current industry needs, and provides information needed to improve the program's quality, and the students' level of preparedness for work placement, or full-time employment upon graduation.

Student progress is monitored during each semester. At-risk students are identified informally, and appropriate interventions are devised to affect the students' success. During these activities, there is also an effort to determine and ensure that the course and/or program are being delivered as intended. Students meet with faculty and/or the program coordinator as appropriate, and are invited or urged to implement recommendations that will result in their success.

In many of the courses, the graded course work, including computer programming projects, are designed to increase in scope, complexity and analytical requirement over the course of the program. Course work in third and fourth year requires synthesis of course material, concepts and techniques, problem-solving, and critical thinking and analysis skills learned over the entire program.

As required by Seneca Academic Policy, there is a Promotion Committee which meets at the end of every semester to administer and determine student progress within the program. During the meeting, there is also discussion of a wide range of issues, with the goal of continuously improving program delivery and quality. The committee includes all faculty teaching in the program, as well as the program's coordinator.

Seneca surveys students twice per year, asking for feedback on faculty, as well as course, program, and college issues. This program's results are favourable, and are used by the School's chair during the administration of the program. In addition, there is an annual Key Performance Indicator (KPI) survey, asking students about program and college issues. Again, this program's results are favourable, and are reviewed, analyzed, and discussed by the program's delivery team.

Regular and periodic status reports are provided to the Computer Studies Advisory Committee (for computer programming curricula). The committee meets at least twice per year, to advise the School on the development, maintenance, and community acceptance of our programs. The committee fulfils a number of functions or roles in support of this program, including:

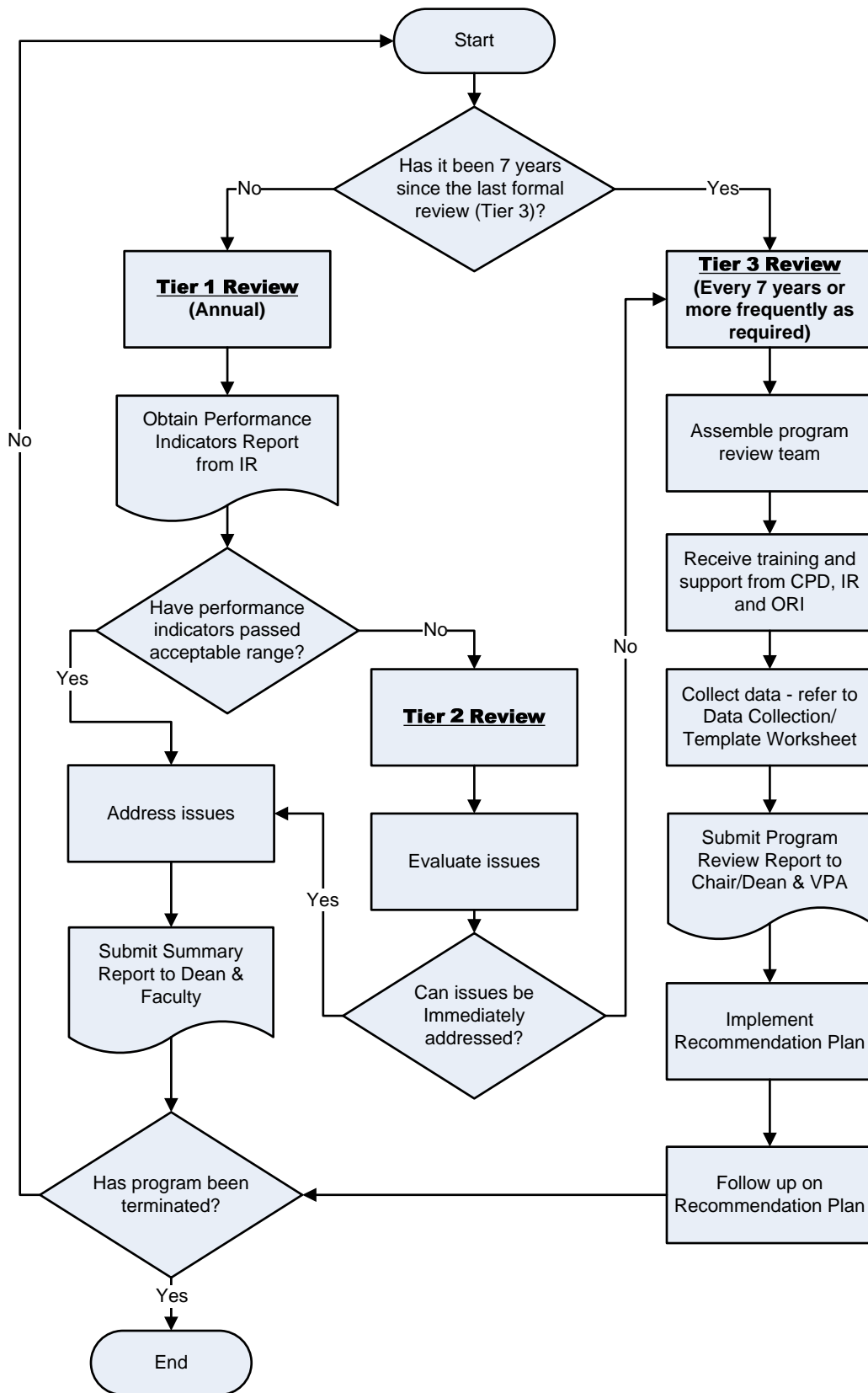
- Participation in the quality assurance review process
- Suggestions and recommendations on program curricula revisions
- Advisement on current and future employment opportunities, industry trends, and employer needs

During every meeting, the committee receives a status report on this program, and provides consultation and discussion consistent with our program delivery goals.

The summer of 2006 was the program's first co-op work experience placement. All students who were seeking co-op employment were placed. During the work placement, employers provide feedback to the dedicated co-op coordinator about the performance of the students, and are surveyed at the end of the work placement. To summarize, the feedback was positive, indicating that the students met or exceeded expectations, and were well-prepared for the work placement.

Chart # 1

Program Review Flowchart



Appendix 12.1 Additional Information – Accreditation Update

This program does not require accreditation from a regulatory body. However, we offer the following commentary.

Seneca’s School of Computer Studies’ diploma programs in computer programming – CPA and CPD – are accredited by the Canadian Information Processing Society (CIPS). These are the *only* Ontario college programs accredited by CIPS. Our School sought accreditation for a number of reasons, including:

- To publicly recognize the quality and reputation of our programs
- To be the first college in Ontario to receive CIPS accreditation
- To facilitate the ability for graduates to earn an ISP (Information Systems Professional) designation
- To attain external professional accreditation of our programs to meet Seneca’s criteria for program review
- To seek CIPS accreditation of this Software Development degree program in the future

CIPS is a professional information technology organization which accredits computer studies programs in colleges and universities throughout Canada. Accreditation by CIPS is an indication to others that the program is of high quality and is relevant to industry requirements. CIPS has accredited degree programs from across the country that are related to computer programming, including programs at the University of Waterloo, the University of Western Ontario, and the University of Ottawa. The CIPS website is at <http://www.cips.ca>.

The following was presented in our original application in 2002:

“...the proposal was benchmarked against the accreditation requirements set forward by the professional body, CIPS (Canadian Information Processing Society). The proposed curriculum meets or exceeds the CIPS requirements for accreditation of applied degrees.”

“CIPS offers two types of accreditation, one for the program and one for the [individual]. The [individual] professional designation is Information Systems Professional (I.S.P.). All graduates of the applied degree program will be eligible for I.S.P. designation after completing the work experience requirement.”

It is our intention to seek CIPS accreditation for this program at the earliest opportunity. This effort can commence in the summer of 2008, one year after this program’s first cohort graduates. During the accreditation process for our diploma programs, our people discussed accreditation for this degree program, and exchanged information that was intended to assist us in our efforts. The ideas, approaches, and principles were included in the design and delivery of our degree program, and continue to the present time.

Appendix 12.2 Additional Information – Mozilla Corporation Partnership

In 2005, the School of Computer Studies began a relationship with the Mozilla Corporation, a world leader in open-source software (and creator of the widely-used Firefox internet browser application). Many of our program's third- and fourth-year students work alongside Mozilla people during their studies, and some have been employed by Mozilla in summer work placements and/or part-time in-semester positions, and have made significant and recognized contributions. A few of note:

- A group of four Seneca students worked to develop software drivers, a programming interface, and other related software for a next-generation human interface device being developed by a Canadian company. As a proof of concept, they modified the Firefox browser to accept new types of input and to alter the way it draws the user interface
- A fourth-year student spent the summer of 2006 working with Mozilla's Vladimir Vukićević to implement the animated version of a widely-used computer graphics format. This work is now finished, and the student is going on to add this support to the Firefox version 3.0 internet browser. This work was funded by Google Inc.
- Two fourth-year students are working to add support for the Microsoft C++ programming language compiler in software called distcc. Distcc is a distributed compiler that allows for a network of PCs to be used when compiling large applications. Mozilla would like to be able to use distcc on Windows, something it does now on the Linux operating system.
- Open Source Testing: Seneca has setup a number of labs in order to do testing. For example, Seneca's English Language Institute is working with Mozilla to test international font rendering in Firefox 3. Another example is our Microsoft Vista testing lab, where students and faculty are working to test Firefox compatibility on Vista. In both cases Mozilla has provided us with custom builds.

Mike Shaver, co-founder of Mozilla, thinks highly of our program. He made the following public statement in June 2006:

I also find myself thinking of next year's first graduates of Seneca's Bachelor of Software Development as well, and what it might be like for them to usher in what could be – and I hope is – a powerful force for change in how software is built, thought about, and taught. Wonder if I can sneak in to watch that ceremony next spring, and maybe pluck a few especially talented graduates for my own mildly nefarious purposes, while they're still dazed from the post-hooding head rush and flashbulb barrage.

Part B

Application For New Consent For A Current Consent Program

Submission Checklist for Part B

Item Name and Binder Tab	Status
Submission Checklist for Part B	[√] Attached
Record of Proposed Changes to the Current Consent Program and Required Submission Elements	[√] Attached
Record of Proposed Changes: Academic Freedom and Student Protection	[√] Attached
Title Page	
Appendix 1.1 Submission Title Page	[√] Not required
Appendix 1.2 Table of Contents	[√] Not required
Executive Summary	
Appendix 2.1 Executive Summary	[√] Not required
Program Abstract	
Appendix 3.1 Program Abstract	[√] Not required
Program Degree-Level Standard	
Appendix 4.1 Degree Level Summary	[√] Not required
Appendix 4.2 Samples of Student Work	[√] Attached
Admissions, Promotion, Graduation Standard	
Appendix 5.1.1 Admissions Requirements Direct Entry	[√] Not required
Appendix 5.1.2 Admissions Policies and Procedures for Mature Students	[√] Not required
Appendix 5.2.1 Credit Transfer/Recognition Policies and Procedures	[√] Not required
Appendix 5.2.2 Advanced Placement Policies	[√] Not required
Appendix 5.2.3 Degree Completion Arrangements	[√] Not required
Appendix 5.2.4 Gap Analysis	[√] Not required
Appendix 5.2.5 Bridging Courses	[√] Not required
Appendix 5.3 Promotion and Graduation Requirements	[√] Not required
Program Content Standard	
Appendix 6.3.1 Program Level Learning Outcomes	[√] Not required
Appendix 6.3.2 Course Descriptions	[√] Attached
Appendix 6.3.3.1 Program Hour/Credit Conversion Justification	[√] Not required
Appendix 6.3.3.2 Academic Course Schedule	[√] Attached

Appendix 6.4. Course Outlines	[√] Attached
Appendix 6.5.1 Program Structure Requirement	[√] Attached
Appendix 6.5.2 Support for Work Experience	[√] Not required
Appendix 6.5.3 Work Experience Outcomes and Evaluation	[√] Not required
Program Delivery Standard	
Appendix 7.1.1 Quality Assurance Policies	[√] Not required
Appendix 7.1.2 Policy on Student Feedback	[√] Not required
Appendix 7.1.3 Student Feedback Instruments	[√] Not required
Appendix 7.2.1.a Listing of the courses incorporating distance delivery	[√] Not required
Appendix 7.2.1.b On-Line Learning Policies and Procedures;	[√] Not required
Appendix 7.2.2 Academic Community Policies	[√] Not required
Capacity to Deliver Standard	
Appendix 8.2.1 Library Resources	[√] Not required
Appendix 8.2.2 Computer Access	[√] Not required
Appendix 8.2.3 Classroom Space	[√] Not required
Appendix 8.2.4 Laboratories/Equipment (where applicable)	[√] Not required
Appendix 8.4 Support Services	[√] Not required
Appendix 8.5 Policies on Faculty	[√] Not required
Appendix 8.6.1 CV Release	[√] Attached
Appendix 8.6.2 A Curriculum Vitae Exceptions	[√] Not required
Appendix 8.6.2 B Curriculum Vitae for Faculty Responsible for Teaching and Curriculum of DW Courses	[√] Attached
Appendix 8.6.2 C Curriculum Vitae for Faculty Responsible for Teaching and Curriculum Development of DO and DL Courses	[√] Not required
Appendix 8.6.2 D Curriculum Vitae for Program Development Consultants	[√] Not required
Appendix 8.6.2 E Curriculum Vitae for On-line Learning Professional and Technical Staff	[√] Not required
Appendix 8.7 Enrolment Projections and Staffing Implications	[√] Attached
Credential Recognition Standard	
Not required	
Regulation and Accreditation Standard	
Appendix 10.1.1 Current Regulatory or Licensing Requirements	[√] Not required
Appendix 10.1.2 Letters of Support From Regulatory/Licensing Bodies	[√] Not required

Program Evaluation Standard	
Appendix 11.1 Periodic Review Policy and Schedule	[√] Not required
Academic Freedom and Integrity Standard	
Appendix 12.1.1 Academic Freedom Policy	[√] Not required
Appendix 12.1.2 Academic Honesty Policy	[√] Not required
Appendix 12.1.3 Academic Honesty Procedure	[√] Not required
Appendix 12.2 Policy on Intellectual Products	[√] Not required
Appendix 12.3 Policy on Ethical Research Practices	[√] Not required
Student Protection Standard	
Appendix 13.1 Academic Calendar Information	[√] Not required
Appendix 13.1.a Credential Recognition Information	[√] Not required
Appendix 13.1.b Organization Information	[√] Not required
Appendix 13.2.1 Dispute Resolution	[√] Not required
Appendix 13.2.2 Fees and Charges	[√] Not required
Appendix 13.2.3 Student Dismissal	[√] Not required
Appendix 13.2.4 Withdrawals and Refunds	[√] Not required
Appendix 13.3 Student Protection Information	[√] Not required
Economic Need	Not required
Non-Duplication of Programs	Not required
Optional Material	
Appendix 16.1 Terminal Credentials and Software Development	[√] Attached
Appendix 16.2 Request for Special Consideration for Co-op Coordinators	[√] Attached

Record of Proposed Changes to the Current Consent Program and Required Submission Elements

Are you proposing to change the title of the program?	[<input checked="" type="checkbox"/>] No
Are you proposing to change the location of the program?	[<input checked="" type="checkbox"/>] No
Are you proposing to change the content of the program?	[<input checked="" type="checkbox"/>] No

Degree Level Standard	
Are you proposing to change the content of the program?	[<input checked="" type="checkbox"/>] No
Attach as Appendix 4.2 the following statement: “With regard to students registered in the new consent program, the organization will have on file and available upon request samples of assessed, individual student work in the terminal stage of the program, that reflects exemplary, average, and minimally acceptable performance, and demonstrates that the degree level standard has been achieved.”	[<input checked="" type="checkbox"/>] Attached
Admissions, Promotion, Graduation Standard	
Are you proposing to make any revisions, deletions, or additions to the direct entry admission requirements?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the admissions policy or procedures for mature students?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the advanced standing admission requirements?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the promotion and/or graduation requirements?	[<input checked="" type="checkbox"/>] No
Program Content Standard	
Are you proposing to make any revisions to the program level learning outcomes?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions to the academic calendar descriptions of the courses in the program?	[<input checked="" type="checkbox"/>] No
Attach as Appendix 6.3.2 , Course Descriptions, a table that indicates course descriptions as these may appear in an academic calendar by semester for each academic year.	[<input checked="" type="checkbox"/>] Attached
Are you proposing to make any revisions to the program hour/credit conversion formula for the program?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions to the academic courses schedule of the program?	[<input checked="" type="checkbox"/>] No
If “no”, attach as Appendix 6.3.3.2 , Academic Course Schedule, the current (and continuing) course schedule.	[<input checked="" type="checkbox"/>] Attached
Attach as Appendix 6.4 , the outlines of the courses in the program for which you are applying for consent.	[<input checked="" type="checkbox"/>] Attached

Attach as Appendix 6.5.1 , Program Structure Requirement, a table indicating the structure for the proposed renewed program including the identification of: <ul style="list-style-type: none"> • On-campus semesters; • Vacation semesters; and • Paid full-time consecutive work experience(s). 	[√] Attached
Are you proposing to make any revisions to the support for work experience?	[√] No
Are you proposing to make any revisions, deletions, or additions to the work experience outcomes and/or the method of evaluating students during their placements?	[√] No
Program Delivery Standard	
Are you proposing to make any revisions, deletions, or additions to the policies pertaining to program delivery quality assurance?	[√] No
Are you proposing to make any revisions, deletions, or additions to the policies pertaining to student feedback?	[√] No
Are you proposing to make any revisions, deletions, or additions to the student feedback instruments?	[√] No
Are you proposing: <ul style="list-style-type: none"> a. either to introduce the delivery of courses using internet, asynchronous, distance or distributed delivery where none was reviewed and approved for the current consent? b. or, if such delivery methods were part of the current consent, to <ul style="list-style-type: none"> i. make available at least double the number of requirements/courses in which any of these delivery methods is the principle method of delivery, or ii. make available more than 50% of the program requirements using any of these methods, regardless of the number proposed during the application and review process? 	[√] No [√] No
Capacity to Deliver Standard	
Are you proposing to make any revisions, deletions, or additions to your organization's detailed plans and schedule for the renewal and upgrading of its library resources?	[√] No
Are you proposing to make any revisions, deletions, or additions to your organization's detailed plans and schedule for the renewal and upgrading of its computers and computer access?	[√] No
Are you proposing to make any revisions, deletions, or additions to your organization's detailed plans and schedule for the renewal and upgrading of its classroom requirements?	[√] No
Are you proposing to make any revisions, deletions, or additions to your organization's detailed plans and schedule for the renewal and upgrading of its laboratories/equipment requirements?	[√] No
Are you proposing to make any revisions, deletions, or additions to the support services available to students?	[√] No
Are you proposing to make any revisions, deletions, or additions to the policies on faculty identified in Appendix 8.5?	[√] No

In completing Appendix 6.4, were any of your courses noted as being “Added” or “New”? If “yes”, then for the courses so noted, attach those that are relevant from the following:	<input checked="" type="checkbox"/> Yes
<ul style="list-style-type: none"> • Appendix 8.6.1 – CV release • Appendix 8.6.2 A – Curriculum Vitae Exceptions • Appendix 8.6.2 B – Curriculum Vitae for Faculty responsible for Teaching and Curriculum Development of DW courses • Appendix 8.6.2 C – Curriculum Vitae for Faculty responsible for Teaching and Curriculum Development of DO and DL courses • Appendix 8.6.2 D Curriculum Vitae for Program Development Consultants 	<input checked="" type="checkbox"/> Attached <input checked="" type="checkbox"/> Not req. <input checked="" type="checkbox"/> Attached <input checked="" type="checkbox"/> Not req. <input checked="" type="checkbox"/> Not req.
Attach as Appendix 8.7 Enrolment Projections and Staffing Implications	<input checked="" type="checkbox"/> Attached
Program Design and Credential Recognition	Not Applicable
Regulation and Accreditation Standard	
Are you proposing to make any revisions or additions to the requirements set by regulatory bodies associated with this program?	<input checked="" type="checkbox"/> No
Program Evaluation Standard	
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to program evaluation?	<input checked="" type="checkbox"/> No
Economic Need	Not applicable
Non-Duplication of Programs	Not applicable

Record of Proposed Changes: Academic Freedom and Student Protection

Have you received a ministerial consent for a program post-pilot project?	[<input checked="" type="checkbox"/>] Yes
If “yes” in the row above, complete the following rows.	
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to academic freedom?	[<input checked="" type="checkbox"/>] No
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to academic honesty?	[<input checked="" type="checkbox"/>] No
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to students’ awareness of the policies and procedures pertaining to academic honesty?	[<input checked="" type="checkbox"/>] No
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to intellectual products?	[<input checked="" type="checkbox"/>] No
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to ethical research practices?	[<input checked="" type="checkbox"/>] No

Have you received a ministerial consent for a program post-pilot project?	[<input checked="" type="checkbox"/>] Yes
If “yes” in the row above, complete the following rows.	
Are you proposing to make any changes to the policy of providing in any advertising, brochures, calendars, and other publications about the formal recognition of credits or credentials specifically mentions the party granting such recognition.	[<input checked="" type="checkbox"/>] No
Are you proposing to make any changes to the policy that key information about the applicant's organization, policies, and programs is published in its academic year calendar and is otherwise readily available to students and the public, specifically including: a) the organization's mission and goals statement; b) a history of the organization and its governance and academic structure; c) a general description of each degree program (e.g., purpose, outcomes, length); d) the academic credentials of faculty and senior administrators; and e) individual descriptions of all subjects in these programs and their credit value.	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to dispute resolution?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to payment schedule of fees and charges?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to student dismissal from the program?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to withdrawals and refunds?	[<input checked="" type="checkbox"/>] No
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to the requirement that students confirm their awareness of all policies specified in Appendix 13.3?	[<input checked="" type="checkbox"/>] No

Appendix 4.2 Student Work

With regard to students registered in the new consent program, the organization will have on file and available upon request samples of assessed, individual student work in the terminal stage of the program, that reflects exemplary, average, and minimally acceptable performance, and demonstrates that the degree level standard has been achieved.

Appendix 6.3.2 Course Descriptions

We are not proposing to make any revisions to the academic calendar descriptions of the courses in the program.

Please see Appendix 6.4, “Course Outlines”, for a complete presentation of course descriptions as part of the course outlines.

Appendix 6.3.3.2 Academic Course Schedule

We are not proposing to make any revisions to the academic courses schedule, other than normal updating to remain current and to improve quality.

Year and Semester	Course Title	DW Within	DO Outside	DL Linked	Course Prerequisites and Co-requisites	Proposed Instructors	Highest Qualification
Year 1							
Semester 1	BTP100: Programming Fundamentals using C	70			Not applicable	Peter Liu Chris Szalwinski Cathy Leung Lew Baxter	Ph.D. Ph.D. M.Sc. Ph.D.
	BTB110: Accounting for the Business Environment	56			Not applicable	Libby Langer William Letterio	M.B.A. M.B.A.
	BTO120: Operating Systems for Programmers - Unix	56			Not applicable	Robert Boyczuk Les Czegel Raymond Chan	M.A. M.B.A. M.A.
	BTO130: Operating Systems for Programmers - Windows	56			Not applicable	Peter McIntyre Danny Roy David Humphrey	M.B.A. M.A. M.A.
	BTC140: Critical Thinking and Writing		56		Not applicable	Judith Carson Burke Cullen John Adames	M.A. Ph.D. Ph.D.
Semester 2	BTP200: The Object-Oriented Paradigm using C++	56			BTP100	Peter Liu Chris Szalwinski Cathy Leung Lew Baxter	Ph.D. Ph.D. M.Sc. Ph.D.
	BTD210: Database Design Principles	56			Not applicable	Libby Langer Mohamed Kassim Mehmet Onsekizoglu	M.B.A. Ph.D. M.A.
	BTI220: Internet Architecture and Development	56			BTO120 or BTO130	Robert Boyczuk Les Czegel Peter McIntyre	M.A. M.B.A. M.B.A.
	BTC240: Interpersonal Communications in Organizations		42		BTC140	Judith Carson Burke Cullen John Adames	M.A. Ph.D. Ph.D.
	Liberal Studies Elective		42			To be determined	

Year and Semester	Course Title	DW Within	DO Outside	DL Linked	Course Prerequisites and Co-requisites	Proposed Instructors	Highest Qualification
Year 2							
Semester 3	BTP300: Object-Oriented Software Development I - C++	56			BTP200	Peter Liu Chris Szalwinski Cathy Leung Evan Weaver	Ph.D. Ph.D. M.Sc. M.Sc.
	BTD310: SQL Database Design Using Oracle	56			BTD210	Mehmet Onsekizoglu Chris Szalwinski	M.A. Ph.D.
	BTI320: Web Programming on UNIX	56			BTO120 and BTI220	Les Czege Robert Boyczuk	M.B.A. M.A.
	BTS330: Business Requirements Analysis using OO Models	56			BTC140 and BTP200	Mary Ryan Barb Czege Rob Robson	M.Ed. M.Ed. Ph.D.
	BTC340: Business Presentations		42		BTC240	Burke Cullen William Letterio	Ph.D. M.B.A.
	Liberal Studies Elective		42			To be determined	
Semester 4	BTP400: Object-Oriented Software Development II - Java	56			BTP300	Peter Liu Chris Szalwinski Robert Boyczuk Lew Baxter	Ph.D. Ph.D. M.A. Ph.D.
	BTN410: Data Communications - Networks	56			BTI220	Peter McIntyre Danny Roy	M.B.A. M.A.
	BTI420: Web Programming on Windows	56			BTI320 and BTO130	Peter McIntyre Chris Szalwinski	M.B.A. Ph.D.
	BTS430: Systems Analysis and Design Using UML	56			BTS330	Mary Ryan Barb Czege Rob Robson	M.Ed. M.Ed. Ph.D.
	BTC440: Business and Technical Writing		42		BTC140	Robin Potter Renee Mallinson John Adames	M.A. Ph.D. Ph.D.
Summer Study	BTR490: Investigative Research Internship	56			BTS330	Mary Ryan Barb Czege William Letterio	M.Ed. M.Ed. M.B.A.

Year and Semester	Course Title	DW Within	DO Outside	DL Linked	Course Prerequisites and Co-requisites	Proposed Instructors	Highest Qualification
Year 3							
Semester 5	BTP500: Data Structures and Algorithms	56			BTP400	David Humphrey Cathy Leung Peter Liu	M.A. M.Sc. Ph.D.
	Professional Option	56				To be determined	
	BTB520: Canadian Business Environment	56			BTB110 and BTC240	William Letterio Mary Ryan	M.B.A. M.Ed.
	BTS530: Major Project - Planning and Design	56			BTS430	Barb Czegel Mary Ryan Chris Szalwinski	M.Ed. M.Ed. Ph.D.
	BTH540: Design for User Interfaces	56			BTI420	Caius Grozav Rob Robson Robert Boyczuk	M.Sc. Ph.D. M.A.
Semester 6	BTP600: Design Patterns in UML	56			BTS430 and BTP500	Robert Boyczuk Cathy Leung David Humphrey	M.A. M.Sc. M.A.
	Professional Option	56				To be determined	
	BTE620: Law, Ethics and Social Responsibility		56		BTB520	William Letterio Mary Ryan	M.B.A. M.Ed.
	BTS630: Major Project Implementation	56			BTS530 and BTP400	Robert Boyczuk Barb Czegel Mehmet Onsekizoglu	M.A. M.Ed. M.A.
	BTC640: Multimedia Presentations		56		BTC340	Caius Grozav Burke Cullen	M.Sc. Ph.D.
	CPP600: Coop Professional Practice			28	BTB520 and BTC240	Pat Harper	B.A.

Year and Semester	Course Title	DW Within	DO Outside	DL Linked	Course Prerequisites and Co-requisites	Proposed Instructors	Highest Qualification
Year 4							
Semester 7	Professional Option	56				To be determined	
	BTN710: Information Security	56			BTN410 and BTP400	Danny Roy Peter McIntyre	M.A. M.B.A.
	BTB720: Marketing Principles and Practices	56			BTB520	William Letterio	M.B.A.
	BTS730: Project Management Methodologies	56			BTS630	Barb Czege Mary Ryan Chris Szalwinski	M.Ed. M.Ed. Ph.D.
	BTH740: Human Factors in Computing			56	BTH540 and BTB520	Rob Robson Robin Potter	Ph.D. M.A.
	CPP700: Coop Integration and Career Planning			14	Co-op work term	Pat Harper	B.A.
Semester 8	Professional Option	56				To be determined	
	Professional Option	56				To be determined	
	BTR820: Research Methodologies and Project		56		BTS730 and BTC440	Burke Cullen John Adames Adam Norman	Ph.D. Ph.D. M.A.
	BTS830: Technology Planning and Acquisition	56			BTB520 and BTS730	William Letterio Barb Czege	M.B.A M.Ed.
	Liberal Studies Option		42			To be determined	
Sub-total Course Hours:		1750	476	98			
Total Program Hours:		2324					
DO + DL:		24.70%					
DO of (DO+DL):		82.93%					
DL of (DO+DL):		17.07%					

> 20%
> 75%
< 25%

Appendix 6.4 Course Outlines

The contents of this appendix are not included in this version of this document.

Appendix 6.5.1 Program Structure

The program has two intakes per year – one in September, and one in January. Two calendar entry points offer the ability for the program to continuously build enrolment numbers, and offers students some flexibility in their course selection.

Fall (September) semester entry point:

Program Year	Fall (September)	Winter (January)	Summer (May)
Year One (1)	On-campus studies	On-campus studies	Vacation
Year Two (2)	On-campus studies	On-campus studies	Vacation (and research)
Year Three (3)	On-campus studies	On-campus studies	Paid full-time work term
Year Four (4)	On-campus studies	On-campus studies	GRADUATION

Winter (January) semester entry point:

Program Year	Fall (September)	Winter (January)	Summer (May)
Year One (1)	(N/A)	On-campus studies	On-campus studies
Year Two (2)	On-campus studies	On-campus studies	Vacation (and research)
Year Three (3)	On-campus studies	On-campus studies	Paid full-time work term
Year Four (4)	On-campus studies	On-campus studies	GRADUATION

Appendix 8.6.1 CV Release

The college has on file and available for inspection, from all faculty and staff whose CVs are included in this submission, signatures that attest to the truthfulness and completeness of the information contained in their CV and agreeing to the inclusion of their curriculum vitae in any documents/web sites associated with the submission, review, and final status of the program application.

Appendix 8.6.2 B Curriculum Vitae for Faculty (DW)

The contents of this appendix are not included in this version of this document.

Appendix 8.7 Enrolment Projections and Staffing Implications

Year	Semester	Cumulative Enrolment Full-time	Cumulative Enrolment Part-time	Cumulative Full-time Faculty Equivalents (F.T.E.)	Cumulative Part-time Faculty Equivalents (F.T.E.)	Ratio of FT Students to FT Faculty	
1	2007	Fall	135	0	6.8	0	20:1
	2008	Winter	139	0	7.7	0	18:1
	2008	Summer	67	0	2	0	34:1
2	2008	Fall	130	0	6.8	0	19:1
	2009	Winter	131	0	7.7	0	17:1
	2009	Summer	67	0	2	0	34:1
3	2009	Fall	130	0	6.8	0	19:1
	2010	Winter	131	0	7.7	0	17:1
	2010	Summer	67	0	2	0	34:1
4	2010	Fall	130	0	6.8	0	19:1
	2011	Winter	131	0	7.7	0	17:1
	2011	Summer	67	0	2	0	34:1

See the worksheet of enrolment projections on the next page for more detail.

As the chart above shows, the prediction is for flat enrolment over the next four years. While this does not allow for growth to hire faculty with higher terminal credentials, a number of retirements in the department over the next few years will enable this to take place.

Worksheet for Enrolment Projections:

Bachelor of Applied Technology – Software Development																
Enrolment Plan																
	Year 1				Year 2				Year 3				Year 4			
	F	W	S		F	W	S		F	W	S		F	W	S	
Sem	07	08	08	Total	08	09	09	Total	09	10	10	Total	10	11	11	Total
1	35	15	0	50	35	15	0	50	35	15	0	50	35	15	0	50
2	0	32	12	44	0	32	12	44	0	32	12	44	0	32	12	44
3	36	0	0	36	35	0	0	35	40	0	0	40	40	0	0	40
4	0	33	0	33	0	30	0	30	0	35	0	35	0	35	0	35
Intern		0	30	30	0	0	30	30	0	0	30	30	0	0	30	30
5	29	0	0	29	30	0	0	30	30	0	0	30	30	0	0	30
6	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0	27
Coop		0	25	25	0	0	25	25	0	0	25	25	0	0	25	25
7	35	0	0	35	25	0	0	25	25	0	0	25	25	0	0	25
8	0	32	0	32	0	22	0	22	0	22	0	22	0	22	0	22
	135	139	67	341	130	131	67	328	130	131	67	328	130	131	67	328

Appendix 16.1 Terminal Credentials and Software Development

The Bachelor of Applied Technology (Software Development) was designed to be a unique degree program, clearly distinct from Computer Science or Software Engineering, other degree disciplines which also feature a focus on developing software.

One of the primary differentiating factors is the Software Development degree's focus on the specifics of a variety of current development technologies. The other degree programs mentioned above teach the theory required, and then test the student's ability to apply that theory by working in a sampling of environments. The Software Development degree has the students work in depth in a variety of environments, and then draws the theory out of those shared experiences. This approach has the benefit of enhancing the graduate's readiness to be fully productive immediately upon employment while providing the graduate with degree-level knowledge and education.

Many of these subject areas covered in the Software Development degree are quite dynamic, changing frequently, especially in the domains of internet programming and operating systems. The college has had success using professors in these volatile areas who possess a Master's degree combined with relevant job experience. These professors have a clearly demonstrated understanding of advanced degree level study, and have made a career decision to pursue technology from a professional point of view, with an interest and motivation in tracking the frequent changes in the industry.

In a similar vein, the Software Development degree has a number of business courses designed to provide students with a professional business knowledge base, where a professional Master's, such as an M.B.A., is often considered a terminal qualification.

For these reasons, the College requests that for the following courses in the Bachelor of Technology (Software Development), a Master's degree be considered the terminal qualification:

Business	Internet Programming & Multimedia	Operating Systems & Networking
BTB110 (Accounting for the Business Environment)	BTI220 (Internet Architecture and Development)	BTO120 (Operating Systems For Programmers – UNIX)
BTC340 (Business Presentations)	BTI320 (Web Programming on UNIX)	BTO130 (Operating Systems For Programmers – Windows)
BTB520 (Canadian Business Environment)	BTI420 (Web Programming on Windows)	BTN410 (Data Communications – Networks)
BTE620 (Law, Ethics and Social Responsibility)	BTC640 (Multimedia Presentations)	BTN710 (Information Security)
BTB720 (Marketing Principles and Practices)		

Comments from this program's assessor panel report in 2002

The following comments are from this program's assessor panel report in 2002 in support of our faculty:

Executive Summary

Faculty are committed, enthusiastic and have a great deal of technological expertise and industrial experience.

The Panel was very impressed with the faculty they met as well as the background information about the faculty included with the program documentation. Eighty percent (80%) of the faculty identified as part of the program have recent, relevant industry experience. Such experience is particularly important in an applied degree program and the number of such faculty in this program is significant.

The existing faculty are strong and they are more than competent to offer the program beginning in 2003.

Capacity to Deliver

3. The Applicant submits curriculum vitae of its faculty members demonstrating that faculty possess an appropriate mix of:

*(a) advanced academic credentials (normally the terminal academic credential in the field);
Rating: Clearly exceeds the benchmark and is of excellent quality*

*(b) any required or desired professional credentials; and/or
Rating: n/a*

*(c) related work experience of substantial depth and range.
Rating: Clearly exceeds the benchmark and is of excellent quality*

We are noting that essentially the same group of faculty members who received this very positive assessment in 2002 have delivered the program since its inception, and are delivering the program today in 2006.

Appendix 16.2 Request for Special Consideration for Co-op Coordinators

Seneca College has a decades-long history of sending students on co-operative education work terms, for both undergraduate diploma programs and graduate certificate programs.

Historically, these work terms have been preceded with a course preparing students for a work experience, covering such activities as preparing resumes, developing interview skills and applying for jobs. In many cases the work terms have also been followed by a course to review the employment experience. These co-op related courses are taught by the college's Co-op Coordinators, the same people who scout potential co-op employers, develop employer relationships and work term job opportunities, and monitor the work term experiences of the students.

The College feels that these Co-op Coordinators are the best candidates for delivering the co-op courses in the Degree programs, specifically CPP600 and CPP700 in the Bachelor of Applied Technology (Software Development), given their combination of human resource management skills and technical domain expertise.

While some of the Co-op Coordinators have advanced degrees, many of them have a bachelor degree, often in combination with some other credentials in human resource management, and/or with relevant placement experience, and therefore do not meet the formal criteria for teaching in a degree program. The College requests that special consideration be granted so that the Co-op Coordinators are permitted to teach the co-op related courses in Degree programs.