CONESTOGA
Connect Life and Learning

CONSENT RENEWAL APPLICATION

Integrated Telecommunication and Computer Technologies

Consent Renewal Application

Bachelor of Applied Technology

Integrated Telecommunication and Computer Technologies

Table of Contents

PART A: Report on Delivery of the Current Consent

Submission Checklist Part A

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

Appendix 5.2.2 Advanced Placement Policies	[X] Not required [ ] Attached
Appendix 5.2.3 Degree Completion Arrangements	[X] Not required [ ] Attached
Appendix 5.2.4 Gap Analysis	[X] Not required [ ] Attached
Appendix 5.2.5 Bridging Courses	[X] Not required [ ] Attached
******Attach as Appendix 5.2.6 Admissions Information	[X] Attached
Appendix 5.3, Promotion and Graduation Requirements	[X] Not required [ ] Attached
******Attach as Appendix 5.3.1, Student Retention Information	[X] Attached
Program Delivery Standard	
Appendix 7.1.1 Quality Assurance Policies	[X] Not required [ ] Attached
Appendix 7.1.2 Policy on Student Feedback	[X] Not required [ ] Attached
Appendix 7.1.3 Student Feedback Instruments	[X] Not required [ ] Attached
Appendix 7.2.1 On-line Learning Policies and Practices	[X] Not required [ ] Attached
Appendix 7.2.2 Academic Community Policies	[X] Not required [ ] Attached
*****Appendix 7.2.3 Expansion of On-Line Leaning	[X] Not required [ ] Attached
*****Appendix 7.2.4 Introduction of On-Line Learning Policies	[X] Not required [ ] Attached

Appendix 1: College and Program Information

Full Legal Name of Organization: Conestoga College Institute of Technology and Advanced Learning
Operating Name of Organization: Conestoga College Institute of Technology and Advanced Learning
Common Acronym of Organization (if applicable): Conestoga College ITAL
URL for Organization Homepage (if applicable): www.conestogac.on.ca
Degree program for which consent renewal is being sought: Bachelor of Applied Technology - Integrated Telecommunication and Computer Technologies
Location (specific address) where program is delivered: Doon Campus
Date on which the program commenced: ___23_ day __08__ month __2004_ year Date when the initial class of students will complete the program: __30__ day ___08_ month __08__ year
Contact Information: Person Responsible for this Submission: Jal C Wadia Name/Title: Executive Director, VP Academic Office Full Mailing Address: 299 Doon Valley Drive Kitchener, ON N2G 4M4 Telephone:519-748-5220 ext 2240 Fax: 519-748-3558 E-mail: jwadia@conestogac.on.ca
Site Visit Coordinator (if site visit is required and if different from above):** Name/Title: Full Mailing Address: Telephone: Fax: E-mail:
* The person who is the primary contact for the submission on matters pertaining to proposal content and communications from the Postsecondary Education Quality Assessment Board. ** This person will be the college's liaison for coordinating the site visit, if required.

Appendix 2: Abstract of Proposed Program

This four-year baccalaureate degree program in Integrated Telecommunication and Computer Technologies (ITCT) integrates a hands-on, practical approach with the theoretical examination of current and emerging telecommunication and computer technologies. The program provides students with a solid electronics foundation as well as the business, communication and team skills required to work in these high-tech areas. Applied projects, industrial case studies, and co-op work terms help prepare graduates of the program to assume technical leadership roles in today's electronics industry.

The ITCT program is delivered using a project-based learning approach. A series of authentic and realizable projects form the main component of the ITCT curriculum, where the material studied is determined by the demands of each carefully selected project. As students progress, they gradually develop and build on the theoretical knowledge and practical skills they require to succeed and advance in the high-tech electronics industry.

Local industry plays a key role in determining both the direction of the program and the knowledge and skills that our graduates must have. As such, this program strives to produce graduates with a rare but highly desired, combination of the following skill sets:

- a strong theoretical foundation along with the ability to effectively apply this knowledge in solving technical and business related problems
- excellent practical skills based on extensive hands-on experience
- professional skills such that they can quickly adapt to, work within, and be productive in their employer’s workplace
- the desire and ability to keep technically current as life-long learners

The program expects graduates to be a good fit for a wide range of technical jobs including engineering product design and prototyping, electronic manufacturing, scientific measurements, testing and analysis, project management, and also applied research.

Appendix 3: Delivery of Consent Checklist

Achieving the Degree Level Standard: Appendix 4 Documents

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?	[X] Yes [ ] No
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)	[X] Attached
If "no", attach as Appendix 4.1., (i) a detailed explanation of how this determination has been made; (ii) the reasons why this is the case; (iii) what measures the institution has/is/will be taking to correct this situation; (iv) why these measures are expected to correct the situation; and (v) what monitoring regime will be used to ensure that these are effective.	[ ] Attached

Appendix 4.1: Achieving the Degree Level Standards -Summary

The college is confident that it is on track for attainment of the standards as outlined in the original proposal. This assertion is based on the following:

The Program Faculty Committee responsible for developing and delivering of the program meets on a regular basis to assess the program outcomes and recommend improvement to the curricula.

The College has established an appropriate structure for the management of the degree programs including a senior level Degree Management Committee (DMC) which provides oversight. The appended organizational chart, including committee membership, illustrates this reporting structure.

The college has recruited and continues to recruit high calibre faculty members with a blend of industrial experience, teaching abilities, and academic qualifications.

The program has an active advisory committee comprised of a properly designed membership reflecting the needs of the program. This advisory committee meets routinely and provides valuable advice. (The membership list and minutes are appended to the appropriate section)

The program is reviewed annually by an external assessor. The assessor for this program is Dr. Mehmet Zeytinoglu, professor and past chair of Electrical Engineering Program at Ryerson University. He was also an original Review Team Member. This assessor is invited annually to visit the college and provide a written report based on interaction with faculty, administration, and students. (Annual reports appended).

The most senior cohort of the program has been on several co-op work terms and the report from the co-op employer has been very positive. (Reports appended)

Current Quality Assurance Practices

Quality assurance in the delivery of academic programs is attributable to ongoing processes that result in continual improvements. These improvements result from the evaluation of evidence arising from processes which have been documented in accordance with the College quality policies that are themselves approved by the Board of Governors.

Curriculum improvements occur primarily through the following processes:

- Course outlines are reviewed on an annual basis by individual professors in consultation with other faculty teaching in that program. These are then reviewed and approved by the Chair/Dean who ensures that proposed changes maintain the alignment of course and program outcomes. Proposed changes frequently relate to feedback received from students at the previous offering. From time to time, the Program Advisory Committee (PAC) is approached about the content of individual courses and their feedback is also incorporated into proposed changes.
- Program designs are reviewed on an annual basis by the professors and Chairs/Deans who are responsible for the program. Program outcomes and the

design are reviewed in consultation with the PAC and feedback is incorporated into proposed changes. PAC's also initiate changes as members raise issues they have come across in industry and that are relevant to a given program. Approval from the PAC is sought for changes to program designs. Significant changes to program designs and in particular any proposed changes to hours of delivery require the approval of the Vice-president, Academic.
- Professional development courses for new and continuing faculty include an introduction to the College standards on program designs and course outlines, amongst other offerings related to curriculum development.

Teaching and learning improvements occur through the following processes:

- Formative feedback on teaching is obtained through the Student Assessment of Teaching (SAT) surveys that are administered to two sections of students each semester for every member of faculty on probation. The same occurs for full-time instructors though on a biannual basis. After the SAT results are compiled, the Chair/Dean meets with the professor to discuss the results as well as to complete a performance evaluation. The frequency of feedback, particularly during the initial years of teaching, helps ensure effectiveness in the classroom. Professors are also encouraged to seek informal feedback on teaching/learning strategies they have employed in their classrooms.
- All new faculty participate in a three-part professional development program that commences with a week of in-service activities delivered in August of each year. That program continues with the second part of the program delivered in May of the following year and the third part in June of the year after that. Other professional development activities relevant to improving teaching and learning are available to all faculty on a regular basis.
- KPI results are reviewed on an annual basis and programs address areas for improvement. In some cases, this might involve improvements to teaching and learning.

Improvements in the overall delivery of academic programs and other services occur through the following processes:

- Program Forums bring together student representatives to meet with their Chair/Dean and program co-ordinator. The agendas for these meetings are set in consultation with the students who can initiate discussions on anything of concern or interest to them. Agenda items might require guests from other areas of the college to ensure they are addressed completely and to the satisfaction of all. Students then report back to the sections they represent to ensure wider communication. Minutes of Program Forums are widely circulated within the College so that issues that emerge across programs and/or Schools can be identified and addressed on a timely basis.
- Faculty and administrators review the KPI results annually and identify areas in which they would like to improve. Strategies to address these are developed and implemented and results reviewed.

The College also has plans to assess the accomplishment towards identified program outcomes for Applied Degree programs on an annual basis during their first delivery. Specialists who are external to the college are being (and will continue to be) invited to review the student assessments and projects and meet with them. Their independent review should ensure the outcomes are appropriate to degree-level programs as well as

consistent with what has been planned. Their feedback will be valuable for improving the delivery of these programs.

The college has well established policies regarding on-going program reviews. These policies are established by the Board and the college rigorously follows them. Results of these and other similar quality policies are reflected in continuous improvement and positive KPI results.

All diploma and certificate programs are reviewed in depth every three years through established procedures for Program Advisory Committees. Newer programs are reviewed more frequently – on an on-going basis until a full cycle of the program is completed. In addition, faculty reviews individual courses every year during the May/June period. Students evaluate the courses taken every semester through the SAT procedure. It is an expectation that all teachers and students discuss, on an on-going basis, content issues that may arise in class from time to time.

Recommendations for major changes received from students, teachers and PAC members are brought to the Academic Coordinating Committee. The changes are discussed with regard to possible impact on space utilization, capital expense and strategic direction of the College. Receiving approval for the changes to the curriculum, the Dean responsible will work with the faculty to implement the changes to the curriculum.

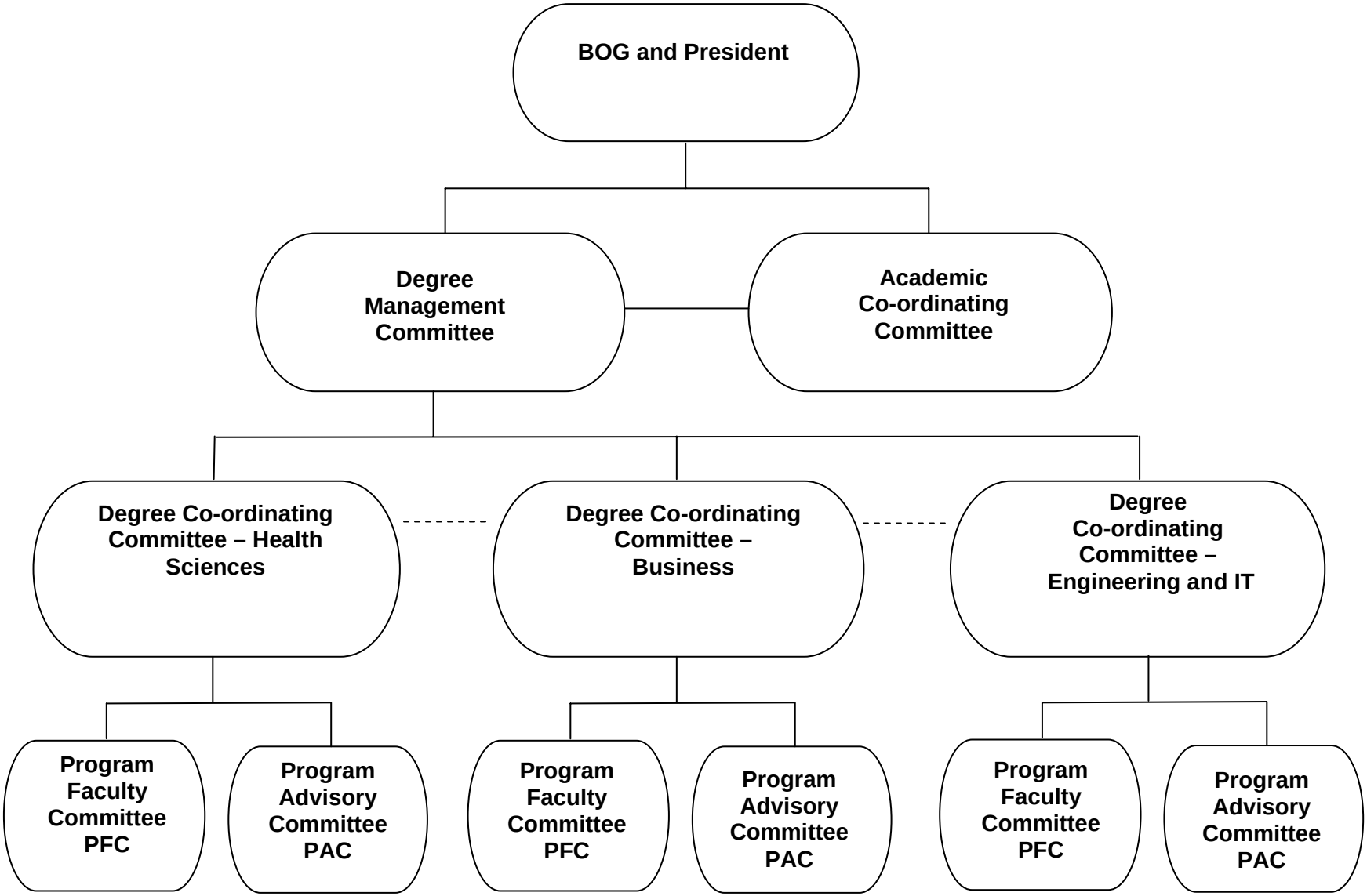
Each applied degree program has three levels of input and quality control in the curriculum and program design, and management of the program.

1. A program champion is designated and this champion works with a multi-discipline curriculum committee. This committee is assisted by curriculum development expert, and industry and university resources.
2. A second operational level is comprised of champions from each degree program. They share mutual challenges and participate in joint events. This forum provides for the sharing of collective experiences amongst degree programs.
3. A third and senior level committee is chaired by the Vice President Academic and it includes Senior Academic Managers and Director of Strategic projects. This committee is responsible for ensuring standards, quality, policies, operations and overall program offering. This committee also works with the Program Advisory Committee. The committee additionally draws from the expertise of the internal key senior operational managers.

Because applied degree programs are new to the College, and we want to be sure that we are indeed offering at the degree level, the curriculum will be reviewed as it is developed by the Program Advisory Committee and by an outside external assessor(s) drawn from universities and/or industry.

Students will evaluate this program through the SAT procedure and through the provincially run KPI Student Satisfaction survey. At least for the first full cycle every course, every semester, will be evaluated. Program faculty will, as per existing procedures, evaluate student progress and success and course offerings through their on-going meetings with the Coordinator and Dean. In addition, the yearly KPI data for this program will give additional feedback on how this program is being received. The Dean of the program will report the curriculum changes to the PAC at each of their meetings.

Degree Management Committee and Structure



Degree Management Committee

E. Dahlin	B.A.Sc., M.A.Sc., M.B.A., P.Eng. Associate Vice President, Business Development and Applied Research
M. Raasok	B.Sc.N. M.Sc.N., Reg.N. Associate Vice President, Health Sciences, Community Services and Bio Technology
C. Koch	B.A., M.Ed., C.A. Associate Vice President, Liberal and Media Studies.
M. McClements	B.A.Sc., M.B.A., P.Eng. Associate Vice President Engineering and Information Technology/Trades and Apprenticeship
J. Wadia Chair	B.Arch, M.Arch., ARIBA. Executive Director, Office of the VP Academic
F. Mensink	B.Math., M.B.A., C.A., C.G.A. Associate Vice President, School of Business

External Reviewers for Bachelor of Applied Technology Degree Programs:

External Reviewers	
M. Miller	Professor and Chair, Department of Architecture (retired) Ryerson University **Role:** Member Program Advisory Committee External year-end program review External reviewer, Bridging Module
R. Pick	Professor and Chair of Mechanical Engineering, University of Waterloo (retired) **Role:** External year-end program review
M. Zeytinouglu	Professor, Department of Electrical and Computer Engineering Ryerson University **Role:** External year end program review and ITCT Bridging Module
G. Locker	Professor of Civil Engineering and Dean of Engineering, Lakehead University (retired) **Role:** External reviewer, Bridging Module

Annual external Review Year One:

Program name

Bachelor of Applied technology- Integrated Telecommunication and Computer Technology

Program Management Information

Director: Jal C Wadia	
Signature Sd J C Wadia	Date Oct 7 2005
School Head: Mike McClements	
Signature Sd. M McClements	Date Oct 7 2005

Comments Regarding Statistical Information

Item	Comments	
a. Number of Applications	Is there any significant increase or decrease from the previous year? Is there a need for an increase/decrease in promotional activities? What should be the target?	**See Stats**
b. Number of Acceptances	Are there more or less qualified students? Is there a need to clarify admission requirements?	**See Response to Question 9.**
c. Number of Confirmations	Has there been an increase/decrease from previous years? Is there a need to change the formula for the number of applications to accept?	**Data Not available.** **First year of operation**
d. Enrolments for Each Academic Term	Are there any significant changes in students registered as of xxxx, xxxx or xxxx from the previous year? Has there been any significant change in program design or delivery that might account for the changes?	**Data not available.** **First year of operation**
e. Retention	Are the numbers of students who completed the program during the normal time span comparable to previous years, or to the provincial average for this program? Are strategies needed to increase retention?	**NA**
f. Number of Graduates and Job Placements	Is the placement level satisfactory? Are the needs of the community being met? Is there an under/over supply of graduates?	**NA**
g. Location of Jobs (Total)	Is the geographic location of graduate job placement an issue?	**NA**
h. Average Planned Section Size for the Program	Is this the maximum that can be obtained for this program? What factors limit the section sizes in the learning settings for this program?	**30 students section size**
i. Program Cost/ Program Revenue	Is the program living within its means? What strategies might help the program become more financially efficient? Does this program need to be offered regardless of cost?	**NA**
j. Cost per Student for the year	What strategies can help keep the costs in line with foreseeable decreases in revenue?	**NA**
k. Demographics – Female – Male Students	Is any change in proportion required? What strategies might help bring about such change?	**1 female**
l. Demographics – Age of Students	Are any changes in curriculum, delivery, or support required to meet the needs of the students?	**NA**

1. Student Satisfaction Survey -
   (see SAT for additional information - Confidential)

Are the students satisfied with their College experience?
What are the major challenges/opportunities arising from the survey

The *Integrated Telecommunication and Computer Technologies* (ITCT) program Year 1 Student Survey results and discussions with the first year students provided the following views and recommendations about the program.

- **Students perceive the program as a demanding academic endeavor. Yet, they also view this experience worth their time and effort. They observe how the ITCT applied degree program differs than the other (diploma) programs offered at Conestoga College.**

- **Students are very satisfied with the program. In particular, students commented very favorably about the program, the currency of the curriculum and the relevance of the subjects covered in the courses. Students also enjoy the integrated project based curriculum structure as the projects provided valuable practical experience and enhanced students' understanding of the subject matter.**

- **Students identified the core faculty members who delivered the program courses as the greatest strength of the program. In particular, students praised faculty members' enthusiasm and professionalism. Students appreciated the access they had to faculty which allowed their course and program related inquiries resolved efficiently.**

- **The lab equipment, computers and the software tools were rated as excellent.**

The students also commented on the following points, which may provide valuable feedback to program administrators.

- **Students identified "start-up" difficulties in some projects which included untested implementation tasks that could not be completed in the prescribed format. While these difficulties were rectified in due course, they resulted in delay and lost time. Therefore, it is recommended that all the tasks in a project are thoroughly tested before they are assigned to students.**

  All new students participate in an orientation program delivered before the start of classes. First-year students acknowledged the value of the orientation they received; they also provided suggestions on how to enhance the relevance of the information delivered at the orientation program. In particular, students indicated that the orientation program should ideally deliver more technical information and training on the laboratory equipment.

- **Some of the advanced concepts covered in the first-year program are not very well understood. Students did not appear to have the confidence (or the knowledge) to properly apply certain technical principles in a context different than what they saw in the classroom or used in a project. This observation is not totally unexpected in the case of students who just completed their first**

year of studies. Fundamental technical concepts should continue to be emphasized throughout the program, such that students upon graduation would be able to function at a level commensurate with applied degree programs.

2. Ad Hoc/Program Advisory Committee Comments on Program Content - (see Appendix "D")

What are the major areas of satisfaction or of concern?
Are there significant trends that will impact on the material to be taught in the program?
What specific curriculum changes should be recommended?

Membership and minutes to be attached by the college.

3. Faculty Review of Program

a. Program Strengths / Opportunities:
What are the major perceived competitive advantages of the program?

The ITCT applied degree program delivers a modern curriculum which focuses on integrated project based learning. This focus is the program's foremost competitive advantage as it provides students with enhanced opportunities for career-based employment.

The program introduces technical elements that are at the core of telecommunication and computer industries through a series of projects of increasing complexity. Projects integrate diverse technical elements into a coherent framework. The program aims to deliver a solid education (through course work and projects) and industrial work experience (through co-op placements). Students are expected to be able to analyze problems from several perspectives and be capable of formulating solutions that take into account all the elements (e.g. implementation, integration, testing, manufacturability and production) typically encountered in the multi-faceted telecommunication and computer industries.

In Year 1 of the program there are currently 19 students enrolled. Such a small class size is highly conducive to learning and provides ample opportunity for interaction between students and faculty.

b. Program Weaknesses/Threats:
What are the major perceived competitive disadvantages of the program?

The recent downturn in the information technology sector has been adversely affecting the number of applicants to many information technology programs. In addition, the applied degree programs offered by CAATs may still be not well known to potential applicants as viable educational opportunities. Therefore, attracting sufficient number of qualified students to the ITCT applied degree program is likely to be an on-going challenge.

Mandatory co-op placements will start at the end of the second year. Finding relevant, high-quality co-op placements for the program students in competition with other universities and/or colleges in the region may be a challenge.

While the curriculum structure for Years 2–4 is in place, significant development work needs to be done to ensure that all the course material and in particular project details are in place. Furthermore, the total number of students enrolled in all years of the program will continue to increase until the program reaches a steady-state in Fall 2007. Consequently, the core faculty members in the program will face an increasing workload. Therefore, it will be very important to recruit additional faculty members who have the appropriate academic qualifications and industrial experience.

c. Recommended Future Curriculum Revisions:
Is the program curriculum significantly different from that operated at other Colleges in Ontario?
What resources are required to implement the recommendations of the Program Advisory Committee?
Is the program content consistent with THE standards?
What knowledge or skills should be added to or deleted from the program?

Not Applicable

d. Recommended Appropriate Equipment Acquisition:
List the name, cost, and rationale for equipment required to support the operation/development of the program.

Equipment used by first year students is up-to-date, of sufficient quantity and at an appropriate level for an applied degree program. In the coming years, similar equipment has to be acquired to accommodate upper level students as the program enrollment increases. The curriculum is project oriented and the successful completion of projects requires many hours of work outside of the regularly scheduled classes and/or labs with full access to dedicated equipment. Therefore, it is of utmost importance that all program students have full access to dedicated laboratory and computing equipment which will allow them to work efficiently on their projects.

The nature of the projects determines the types of equipment that will have to be acquired. As the projects in the upper years of the program are currently being developed, no recommendations for specific equipment can be made at this time.

A related issue is the availability of project lab space. Students spend most of their time in their "home-base" which is a fully equipped lab facility. In steady

state 4 such rooms, one for each program level, will be required.
The Faculty and program administrators are aware of the space and equipment requirements of the program and are fully committed to provide the necessary funding.

4. Curriculum Review Including Program Goals and Standards

When was the last major curriculum review and what was the major driving force(s) behind it?
Does the program reflect the provincial goals and/or THE standards?
Are all of the program stakeholders aware of the program goals?
Have all of the program stakeholders agreed to the program goals?

Not Applicable.

5. Current/Proposed Admission Requirements

Are the current admission requirements meeting the College guidelines?
Do the admission requirements ensure future students will be successful?

The current admission requirements are appropriate for a degree program. Admission requirements include six Ontario academic Credit (OAC) courses (under the old high school curriculum) or the equivalent, including English I, Algebra & Geometry, Calculus, Chemistry, and Physics.

The current admission requirements are comparable to those in effect at other technical (engineering) programs. However, the program administrators should be aware of changes that are taking place at Ontario engineering programs, under which the Grade 12 U course Geometry and Discrete Mathematics (MGA4U) (or its OAC equivalent) is being moved from the required to the recommended category. Thus, retaining the Grade 12 U course Geometry and Discrete Mathematics as a required course may result in a more demanding set of admission requirements than those at several university based engineering programs. If the ITCT program were to consider a revision of its admission requirements, the program content should be carefully examined such that students admitted to the program without the Geometry and Discrete Mathematics (MGA4U) course, would not be disadvantaged.

6. Relations with External Organizations Required to Support the Operation of the Program

List the major regulatory agencies, work placement sites, etc., required for the operation of the program, and indicate the present and foreseeable stability of our relationship with them. Please deal specifically with those agencies whose loss of support would result in a suspension, cancellation, or significant change in delivery of the program.
Review Co-op Data when available

7. Progress Towards Changes in Method of Delivery, and Meeting The Requirements for General Education, Generic Skills, Program Demands Analysis, and Prior Learning Assessment

What are the action plans within the program to meet the above major initiatives?

Please indicate the positive or negative affects of the above issues on the design, and/or delivery of the program.

Not Applicable

8. Program Accomplishments

List the major goals met, recommendations implemented, major challenges handled, and the significant promotional activities operated during the past year.

In addition, indicate any major accomplishments or awards won by the program, or the students or staff related to the program.

Indicate any significant professional development activities undertaken by the members of the program staff over the past year.

The major accomplishment of the 2004/2005 academic year has been the start and successful implementation of the first year of the ITCT applied degree program. The program admitted 22 students to the first year, and currently there are 19 registered students.

As part of this review process I visited Conestoga College on April 29, 2005. During the visit I had the opportunity to meet the administrators who are responsible of the ITCT program, core faculty members and first year students. I met with the students as a group and heard their views regarding the program. I also reviewed the extensive documentation on first year courses and projects. All the information reviewed clearly indicates that the first year program has been prepared and delivered consistent with the original proposal and applied degree standards.

In the first year of the implementation, a lab/classroom facility has been set up. This facility houses all the lab and computing equipment, and functions as a home base for the program students where they work on their projects and attend most of their lectures. Core faculty members have been responsible for the preparation and delivery of the lectures and projects. Faculty members also supervise and provide guidance to the program students, and assess their projects.

During the May–August 2005 period a second lab/classroom facility will be set up and equipment will be acquired. Most importantly during this period, core faculty must develop all second year courses and projects. Curriculum development and program delivery will likely represent an ever increasing portion of core faculty members' workload as the program gradually moves towards full implementation and steady state enrollment. Such a heavy workload will leave little time for professional development, which in turn, may adversely affect program quality.

Therefore, recruitment of new faculty with appropriate academic qualifications and industrial experience must proceed as planned.

Another important activity will be the preparation for the mandatory co-op placements that will start at the end of the second year. The co-op office is in the process of initiating contacts with companies in the region to identify potential placement positions.

9. Progress Towards Changes in Method of Delivery, and Meeting The Requirements for General Education, Generic Skills, Program Demands Analysis, and Prior Learning Assessment

Recommendation	Action By	Planned Completion Date
As a result of this review please recommend actions for program improvement to be accomplished over the next year **Not Applicable**		

Program Reviewer:

Dr Mehmet Zeytinoglu, PEng.
Professor, Ryerson University

Sd.

Date:

Oct 5 2005

Annual external Review Year Two:

Program name

Bachelor of Applied technology- Integrated Telecommunication and Computer Technology

Program Management Information

Director: Jal C Wadia	
Signature Sd J C Wadia	Date Nov 06
School Head: Mike McClements	
Signature Sd. M McClements	Date Nov 06

Comments Regarding Statistical Information

Item	Comments	
m. Number of Applications	Is there any significant increase or decrease from the previous year? Is there a need for an increase/decrease in promotional activities? What should be the target?	**See Stats**
n. Number of Acceptances	Are there more or less qualified students? Is there a need to clarify admission requirements?	**See Response to Question 9.**
o. Number of Confirmations	Has there been an increase/decrease from previous years? Is there a need to change the formula for the number of applications to accept?	**Data Not available.** **Second year of operation**
p. Enrolments for Each Academic Term	Are there any significant changes in students registered as of xxxx, xxxx or xxxx from the previous year? Has there been any significant change in program design or delivery that might account for the changes?	**Data not available.** **Second year of operation**
q. Retention	Are the numbers of students who completed the program during the normal time span comparable to previous years, or to the provincial average for this program? Are strategies needed to increase retention?	**NA**
r. Number of Graduates and Job placements	Is the placement level satisfactory? Are the needs of the community being met? Is there an under/over supply of graduates?	**NA**
s. Location of Jobs (Total)	Is the geographic location of graduate job placement an issue?	**NA**
t. Average Planned Section Size for the Program	Is this the maximum that can be obtained for this program? What factors limit the section sizes in the learning settings for this program?	**30 students section size**
u. Program Cost/ Program Revenue	Is the program living within its means? What strategies might help the program become more financially efficient? Does this program need to be offered regardless of cost?	**NA**
v. Cost per Student for the year	What strategies can help keep the costs in line with foreseeable decreases in revenue?	**NA**
w. Demographics – Female – Male Students	Is any change in proportion required? What strategies might help bring about such change?	**1 female**
x. Demographics – Age of Students	Are any changes in curriculum, delivery, or support required to meet the needs of the students?	**NA**

1 Student Satisfaction Survey - (see SAT –Confidential Information)

Are the students satisfied with their College experience?
What are the major challenges/opportunities arising from the survey

Students registered in the second year of the Integrated Telecommunication and Computer Technologies (ITCT) program provided the following views about the program.

- **Students are very satisfied with the program. In particular, students commented favorably about the program, the currency of the curriculum and the relevance of the subjects covered in the courses. Students also enjoy the integrated project based curriculum structure as the projects provided valuable practical experience and enhanced students' understanding of the subject matter. Some of the students interviewed during the visit attended university programs prior to registering in the ITCT program. These students articulated the value of the integrated project-based approach in providing the motivation to succeed in the program.**

- **Students continue to identify the core faculty who delivered the program courses and supervise projects as the greatest strength of the program. Students praised faculty members' enthusiasm and professionalism and appreciated the access they had to faculty, which allowed their course and program related inquiries resolved efficiently.**

- **Students appreciated the opportunity had to communicate their views and concerns to program faculty during the weekly briefing sessions.**

- **The lab equipment, computers and the software tools were rated as excellent.**

With the first two years of the program in place, the second year students have been mentoring and assisting first year students. Due to the project-based format of the program, students at all program levels spend significant amounts of time in their laboratories. Therefore such interaction among students registered at different levels of the program is desirable, mutually beneficial and should be further encouraged. Proximity of the first and second year laboratories further facilitates this interaction. Program administrators are therefore encouraged to locate the third and fourth year laboratories in the vicinity of where the first and second year laboratories are located.

2. Ad Hoc/Program Advisory Committee Comments on Program Content -

What are the major areas of satisfaction or of concern?
Are there significant trends that will impact on the material to be taught in the program?
What specific curriculum changes should be recommended?

Membership and minutes to be attached by the college.

3. Faculty Review of Program

e. Program Strengths / Opportunities:
What are the major perceived competitive advantages of the program?

Integrated project-based learning is central to the ITCT program. Every semester has a specific theme, the "focus subject area". All courses in a given semester function in harmony to deliver the science, technology, and engineering and related manufacturing topics that support the focus subject area. Most importantly, the focus subject area defines the content and structure of the projects, which function as core activities bringing together diverse elements of the curriculum into a coherent framework. Projects provide valuable hands-on experience in applying the insight, knowledge and technical prowess delivered through program courses into building realistic engineering prototypes.

The ITCT program delivers all mathematics and science concepts on an "as-needed" format directly supporting the projects that are at the core of the curriculum. This approach allows students to study, observe and ultimately learn how abstract concepts relate to engineering problems. Therefore, the ITCT program students can easily appreciate the relevance and significance of such concepts.

While there are other examples of project-based approach to technical/ engineering education, the ITCT program is one of the few programs where project-based learning is integral to the design of the curriculum and all course/ project work. As a result of this integrated project-based learning, students are expected to be able to analyze problems from several perspectives and be capable of formulating solutions that take into account all the elements (e.g. implementation, integration, testing, manufacturability and production) typically encountered in telecommunication and computer industries.

The curriculum of the ITCT program has been designed to expose program students to more topics in comparison to other technology/engineering programs. A working knowledge in diverse subject areas and experience in a multitude of engineering applications will be a significant advantage to the graduates of the ITCT program, and thus are distinct program strengths.

As a result of the current enrollment levels, the ITCT program provides ample opportunity to students and faculty to interact, discuss and resolve questions about courses and projects. Such an environment is highly conducive to learning (particularly, in a project-based program) and further strengthens the program.

f. Program Weaknesses/Threats:
What are the major perceived competitive disadvantages of the program?

While exposure to diverse subject areas may potentially be considered to be a strength (as indicated above), it also poses a challenge. As the curriculum has to be delivered within the timeframe of a four-year program (albeit at a higher total curriculum hours relative to an average four-year engineering program), faculty and program administrators must ensure that all course material is covered rigorously and at sufficient depth.

The not-so-recent downturn in the information technology sector and the on-going perception regarding employment opportunities in this sector adversely affect applications to information technology programs. For the 2005/2006 academic year, the ITCT program operated with 18 students registered in the second year. In Fall 2005 the program admitted 8 students to the first year with only 6 students from this cohort remaining registered as of June 2006. Therefore, student recruitment continues to be an on-going challenge. Enrollment levels at or near the projected numbers are essential for the long term stability of the program as it will allow the program courses to be delivered economically. The bridging program designed for advanced standing into (approximately) third year of the program will start in 2007. This initiative, if successful, may increase enrollment in the upper years of the program.

Currently, there are three open faculty positions (advertised qualifications include a master's degree, PhD preferred, in a related field with several years of industrial and/or educational experience). As the courses/projects to be delivered in the final two years of the program are still being developed, it is essential (and of utmost importance) to fill the open faculty positions with qualified recruits in a timely manner.

g. Recommended Future Curriculum Revisions:
Is the program curriculum significantly different from that operated at other Colleges in Ontario?
What resources are required to implement the recommendations of the Program Advisory Committee?
Is the program content consistent with THE standards?
What knowledge or skills should be added to or deleted from the program?

Program content as actually delivered in the first two years follows closely the originally proposed curriculum. However, some revisions as stated below may be considered to further enhance the program.

- **The program attempts to deliver a large number of topics and to cover many advanced topics early in the program. While this approach may be necessary to structure meaningful and realistic projects, it should not come at the expense of superficial coverage of theoretical topics. Therefore, a more balanced approach between theory and application of engineering concepts would be a welcome enhancement to the program. For example, program courses and projects can be structured to allow a more open-ended delivery of subject matter, where students would have to analyze engineering problems and formulate feasible solutions through the use of mathematical/analytic tools and techniques (e.g. integration, differentiation, algebra, optimization, curve fitting, etc.). Such an approach would teach students the significance and the utility of being well versed in the use of such tools.**

- **The basic science content of the program should be further enhanced. This recommendation is of particular importance if the College administration intends to seek professional accreditation of the ITCT program.**

h. Recommended Appropriate Equipment Acquisition:
List the name, cost, and rationale for equipment required to support the operation/development of the program.

Equipment used by first and second year students is up-to-date, of sufficient quantity and at an appropriate level for an applied degree program. In the coming years, similar equipment has to be acquired to accommodate upper level students as the program enrollment increases. The curriculum is project oriented and the successful completion of projects requires many hours of work outside of the regularly scheduled classes and/or laboratories with full access to dedicated equipment. Therefore, it is important that all program students have full access to dedicated laboratory and computing equipment which will allow them to work efficiently on their projects.

The nature of the projects determines the types of equipment that will have to be acquired. As the projects in the upper years of the program are currently being developed, no recommendations for specific equipment can be made at this time.

A related issue is the availability of project lab space. Students spend most of their time in their "home-base" which is a fully equipped lab facility. In steady state 4 such rooms, one for each program level, will be required. Program administrators are aware of the space and equipment requirements of the program, have plans in place and are fully committed to provide the necessary funding.

4. Curriculum Review Including Program Goals and Standards

When was the last major curriculum review and what was the major driving force(s) behind it?
Does the program reflect the provincial goals and/or THE standards?
Are all of the program stakeholders aware of the program goals?
Have all of the program stakeholders agreed to the program goals?

Not Applicable.

5. Current/Proposed Admission Requirements

Are the current admission requirements meeting the College guidelines?
Do the admission requirements ensure future students will be successful?

The current admission requirements to the ITCT program are as follows:

> A minimum of six (6) Grade 12 courses including five (5) required university preparation (U) courses and one additional university (U) or university/college (M) course. The following Grade 12 U courses are required: English (ENG4U), Advanced Functions and Introductory Calculus (MCB4U), Chemistry (SCH4U), Physics (SPH4U) plus one of Geometry and Discrete Mathematics (MGA4U) or Mathematics of Data Management (MDM4U).

These admission requirements are appropriate for the program.

Program administrators should be aware of the recent developments regarding the high school mathematics curriculum which may have an impact on the admission requirements. In particular, a Task Force on Senior High School Mathematics convened by the Minister of Education studied the high school mathematics courses and concluded that calculus should remain a part of the senior secondary school mathematics curriculum. The Task Force also concluded the current Geometry and Discrete Mathematics course is "unsustainable, with declining enrolment". The Task Force recommended to "transfer some curriculum content from Advanced Functions and Introductory Calculus, and the study of vectors in Geometry and Discrete Mathematics, into a new course to be called Calculus and Vectors" to replace Geometry and Discrete Mathematics in the secondary school curriculum. The revised Grade 12 mathematics curriculum, including calculus, is expected to be ready for implementation by September 2007.

6. Relations with External Organizations Required to Support the Operation of the Program

List the major regulatory agencies, work placement sites, etc., required for the operation of the program, and indicate the present and foreseeable stability of our relationship with them. Please deal specifically with those agencies whose loss of support would result in a suspension, cancellation, or significant change in delivery of the program.

Review Co-op Data when available

7. Progress Towards Changes in Method of Delivery, and Meeting The Requirements for General Education, Generic Skills, Program Demands Analysis, and Prior Learning Assessment

What are the action plans within the program to meet the above major initiatives?

Please indicate the positive or negative affects of the above issues on the design, and/or delivery of the program.

Not Applicable

8. Program Accomplishments

List the major goals met, recommendations implemented, major challenges handled, and the significant promotional activities operated during the past year.

In addition, indicate any major accomplishments or awards won by the program, or the students or staff related to the program.

Indicate any significant professional development activities undertaken by the members of the program staff over the past year.

The major accomplishments of the 2005/2006 academic year have been: (i) the start and successful implementation of the second year of the program, and (ii) admission of a new cohort of students into the first year of the program and the repeat delivery of the first year curriculum. There are 18 students currently registered in the second year of the program; the program admitted 8 students to the first year, and there are currently 6 students remaining registered in the first year of the program.

Due to the small size of the students admitted to the first year in September 2005, students who continued into the second year in the 2005/2006 academic year retained the original (and larger) laboratory allocated to their group, and a small room was equipped as the new first year laboratory.

Core faculty members of the program have developed and successfully delivered several new projects that supported the second year curriculum (Semester 3: Video Surveillance System, Coded Voice System, Industrial Monitoring (Fibre Optic) System; Semester 4: Embedded System Controller, Tone Response System, Motor Controller). The scope of some of the second year projects had to be scaled down due to unexpected challenges in their implementation and in part due to the strike towards the end of Semester 4.

Two new faculty joined the program in 2005 and one faculty (N. Nelson) was on academic leave during the 2005/2006 academic year. The program also experienced the unexpected leave of a new faculty in Fall 2005 at the start of the classes. Despite these challenges core faculty successfully delivered all program courses and projects.

The second year program started with an exploration module delivered during the first week of the Fall semester (September 6–9). The exploration module included a review of mathematical concepts from first year.

As part of this review process I visited Conestoga College on June 12, 2006. During the visit I had the opportunity to meet the administrators who are responsible for the ITCT program, core faculty members and a selected group of second year students (the students I met, have their co-op placement with various departments at the Conestoga IT College). I also reviewed the extensive documentation on second year courses and projects. All the information reviewed clearly indicates that the second year program has been prepared and delivered consistent with the original proposal and applied degree standards.

9. Progress Towards Changes in Method of Delivery, and Meeting The Requirements for General Education, Generic Skills, Program Demands Analysis, and Prior Learning Assessment

Recommendation	Action By	Planned Completion Date
As a result of this review please recommend actions for program improvement to be accomplished over the next year **Not Applicable**		

Program Reviewer:

Dr Mehmet Zeytinoglu, PEng.
Professor, Ryerson University

Sd.

Date:

Nov 06

Appendix 5 & 6: Program Content and Admissions Policies

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. **Refer to sample Minutes as Appendix 6.1** If "no", attach as **Appendix 6.1.1** Program Advisory Committee, a statement explaining why this has occurred, and what measures the institution took or is taking to remediate this situation.	[X] Yes [ ] No [ ] Attached
The program has adhered to the requirements set by professional or accrediting bodies. If "no", attach as **Appendix 6.2.1**, Professional/Accreditation or Other Requirements, an explanation of where there has been a shortfall, why this has occurred, and what measures the institution is taking to remediate this situation. If "yes", attach as **Appendix 6.2.2**, Letters of Support: Professional/ Accreditation or Other Requirements, documentation to the effect that the program has received such accreditation, and, in the case where it has not, a description of its status in the accreditation process.	[X] Not app. [ ] Yes [ ] No [ ] Attached [ ] Attached
The intended learning outcomes of the individual courses in the program have been met (up to the current point of delivery). 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). If "no", attach as **Appendix 6.3.1.1,** Program Level Learning Outcomes (Not Met): (i) a detailed explanation of how this determination has been made; (ii) the reasons why this is the case; (iii) what measures the institution has/is/will be taking to correct this situation; (iv) why these measures are expected to correct the situation; and (v) what monitoring regime will be used to ensure that these are effective.	[X] Yes [ ] No [ ] Not req. [X] Attached [ ] Not req. [ ] Attached
The Program Hour/Credit Conversion has remained the same. If "no", attach as **Appendix 6.3.3.1**, the new Program/Hour Conversion, and an explanation of the changes and their reasons	[X] Yes [ ] No [ ] Attached
The Academic Course Schedule has remained essentially the same. If "no", attach as **Appendix 6.3.3.2**, the new Academic Course Schedule, and an explanation of the changes and their reasons.	[X] Yes [ ] No [ ] Attached
Have any "P" ("professional field of study") courses been added or dropped from the program? If "yes", attach as **Appendix 6.4.A**, Explanation of Added or Dropped "P"	[ ] Yes [X] No [ ] Attached

Courses, an explanation of why the course(s) was added or 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 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? If "yes", attach as **Appendix 6.4.B.**, Explanation of Added "O" Courses, an explanation of why the course(s) was added or 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 If there were additions, attach as **Appendix 6.4.B.1,** Added "O" Course Outlines, the outlines of the courses that were added.	[ ] Yes [X] No [ ] Attached [ ] Attached [X] NR
The Program Structure has remained essentially the same. If "no", attach as **Appendix 6.5.1**, the new Program Structure Requirement with a description of the changes and reasons.	[ ] Yes [X] No [X]Attached
Have there been instances when students were unable to secure a required work experience? **Please refer to Co-op Report as Appendix 6.5.2** If "yes", attach **Appendix 6.5.2** Support for Work Experience, an explanation of how many students were affected, and how you were able to meet the requirement.	[ ] Yes [X] No [ ] Attached
Have there been any revisions, deletions, or additions to the work experience outcomes and /or the method of evaluating students during their placements? If "yes", attach **Appendix 6.5.3** Work Experience Outcomes and Evaluation, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Have there been changes to the program since the original consent? 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.	[ ] Yes [X] No [ ] Attached
The direct entry admission requirements approved under the current consent have been lowered. If "yes", attach the changed requirements as **Appendix 5.1.1** Admission Requirements Direct Entry, and 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.	[ ] Yes [X] No [ ] Attached
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.	[ ] Not app. [X] Yes [ ] No

If "no", attach the changed policy as **Appendix 5.1.2** Admission Policies and Procedures for Mature Students, and an explanation of (i) what the change was, including the introduction of policies where none were previously approved (ii) why there was a change, (iii) when the change occurred and (iv) why the change was made without seeking a change of consent from the Minister.	[ ] Attached
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. If "no", attach the changed policy as **Appendix 5.2.1** Credit Transfer/Recognition Policies and Procedures, and an explanation of: (i) what the change was, including the introduction of policies where none were previously approved, (ii) why there was a change, (iii) when the change occurred, and (iv) why the change was made without seeking a change of consent from the Minister.	[ ] Not app. [X] Yes [ ] No [ ] Attached
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. If "no", attach the changed policy as **Appendix 5.2.2**, Advanced Placement Policies, Prior Learning Assessment, and an explanation of: (i) what the change was, including the introduction of policies where none were previously approved (ii) why there was a change, (iii) when the change occurred and (iv) why the change was made without seeking a change of consent from the Minister.	[ ] Not app. [X] Yes [ ] No [ ] Attached
The advanced standing admissions policy for "Degree Completion Arrangements" on a "block" basis approved under the current consent has been followed without material change. [1] If "no", attach the changed policy as **Appendix 5.2.3** Degree Completion Arrangements, and an explanation of: (i) what the change was, including the introduction of policies where none were previously approved (ii) why there was a change, (iii) when the change occurred and (iv) why the change was made without seeking a change of consent from the Minister.	[ ] Not app. [X] Yes [ ] No [ ] Attached
The advanced standing admissions policy for "Bridging Courses" approved under the current consent has been followed without material change. If "no", attach the changed policy as **Appendix 5.2.5** Bridging Courses, and an explanation of: (i) what the change was, including the introduction of policies where none were previously approved (ii) why there was a change, (iii) when the change occurred and (iv) why the change was made without seeking a change of consent from the Minister.	[ ] Not app. [X] Yes [ ] No [ ] Attached
Attach as **Appendix 5.2.6**, Admissions Information (See Page 29)	[X] Attached

[1] "Advanced standing or credit recognition" policies relating to Degree Completion and Bridging Course are program specific, and they cannot be introduced into one consent program because they were accepted as part of a later consent.

The promotion and/or graduation requirements approved under the current consent have been lowered. If "yes", attach the changed policy as **Appendix 5.3**, Promotion and Graduation Requirements, and 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.	[ ] Not app. [ ] Yes [X] No [ ] Attached
Attach as **Appendix 5.3.1**, Student Retention Information	[X] Attached

Appendix 6.1.1: Program Advisory Committee

Sample PAC Minutes

Conestoga College Institute of Technology and Advanced Learning
College Administration - 299 Doon Valley Drive, Kitchener, ON N2G 4M4 Canada, 519.748.5220, www.conestogac.on.ca

INTEGRATED TELECOMMUNICATIONS AND COMPUTER TECHNOLOGIES

PROGRAM ADVISORY COMMITTEE

Minutes of the meeting held on Monday, June 26, 2006
At the Doon Campus of the College

PRESENT:	Dave Bernard	Psion Teklogix Inc.
	Nigel Doran	COM DEV International
	Rob Frappier	D&D Automation
	Bill Wilson	University of Waterloo
	Mehmet Zeytinoglu	Ryerson University
REGRETS:	Larry Korba	National Research Council Canada
	Murray Zink	ATS Automation
RESOURCE MEMBERS PRESENT:	Mike McClements (Chair)	Associate V.P. Engineering & Information Technology, Trades & Apprenticeship
	Jack Cole	Faculty Member
	Monzur Kabir	Faculty Member
	Jal Wadia	Executive Director, Planning and Operations
INFO:	John Tibbits	President

1. WELCOME AND INTRODUCTIONS

- The meeting was called to order at 1:00pm. Mike McClements welcomed everyone to the meeting. Introductions were made.

2. APPLIED DEGREE PROGRAMS - CONTEXT

- Mike McClements gave some background information regarding the College's applied degree programs including an overview of the approval process and delivery methodology. Students will be admitted into the third year in September 2006 and a bridging program into the third year will commence in summer 2007.
- It has been a challenge to recruit faculty members who have the required credentials and industrial experience.

- Student recruitment is also continuing to be a challenge for this program as well as for diploma programs in this field. We are therefore operating with smaller classes than originally anticipated.
- Obtaining equipment for labs has also been difficult.
- Students are working hard and are successful.
- The College will be addressing the professional practice process in the near future. This will hopefully include all engineering degree programs.

3. PROGRAM DELIVERY METHODOLOGY

- Jim Smith distributed a program brochure as well as a document giving details of the program description and typical projects. He gave a detailed description of the first project, a PCD Fabrication Project, and the Audio Amplifier Project and showed examples of this equipment.
- Other projects in the first six semesters were briefly described by Jim Smith, Jack Cole and Monzur Kabir.
- Courses for the 4th year have been decided but projects are not yet planned.
- Jim Smith also gave a brief description of the Foundation Module explaining that the objective was to assess students and ensure that they were all on an even level. Students are given remedial help when required.

4. PROGRAM DISCUSSION – YEARS 1 AND 2

- A discussion took place regarding the curriculum content for Years 1 and 2. The Committee asked several questions regarding the mix of lecture/practical experience and also about the evaluation process.
- Mike McClements informed the Committee that there will be a mandatory review by the PEQAB at the end of 2006. The review will confirm that our commitments and expectations are taking place.

5. TOUR OF PROGRAM HOME ROOMS

- A brief tour of program home rooms took place.

6. FUTURE MEETINGS

- The Committee expressed a preference for late afternoon meetings. This will be taken into account when arranging the next meeting.

7. OTHER BUSINESS

- Mike McClements gave a brief overview of the Program Advisory Committee process at the College and the opportunity to provide input into the curriculum. Nigel Doran indicated that he had experience with ISO 9000-2000 and can offer input into this area.

8. ADJOURNMENT

The meeting was adjourned at 3:15pm.

Appendix 6.3.1: Program Level Learning Outcomes

Please refer to the attached annual program reviews conducted by the external assessor. Please also refer to the minutes and membership of the Program Advisory Committee. The college maintains a well organized structure which is shown as part of Appendix 4.1. The faculty meetings are held weekly, while the Degree Management Committee meets monthly or more frequently if needed.

The college also maintains an archive of documents that includes students' work, assignments, projects etc. These documents are used by the faculty in the designing and implementing course outcomes, and in continually improving the program delivery, sequencing and structure.

Appendix 6.5.1: Program Structure

Original Program Structure			
Year	September	January	April
Year One	Semester 1	Semester 2	Co-op opportunity
Year Two	Semester 3	Semester 4	Co-op opportunity
Year Three	Semester 5	Semester 6	Co-op opportunity
Year Four	Semester 7	Semester 8	

Current Program Structure			
Year	August/September	January	April
Year One	Foundation Module (4 Weeks)	Semester 2	Co-op opportunity
	Semester 1		
Year Two	Semester 3	Semester 4	Co-op opportunity
Year Three	Semester 5	Co-op opportunity	Semester 6
Year Four	Co-op opportunity	Semester 7	Semester 8

The Program Structure was modified based on the subsequent advice of the industry and the Program Advisory Committee. The new structure is an enhancement and it addresses some of the industrial and pedagogical dynamics. In particular:

1. This provides for 4 work term opportunities as compared to 3 in the original proposal.
2. The new sequencing of co-op work term provides for greater interaction with the industry enhancing students' experience both in depth and breadth.
3. Includes a four week foundation module concept which was presented to the Panel at the time of the review. The Foundation Module as planned improves the total program content, providing a very vibrant learning culture, thus enhancing retention of candidates. The foundation module is shared by all of the degree programs, providing students with a solid interactive culture and learning skills.

Appendix 6.5.3: Co-Op Report (Work Experience Outcomes)

This following report is provided for information only in support of our analysis that we are meeting required program objectives

Program Review 2006

Overview

This report covers co-op work term employment from May 2005 until present

May to August 2005 11 of 19 eligible first year students obtained work term employment

May to August 2006 2 of 8 eligible first year students obtained work term employment
18 of 18 eligible second year students obtained work term employment

Employers Who Have Hired Co-op Students
* notes employers that have hired for numerous work terms

Bayview Glen Day Camp	Administrative Co-ordinator
COM DEV Ltd.*	Co-op student
Conestoga College*	Hardware Technician
Desire2Learn.com Inc.	IT Specialist
Environment Canada - National Water Research Institute	Technician
Fibre Laminations Ltd	Process Control Technician
Kaparel Corporation	Associate Hardware Designer
Metafore I.T. Solutions	Co-op student
Research In Motion*	Embedded Systems Software Developer
Tech Serve International Inc.	Telephone Technician Trainee
Walinga Inc.	Technician

Site Visit Summary – Employer Feedback

Below is a summary of the comments that I have received regarding student performance:

Student's Strengths:

Student is persistent and asks appropriate questions – had a good electrical background
Student is utilizing the software ProEngineer to its fullest capacity
Student is a sponge – picks up things very quickly
Student is more than measuring up as part of the team
Senior people speak very highly of student
Student "just started" on his very first day
Student is organized, a self-starter and works well with the team
Student was more advanced in programming than expected
Student could "blow out of the water" some that have five or six years experience
Team doesn't know what we would have done without this student

Improvements:

The areas for improvement as suggested by the employers were practically non-existent and include comments such as:
Continue to get experience
Continue to perform in current manner
No areas for improvement identified

Site Visit Summary – Student Feedback

How does the work you have been doing relate to your program of study?

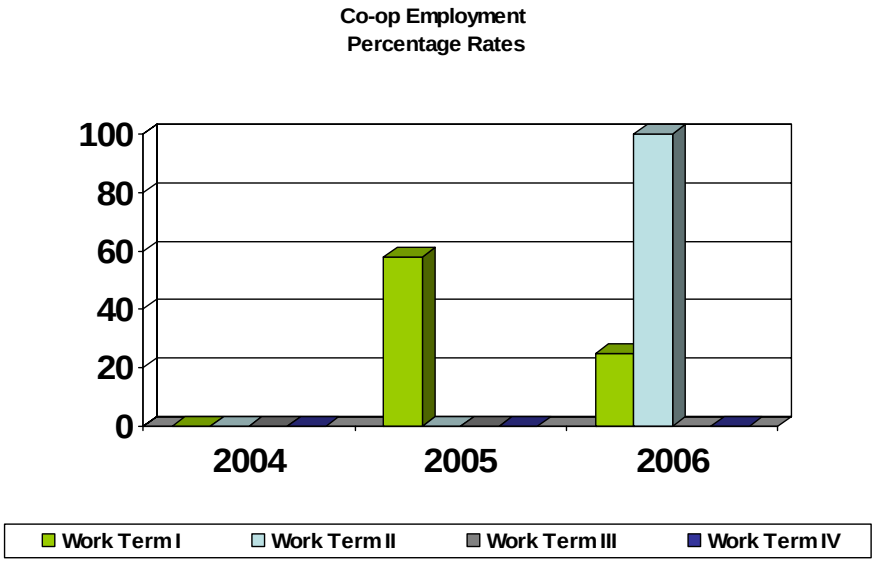
This job has really got me thinking about my career
I am realizing that what I am learning in the classroom cannot be exactly replicated in the workplace, but can be expanded upon
This work term has drastically affected my career plan
The atmosphere where I am working is phenomenal
My work term has helped me to see the different possibilities available to me

Worthy of Mention

Originally there was some misunderstanding about the program layout where students were under the impression that they only needed 2 of 3 work terms. As a result many students opted out of their first work term.

This year a first year student has been nominated for the Co-op Student of the Year Award.
Students are reluctant to apply to jobs outside of the Kitchener/Waterloo/Cambridge/Guelph area.
Research in Motion continues to hire increasing numbers of co-op students from this program.

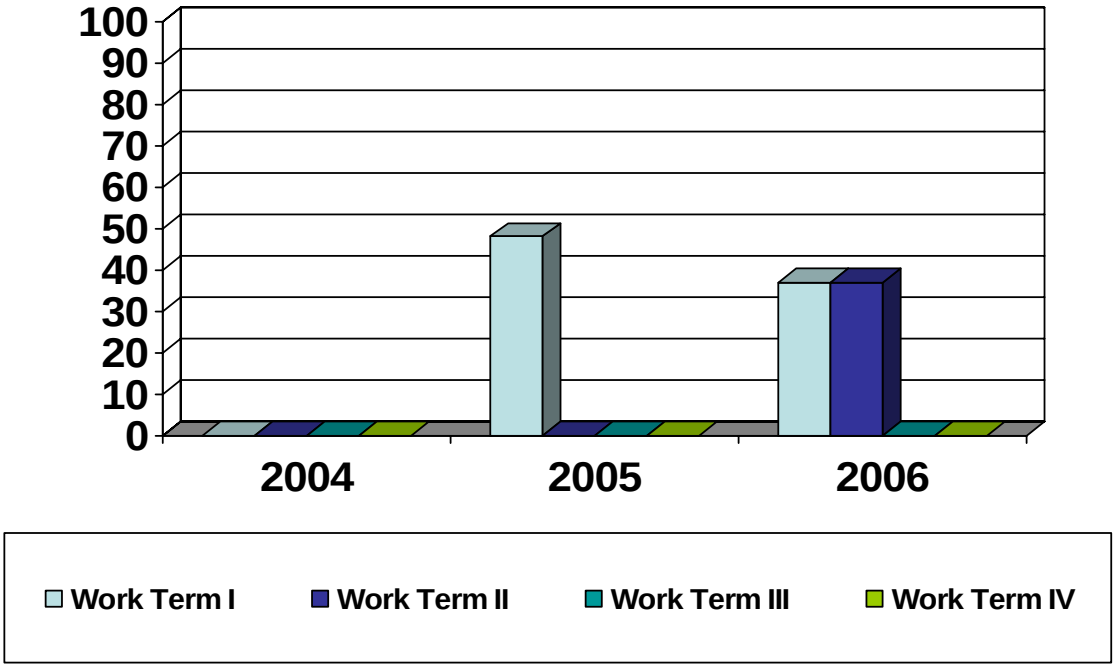
Bachelor of Applied Technology – Integrated Telecommunication and Computer Technologies (ITCT)



Of special note: Due to late decisions on the co-op model, many students elected to defer the first work term.

Bachelor of Applied Technology – Integrated Telecommunication and Computer Technologies

Number of Positions Available*



* Includes positions posted with other programs

Appendix 5.2.6: Admission Information

Number of New Students Highest Certification	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	New Intakes into Program in 200_-0_ Academic Year
1. Secondary School Graduates	20	6	11	
2. College Graduates	1		1	
3. University Graduates	1	1	1	
4. Mature Students		2	3	
5. Total Students Commencing Program	22	9	16	
6. Average Secondary School G.P.A. of students listed in (1) above	3.0	3.5	3.0	
7. Number of Total Students (5) granted Advanced Standing into the Program**			2 *8	
8. Number of Total Students (5) who are International Students (i.e., on a Student Visa)	2			

** As an attachment to this table, please provide relevant information on (7) above: e.g., categories they came from (1, 2, 3, or 4); amount of advanced standing awarded; how advanced standing was determined.

** Transfer Credit and Credential Recognition

Since the starting of the program two students have been granted advanced standing for some of the courses. These students are university/college graduates with program affinity and they have high marks in programs they attended at the college/university. Advanced standing granted is base on evaluation of each course and the number credits granted is minimal.

Appendix 5.3.1: Student Retention Information

Retention Rates for Each Potential Four-Year Cohort

Row	Academic Year	Fulltime	Part-time
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		
7	Total who commenced program in 2003-2004 academic year		
8	Total from row 7 who re-enrolled in 2004 – 2005 academic year		
9	Total from row 8 who re-enrolled in 2005 – 2006 academic year		
10	Total from row 9 who re-enrolled in 2006 – 2007 academic year		
11	Total from the 2003-2004 starting cohort who graduated		
12	Total from row 10 who are still in program		
13	Total who commenced program in 2004-2005 academic year	22	
14	Total from row 13 who re-enrolled in 2005–2006 academic year	18	
15	Total from row 14 who re-enrolled in 2006–2007 academic year	18	
16	Total from row 15 who re-enrolled in 2007–2008 academic year		
17	Total from the 2004-2005 starting cohort who graduated	17	
18	Total from row 14 who are still in program (if reporting before the beginning of the 2007-2008 academic year)		
19	Total from row 15 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	10	
21	Total from row 20 who re-enrolled in 2006–2007 academic year	7	
22	Total from row 21who 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)	6	
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	16	
27	Total from row 22 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)	16	
30	Total from row 27 who are still in program (if reporting after the beginning of the 2007-2008 academic year)		

2002-2003 starting cohort

2003-2004 starting cohort

2004-2005 starting cohort

2005-2006 starting cohort

2006-2007 starting cohort

Appendix 7: Program Delivery Standard

Have there been any revisions, deletions, or additions to the policies pertaining to program delivery quality assurance? If "yes" attached **Appendix 7.1.1**, Quality Assurance Policies, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Have there been any revisions, deletions, or additions to the policies pertaining to student feedback? If "yes" attached **Appendix 7.1.2**, Policy on Student Feedback, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Have there been any revisions, deletions, or additions to the policies pertaining to student feedback instruments? If "yes" attached **Appendix 7.1.3**, Student Feedback Instruments, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
1. Does your consent include the authority to offer parts of the program through internet, asynchronous, distance or distributed delivery? 2. If "yes" to 1, have there been any revisions, deletions, or additions to the On-line Learning Policies and Procedures? 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? 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 ban 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? 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? 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 to delivery has been added; (ii) an explanation of (a.) why there was	[ ] Yes [X] No [ ] Yes [ ] No [ ] Attached [ ] Yes [ ] No [ ] Attached [ ] Yes [ ] No [ ] Attached [ ] Yes [X] No [ ] Attached

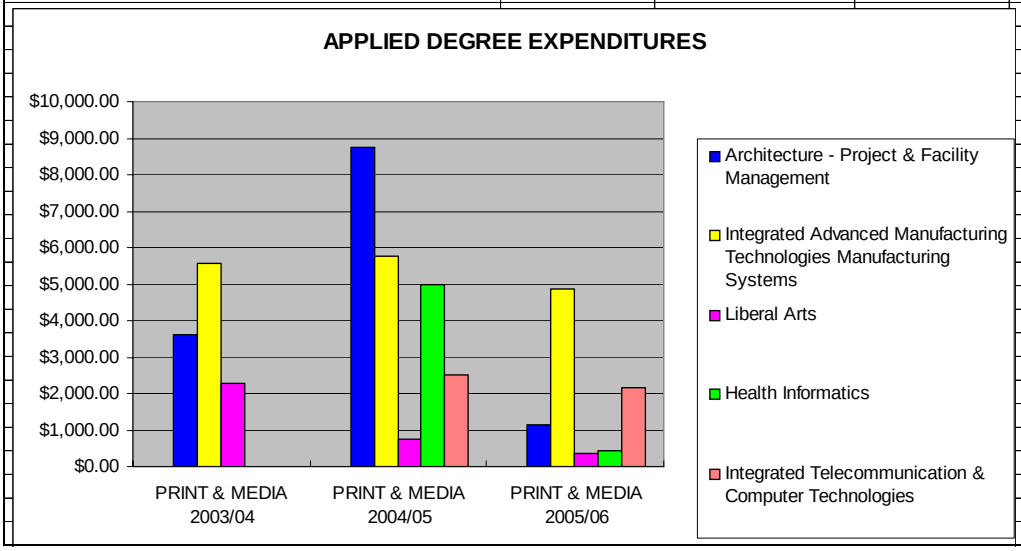
Appendix 8: Capacity to Deliver

Attach as **Appendix 8.2.1** Library Resources (See Page 31)	[X] Attached
Attach as **Appendix 8.2.2** Computer Access (See Page 32)	[X] Attached
Attach as **Appendix 8.2.3** Improvements/Expansion of Classroom Space (See Page 32)	[X] Attached
Attach as **Appendix 8.2.4** Laboratories/Equipment (See Page 32)	[X] 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.	[X] Attached
Have there been any revisions, deletions, or additions to the support services available to students? If "yes", attach **Appendix 8.4** Support Services, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
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?[2] If "yes", attach **Appendix 8.5** Policies on Faculty, (i) the new policy and (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.	[ ] Yes [X] No [ ] Attached
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? If "yes" attach as **Appendix 8.6.2 A**, all Exception Statements Approved by the President of the organization	[ ] Yes [X] No [ ] Attached
Attach as **Appendix 8.6.2 B** Faculty Qualifications: Discipline Related Courses (See Page 33)	[X] Attached
Attach as **Appendix 8.6.2 C** Faculty Qualifications: Breadth Courses (See Page 34)	[X] 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.	[X] Attached

[2] See Section 7, 4 above for context.

Appendix 8.2.1: Library Resources

APPLIED DEGREE EXPENDITURES	PRINT & MEDIA 2003/04	PRINT & MEDIA 2004/05	PRINT & MEDIA 2005/06	TOTAL SPENT BY DEGREE TOTALS
Architecture - Project & Facility Management	$3,595.04	$8,745.30	$1,121.77	$13,462.11
Integrated Advanced Manufacturing Technologies Manufacturing Systems	$5,568.88	$5,783.58	$4,862.84	$16,215.30
Liberal Arts	$2,256.01	$734.30	$351.68	$3,341.99
Health Informatics		$4,976.46	$450.86	$5,427.32
Integrated Telecommunication & Computer Technologies		$2,509.65	$2,142.18	$4,651.83
Total Applied Degree Expenditures for print and media	$11,419.93	$22,749.29	$8,929.33	$43,098.55
ELECTRONIC RESOURCES	2004/05	2005/06		
ACM Digital Library	$759.00	$768.00		
Access Science	$833.00	$828.00		
Proquest ABI Trade & Industry	$3,670.00	$3,488.00		
Proquest Telecomm		$3,800.00		
PsycArticles		$5,900.00		
TOTAL SPENT ON ELECTRONIC RESOURCES	$5,262.00	$14,784.00		



LRC was recently expanded at a cost of over one million dollars to augment additional needs of the college programming.

Appendix 8.2.2: Computer Access

Directly Related to the Consent Program	Number at Time of Consent	Current Number
Number of Students in Program (Cumulative)		40
Number of Computers without Internet Access available solely (i.e., they have priority of use) to Students in Program	0	0
Number of Computers with Internet Access available solely to Students in Program	0	60 Each student is provided with a dedicated computer
Expenditure during this period for purchase/rental of ADDITIONAL computer equipment pertaining specifically to this program.		$75,500
Number of Computers without Internet Access reasonably accessible to Students in Program	N/A see above	N/A see above
Number of Computers with Internet Access reasonably accessible to Students in Program	N/A see above	N/A see above

Appendix 8.2.3: Improvement /Expansion of Classroom Space

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.		$12,000

Three dedicated labs are provided to the program and one additional lab will be provided for the fourth year.

Appendix 8.2.4: Laboratories/Equipment

Directly Related to the Consent Program	Number at time of consent	Current Number
Number of Specifically-Equipped Work Stations and/or Specialized Equipment	0	40
Expenditure for construction/rental of ADDITIONAL laboratories and equipment pertaining specifically to this program.		$213,775

Lab Stations:

Appendix 8.3: Resource Renewal and Upgrading

Physical resource renewal for the program is well underway. Each cohort of the program is provided with a room/lab as its home room. These labs are fully equipped including a computer station for each student and work benches for individual and group activities. The rooms are designed for an interactive learning environment. All of the computers have internet access and access to an appropriate level of on-line technical resources. These facilities are kept open around the clock and the students are found to be present in the rooms past regular teaching hours, developing their projects and preparing necessary presentations.

The college library and open computing facilities are also available to the students during normal operating hours of the college and the labs are made available after hours. Physical library space has been almost doubled with an addition costing over one million dollars. In addition to the physical space expansion, the college has invested over $63,000 in developing library resources for the degree programs. As these resources are shared amongst three BAT programs, it is difficult to separate them for each program. For example, on-line resources are applicable to both the Integrated Manufacturing and Integrated Telecommunication programs. Library resources as applicable to the breadth courses are also shared internally and with other colleges and universities.

The college has a strategic plan for computer expansion and utilization for the students. Under this plan, the college normally adds two to three computing labs annually. The total number of computers available to the students has increased from 1461 in 2003 to 2138 in 2006.

This table shows non delivery expenditures for the program:

ITCT	2003/04	2004/05	2005/06	2006/07	Total
Curriculum 200316 Capital	25451.83				25,451.83
Curriculum 200316 Equipment	3,004.05				3,004.05
Delivery 206314 Capital		152,508.53			152,508.53
Delivery 206314 Equipment		6,499.17	1,484.61		7,983.78
Instr Cap 111878 Capital			45,083.57	29,980.98	75,064.55
Electronics Total	**28,455.88**	**159,007.70**	**46,568.18**	**29,980.98**	**264,012.74**

Appendix 8.6.2 B: Faculty Qualifications-Discipline Related Courses

Faculty holding Academic Degrees higher than a Bachelor in a field of study related to the subject to be taught[3]

	1st Academic Year of Delivery 2004 to 2005		2nd Academic Year of Delivery 2005 to 2006		3rd Academic Year of Delivery 2006 to 2007		4th Academic Year of Delivery 200_ to 200_	
Highest Qualification	**# with Credentials**	**# of Courses Taught**	**# with Credentials**	**# of Courses Taught**	**# with Credentials**	**# of Courses Taught**	**# with Credentials**	**# of Courses Taught**
Doctorate Degree	2	6	5	13.5	4	8.5		
Master Degree	1	4	2	5.5	4	6		

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

	1st Academic Year of Delivery 200_ to 200_		2nd Academic Year of Delivery 200_ to 200_		3rd Academic Year of Delivery 200_ to 200_		4th Academic Year of Delivery 200_ to 200_	
	Instructor Qualification	**Course Taught**	**Instructor Qualification**	**Course Taught**	**Instructor Qualification**	**Course Taught**	**Instructor Qualification**	**Course Taught**
1.								
2.								

[3] Where appropriate, identify the degree deemed "terminal" by the college if other than a Masters or Doctoral program.

Appendix 8.6.2 C: Faculty Qualification - Breadth Courses

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

	1st Academic Year of Delivery 2004 to 2005		2nd Academic Year of Delivery 2005 to 2006		3rd Academic Year of Delivery 2006 to 2007		4th Academic Year of Delivery 200_ to 200_	
Highest Qualification	**# with Credentials**	**# of Courses Taught**	**# with Credentials**	**# of Courses Taught**	**# with Credentials**	**# of Courses Taught**	**# with Credentials**	**# of Courses Taught**
Doctorate Degree	1	2	1	2	1	1		
Master Degree	4	6	6	6	4	4		

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

	1st Academic Year of Delivery 200_ to 200_		2nd Academic Year of Delivery 200_ to 200_		3rd Academic Year of Delivery 200_ to 200_		4th Academic Year of Delivery 200_ to 200_	
	Instructor Qualifications	**Title of Course Taught**	**Instructor Qualifications**	**Title of Course Taught**	**Instructor Qualifications**	**Title of Course Taught**	**Instructor Qualifications**	**Title of Course Taught**
1.								
2.								
3.								
…								

Appendix 8.7: Enrolment Projections and Staffing Implications

Our original proposal called for a first year intake of 30 students. In the first year of operation the window of mounting the program was short and we managed to attain about two thirds of the target. We have continued with this pattern. While we remain concerned about the enrolment targets, our commitment to the program is solid. We have developed dedicated facilities and provided necessary resources to the program. Marketing of the new degree programs is a provincial challenge for this yet to be defined and proven product line. Our co-op reports are excellent and we are confident that when we have our first cohort in the work place we will have natural ambassadors present in the industry.

The college is actively involved in the provincial activities in context of the new degree initiatives. These actions in conjunction with our solid program design and delivery, smaller classes, and applied offering, will help us increase our enrolment.

Recruitment of staff is also a challenge in this technically advanced field. We have maintained our high recruiting standards. Our project and team based approaches in learning and teaching is an advantage in that we have been able to have collective knowledge and experience available to the students. We have yet unfilled positions for the program and we expect to fill them before starting the final year of the program.

In part B of this document we are proposing a bridge and entry point for the qualified diploma students. We have taken a cautious approach to this initiative and we feel that we are ready for this. Our experience in two other degree programs has been very positive and we think that this opportunity offered to the highly qualified diploma graduates will enhance the overall quality of the program, while increasing our cohort population.

Appendix 9 & 10: Credential Recognition and Credit Transfer

Have there been any revisions or additions to the requirements set by regulatory bodies associated with this program? If "yes", attach: • **Appendix 10.1.1** Current Regulatory or Licensing Requirements, and a brief explanation of the change; and • **Appendix 10.1.2** Letters of Support from Regulatory/Licensing Bodies to the effect that either your program has been adapted to meet these requirements, or, if applicable, the program continues to be accredited.	[X] Not app. [ ] Yes [ ] No [ ] Attached [ ] Attached
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? If "yes", attach as **Appendix 9.1.a**, Credential Recognition, a description of the formal and informal arrangements. If "no", attach as **Appendix 9.1.a**, an explanation of the steps (and results) that you have taken to meet this benchmark.	[ ] Yes [X] No [ ] Attached [X] 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? If "yes", attach as **Appendix 9.1.b**, Credit Transfer Recognition, a description of the formal and informal arrangements.	[ ] Yes [X] No [ ] Attached
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? If "yes", attach **Appendix 9.1.c** Policy on Informing Students of any Provisions for Credential Recognition and Credential Transfer, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached

Appendix 9.1.a: Credential Recognition

Credential recognition is a complex issue and comes from different sources:

First, we see recognition of this credential by the industry to be of critical importance. To that end, our co-op students have been well received. We are confident that given time, when our graduates are well placed in the industry, they will carry our message of quality and relevance. Industry participation through the PAC is well institutionalized and we consider this to be our strength. This strength is reflected in the scholarships and awards our students are receiving. On November 30th we held our 2nd annual degree recognition evening where 26 scholarships were awarded to the degree students.

Second, we see recognition of the credentials by the schools and parents to be an important factor in our ability to deliver the program. While the start is slow in terms of enrolment, we are confident that our program offering will appeal to a larger audience in the near future. We are continuing our marketing at all possible opportunities.

Third, we see credential recognition by an accreditation body as an important aspect. In this context most accreditation bodies need a completed cohort. We are developing strategies and evidence in place in order that in the future we can attain this goal.

Fourth, we see recognition of our graduates by other educational institutes for advanced studies as another way of getting this credential recognized. This issue in Ontario remains a challenge and we are diligently working toward opening these opportunities for our future graduates. Other provinces and countries have a well developed recognition system. Again, we remain confident that when our students perform side by side with the university graduates, our universities will be more open to this idea and welcome our graduates.

Appendix 11: Program Evaluation

Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to program evaluation? If "yes", attach **Appendix 11.1,** Periodic Review Policy and Schedule, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
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.	[X] Attached

Appendix 11.2: Program Evaluation Measures

Throughout this document we have demonstrated our continuous program monitoring system and the following elements of the system give us full confidence about the measures we have taken:

1. We are continuing our effort in building a well qualified faculty team. This dedicated team works collectively in the development of the program.
2. We have a well defined management structure that includes a senior level Degree Management Committee.
3. We have put in place a Program Advisory Committee. We listen to these advisors and implement their advice.
4. Our co-op department provides appropriate learning opportunities and industrial feed-back.
5. We invite an external assessor annually to review our program and we implement advice received.
6. We have provided good physical resources and have made a commitment for further development.
7. We benchmark our program with other programs in many different ways.
8. We recruit students carefully.
9. When we develop new ideas, such as a bridge for qualified diploma graduates, we put proper structures in place and we validate our proposals through an external assessor.

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 14 2006 Date

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	[X] Attached
Record of Proposed Changes to the Current Consent Program and Required Submission Elements	[X] Attached
Record of Proposed Changes: Academic Freedom and Student Protection	[X] Attached
Title Page	
Appendix 1.1 Submission Title Page	[X] Not required [ ] Attached
Appendix 1.2 Table of Contents – PLEASE REFER TO THE MAIN TABLE OF CONTENTS	[X] Not required [ ] Attached
Executive Summary	
Appendix 2.1 Executive Summary	[X] Not required [ ] Attached
Program Abstract	
Appendix 3.1 Program Abstract	[X] Not required [ ] Attached
Program Degree-Level Standard	
Appendix 4.1 Degree Level Summary	[X] Not required [ ] Attached
Appendix 4.2 Samples of Student Work	[X] Attached
Admissions, Promotion, Graduation Standard	
Appendix 5.1.1 Admissions Requirements Direct Entry	[ ] Not required [X] Attached
Appendix 5.1.2 Admissions Policies and Procedures for Mature Students	[X] Not required [ ] Attached
Appendix 5.2.1 Credit Transfer/Recognition Policies and Procedures	[ ] Not required [X] Attached
Appendix 5.2.2 Advanced Placement Policies	[ ] Not required [X] Attached
Appendix 5.2.3 Degree Completion Arrangements	[ ] Not required [X] Attached
Appendix 5.2.4 Gap Analysis	[ ] Not required [X] Attached
Appendix 5.2.5 Bridging Courses	[ ] Not required [X] Attached
Appendix 5.3 Promotion and Graduation Requirements	[X] Not required [ ] Attached
Program Content Standard	
Appendix 6.3.1 Program Level Learning Outcomes	[X] Not required [ ] Attached
Appendix 6.3.2 Course Descriptions	[X] Attached
Appendix 6.3.3.1 Program Hour/Credit Conversion Justification	[X] Not required [ ] Attached
Appendix 6.3.3.2 Academic Course Schedule	[X] Attached
Appendix 6.4. Course Outlines	[X] Attached

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

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

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

Are you proposing to change the title of the program? If "yes", attach **Appendix 1.1** Submission Title Page	[ ] Yes [X] No [ ] Attached
Are you proposing to change the location of the program? If "yes", attach **Appendix 1.1** Submission Title Page	[ ] Yes [X] No [ ] Attached
Are you proposing to change the content of the program? If "yes", attach: **Appendix 2.1** Executive Summary and **Appendix 3.1** Program Abstract	[ ] Yes [X] No [ ] Attached [ ] Attached
Degree Level Standard	
Are you proposing to change the content of the program? If "yes", attach **Appendix 4.1** Degree Level Summary	[ ] Yes [X] No [ ] Attached
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."	[X] Attached
Admissions, Promotion, Graduation Standard	
Are you proposing to make any revisions, deletions, or additions to the direct entry admission requirements? If "yes", attach **Appendix 5.1.1** Admission Requirements Direct Entry, and a brief explanation of the change(s).	[X] Yes [ ] No [X] Attached
Are you proposing to make any revisions, deletions, or additions to the admissions policy or procedures for mature students? If "yes", attach **Appendix 5.1.2** Admission Policies and Procedures for Mature Students, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached

Are you proposing to make any revisions, deletions, or additions to the advanced standing admission requirements? If "yes", attach, where applicable, a brief explanation of the change(s): • **Appendix 5.2.1** Credit Transfer/Recognition Policies and Procedures • **Appendix 5.2.2** Advanced Placement Policies • **Appendix 5.2.3** Degree Completion Arrangements • **Appendix 5.2.4** Gap Analysis • **Appendix 5.2.5** Bridging Courses	[X] Yes [ ] No [X] Attached [ ] Not app. [X] Attached [ ] Not app. [X] Attached [ ] Not app. [X] Attached [ ] Not app. [X] Attached [ ] Not app.
Are you proposing to make any revisions, deletions, or additions to the promotion and/or graduation requirements? If "yes", attach **Appendix 5.3**, Promotion and Graduation Requirements, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Program Content Standard	
Are you proposing to make any revisions to the program level learning outcomes? If "yes", attach as **Appendix 6.3.1**, Program Level Learning Outcomes, a table that indicates the program outcomes and the corresponding courses, course segments, or workplace requirements that contribute to the outcome.	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions to the academic calendar descriptions of the courses in the program? 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.	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions to the program hour/credit conversion formula for the program? If "yes", attach as **Appendix 6.3.3.1**, Program Hour/Credit Conversion Justification, answers to the questions contained in that appendix and, where appropriate, a table with the information requested.	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions to the academic courses schedule of the program? If "no", attach as **Appendix 6.3.3.2** , Academic Course Schedule, the current (and continuing) course schedule; or If "yes", attach as **Appendix 6.3.3.2**, Academic Course Schedule, the revised course schedule (please denote the new courses – e.g., bold or colour)	[ ] Yes [X] No [X] Attached [ ] Not app. [ ] Attached [ ] Not app.

Attach as **Appendix 6.4**, the outlines of the courses in the program for which you are applying for consent. **Note 1**: Immediately after giving the "Course Title" in the first line of the standard template of Appendix 6.4, please include the relevant option from the following four: • No change (indicates that, apart from normal updating, the course has remained the same as that approved in the original application) • Changed (indicates that there has been a significant addition or change in the content or method of delivery of the course that was approved in the original consent application) • Added (indicates that the course was not part of the original consent application but was subsequently added to the program) • New (indicates that the courses has never been a part of the program) **Note 2**: If a course outline has already been supplied in Part A of the application, it need not be replicated here. In such cases, simply complete the first two lines of Appendix 6.4: • Line 1: "Course Title" followed by the annotations (i) "no change" and (ii) a page reference to where it can be found in the submission, and • Line 2: "Year and Semester". The subsequent sections of Appendix 6.4 are not required.	[X] Attached
Attach as **Appendix 6.5.1**, Program Structure Requirement, a table indicating the structure for the proposed renewed program including the identification of: • On-campus semesters; • Vacation semesters; and • Paid full-time consecutive work experience(s).	[X] Attached
Are you proposing to make any revisions to the support for work experience? If "yes", attach as **Appendix 6.5.2**, Support for Work Experience, a summary of the types of placements students will be seeking, the college's plans to develop placement opportunities for students, and the level of support the college will extend to students seeking placements.	[ ] Yes [X] No [ ] Attached
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? If "yes", attach **Appendix 6.5.3**, Work Experience Outcomes and Evaluation, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Program Delivery Standard	
Are you proposing to make any revisions, deletions, or additions to the policies pertaining to program delivery quality assurance? If "yes", attach **Appendix 7.1.1** Quality Assurance Policies, and a	[ ] Yes [X] No [ ] Attached

brief explanation of the change(s).	

Are you proposing to make any revisions, deletions, or additions to the policies pertaining to student feedback? If "yes", attach **Appendix 7.1.2** Policy on Student Feedback, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions, deletions, or additions to the student feedback instruments? If "yes", attach **Appendix 7.1.3** Student Feedback Instruments, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Are you proposing: 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 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? If "yes" to any of the above: ▪ attach **Appendix 7.2.1.a**, a listing of the courses incorporating distance delivery; ▪ attach **Appendix 7.2.1.b**, On-line Learning Policies and Procedures; ▪ attach **Appendix 7.2.2**, Academic Community Policies; ▪ attach **Appendix 8.6.2.E**, Curriculum Vitae for On-line Learning Professional and Technical Staff	 [ ] Yes [X] No [ ] Yes [X] No [ ] Yes [X] No [ ] Attached [ ] Attached [ ] Attached [ ] Attached
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? If "yes", attach **Appendix 8.2.1** - Library Resources.	[ ] Yes [X] No [ ] Attached
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? If "yes", attach **Appendix 8.2.2** – Computer Access.	[ ] Yes [X] No [ ] Attached
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? If "yes", attach **Appendix 8.2.3** – Classroom Space	[ ] Yes [X] No [ ] Attached

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? If "yes", attach **Appendix 8.2.4** – Laboratories/Equipment	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions, deletions, or additions to the support services available to students? If "yes", attach **Appendix 8.4** Support Services, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions, deletions, or additions to the policies on faculty identified in Appendix 8.5? If "yes", attach **Appendix 8.5** Policies on Faculty, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
In completing appendix 6,4, were any of your courses noted as being "Added" or "New"? If 'yes", then for the courses noted, attach those that are relevant from the following: · **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	[ ] Yes [X] No [ ] Attached [ ] Not req. [ ] Attached [ ] Not req. [ ] Attached [ ] Not req. [ ] Attached [ ] Not req. [ ] Attached [ ] Not req. [ ] Attached [ ] Not req.
Attach as **Appendix 8.7.2** Enrolment Projections and Staffing Implications	[X] 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? If "yes", attach: **Appendix 10.1.1** Current Regulatory or Licensing Requirements, and a brief explanation of the change and **Appendix 10.1.2** Letters of Support From Regulatory/Licensing Bodies	[ ] Yes [X] No [ ] Attached [ ] Attached

Program Evaluation Standard	
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to program evaluation? If "yes", attach **Appendix 11.1** Periodic Review Policy and Schedule, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Economic Need	Not applicable
Non-Duplication of Programs	Not applicable

Appendix 4.2: Retention of Evidence (Samples of 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 5.1.1: Admission Requirements Direct Entry

Impact of possible grade 12 curriculum changes:

Since the double cohort and the introduction of the new grade 12 curriculum, changes, especially in the mathematics courses have been frequent and ongoing. This has already necessitated at least one change to the admission requirements for the Engineering programs at Universities and Colleges. We understand that it will likely change again for 2007/2008 school year. The initial proposal from the Ministry of Education suggests that two of the U level math courses may be replaced. Advanced Functions and Introductory Calculus (MCB4U) and Geometry and Discrete Mathematics (MGA4U) may no longer be offered. The courses may be replaced by Advanced Functions (MHF4U) and Calculus and Vectors (MCV4U). It is also proposed by Ministry of Education that the Advanced Functions can be taken concurrently with, or preceding, Calculus and Vectors. Calculus and Vectors cannot be taken without taking Advanced Functions. As you will notice this is yet tentative and we are unsure about the complexity and timing of these changes.

In the past we have noticed that the changes in grade 12 curriculum are frequent and we are provided with a short notice of the final changes. We have had to adjust our admission requirements and more importantly our curricula to accommodate these changes, and make sure that we attract students with highest standing. While we can not predict the changes at grade 12 level we will continue our monitoring process, and we want to assure the Board that we will modify our entrance requirements and delivery to accommodate grade 12 curriculum changes. Furthermore we want to assure the Board that these future possible changes will always be in congruence with admission requirements for similar university engineering degree programs.

Proposed direct entry to the third year of the program:

The program currently accepts students with appropriate high-school marks and follows the guidelines established through the original consent. Through this renewal it is proposed that graduates of affinity 3 year diploma program with high marks be allowed to enter third year of the program following completion of a bridge. This proposed change is fully documented in appendices 5.2.1 through 5.2.5.

The proposed documented appended here was developed following a thorough gap analysis, and in consultation with, the external reviewer, Dr Mehmet Zeytinoglu, PEng. Professor, Ryerson University. Dr Zeytinoglu was also on the original review panel.

Appendix 5.2.1: Credit Transfer/Recognition Policies and Procedures

While the main college policies for the credit transfer remain the same under this appendix, the college is requesting acceptance of students in the third year of the program when they have successfully completed a three year college affinity diploma and have attained high marks as defined in the following document. The following policy has been submitted and approved by the Board following the pilot projects and during subsequent applications

Purpose

This procedure describes the activities involved in the admission of students into applied degree programs other than entry into the first year in accordance with the MTCU, PEQAB and College requirements.

Scope

This procedure applies to all applicants applying to all applied degree programs in the above context.

Definitions

PEQAB – Postsecondary Education Quality Assessment Board.

MTCU – Ministry of Training Colleges and Universities.

DMC – The Degree Management Committee is chaired by the Vice President Academic and the membership includes the Director of Strategic Projects, Associate Vice Presidents and Deans of the Schools. The committee is managed by the Director of Strategic projects and it reports to the Executive Committee and interfaces with the Academic Coordinating Committee (ACC) of the college. (Current structure and membership of the DMC are appended).

This is an oversight committee responsible for reviewing and approving policies and procedures in context of the College Degree Programs, associated applied research activities and articulations/bridging with the university degree programs. The committee ensures quality and consistency of offering at degree level. The committee also designs and approves instruments and procedures for quality control including instruments of Annual (external) Program Review and Recognition Scholarships.

ACC – All senior academic managers are members of the ACC. The Vice President, Academic chairs the committee. The committee meets regularly to analyze and approve major decisions related to academic matters.

PFC – The Program Faculty Committee consists of program teaching faculty and program co-ordinator. This committee is responsible for the coordination of various activities in the program including curriculum and project design, and student remediation and progression. The committee participates in establishing academic benchmarks and reviews credentials of the new students. The Committee advises management on various aspects of the program including resource requirements, professional development and applied research.

SIS – A computerized Student Information System used for the Admissions, Registration, Receivables and Achievement.

OCAS – The Ontario College Application Service acts as a central processing centre for college applications and confirmations of acceptance. Applicants applying for advanced standing who have attended institutions must complete an OCAS application.

Conestoga College Application Form – Applicants applying for readmission to Conestoga College with advanced standing complete a Conestoga College Application form.

Applied Degree Program – A four-year degree program approved by the PEQAB.

Affinity Diploma Program – A program that is in the same general discipline as that of the degree program.

Advanced Standing for Applied Degree Programs -The admission of a student into a year other than the first year of the program based on previous post-secondary learning and completion of a Program Bridging Module.

Bridging Module – This is a module of study with specified courses/outcomes to be completed over a limited amount of time and prepares the graduate from articulated Affinity College Diploma Program/s at a predetermined entry point into the Degree Program. The module includes essential knowledge and skills to bridge the gap between the applied degree program and the diploma program based on the gap analysis.

PAC – The Program Advisory Committee is a College committee made up of industry, business and educational representatives from the community advising about the direction and content of the college program.

PLAR – Prior Learning Assessment and Recognition
Prior Learning Assessment and Recognition will be conducted according to the "Standards for Quality Assurance in PLAR", adapted by CEAL-Council on Adult and Experiential Learning (or other models identified by PEQAB).

No more than 50% of the total number of credits/hours will be based on prior learning assessment and/or advanced standing (PEQAB Guidelines).

No life experience credits will be given (PEQAB Guidelines).

No credit will be granted for the final thesis or capstone project (PEQAB Guidelines).

Applicants from articulated and non-articulated programs will have a minimum grade point B (70%) average to qualify for admission.

Portfolio – Collection of program related material specified by PFC.

Interview – Meeting of an applicant with program faculty to determine program suitability based on criteria established by the PFC.

Articulated Program – A diploma and/or degree program that is course/outcomes mapped with the college Applied Degree Program.

Non-Articulated Program – A diploma and/or degree program that is not course/outcomes mapped with the College Applied Degree Program.

Responsibilities

1. The Academic Vice President and the Director of Strategic Projects, in consultation with the Associate Vice Presidents and Deans, are responsible for developing applied degree bridging programs and obtaining appropriate approval from the PEQAB and/or MTCU.

2. The Associate Vice-Presidents and Deans responsible for the degree programs, in consultation with the Director of Strategic Projects, are responsible for developing articulation maps.

Items 3 to 6 are to be submitted to the DMC for approval.

3. The Associate Vice Presidents and Deans responsible for the degree programs, in consultation with the Registrar, are responsible for determining the number of bridged students to be admitted to any one cohort year. Capacity will be limited.

4. The Associate Vice Presidents and Deans responsible for the degree programs are responsible for establishing and receiving appropriate approvals for the admission criteria for all applied degree programs in accordance with the PEQAB and College guidelines, within the following framework:

    - Qualified three-year diploma graduates having program affinity from an articulated Conestoga program and an articulated program with other post-secondary institutions will be granted an entry to the third year of the degree program. These students will be required to successfully complete a program specific Bridging Module.
    - Graduates from a non-articulated program will be required to complete prescribed additional courses and/or Bridging Module based on an individual assessment.
    - Liberal Studies (breadth) Electives and co-op work terms may be required based on individual assessment.

5. The Associate Vice Presidents and Deans responsible for the degree programs, in consultation with the PFC and PAC, will determine if a comprehensive entrance examination is required by the program and develop this examination accordingly. PFC will conduct such an exam and evaluate it according to defined grading rubrics.

6. The Associate Vice Presidents and Deans responsible for the programs, in consultation with the PFC, will determine if applicants are required to submit a portfolio and develop the specifications based on program specific needs. The PFC will review the portfolio and evaluate it according to defined grading rubrics.

7. The Associate Vice Presidents and Deans responsible for the program will arrange the Comprehensive exam and/or portfolio review and will provide assessment and recommendation to the registrar.

8. The Associate Vice Presidents and Deans responsible for the programs will determine and communicate admission decisions to the Registrar.

9. The Registrar, or designate, is responsible for receiving applications, providing transcripts, updating and maintaining the program masters and admissions criteria on the Curriculum Records and SIS system.
10. The Registrar is responsible for the communication of information and admission decisions to applicants.

Procedure

1. Admissions staff communicates program information for selected programs for the new academic year to OCAS.

2. The Registrar's Office updates the SIS system with the relevant program information and detail records required to process applications that may come via OCAS or a Conestoga College Application Form.

3. Admissions staff process the OCAS and Conestoga College applications received.

4. Admissions staff requests academic background from applicants, if required, and forwards all information to Program Chair/Co-ordinator.

5. Program Chair/Co-ordinator contacts the applicant to discuss next steps based on the applicant's background.

6. If testing is required, Deans/Chairs provide the entrance examination to the Testing Centre and informs applicant. Test is returned to Chair/Co-ordinator upon completion.

7. If a Portfolio and/or interview is required, the Chair/Co-ordinator arranges an appointment with the applicant. Interviews are conducted through PFC.

8. Applicant writes an entrance examination if required.

9. Associate Vice President/Dean/Chair/Co-ordinator assesses the academic background, (and test results and/or the portfolio, if required) makes an admission decision and forwards the results to the Registrar's Office.

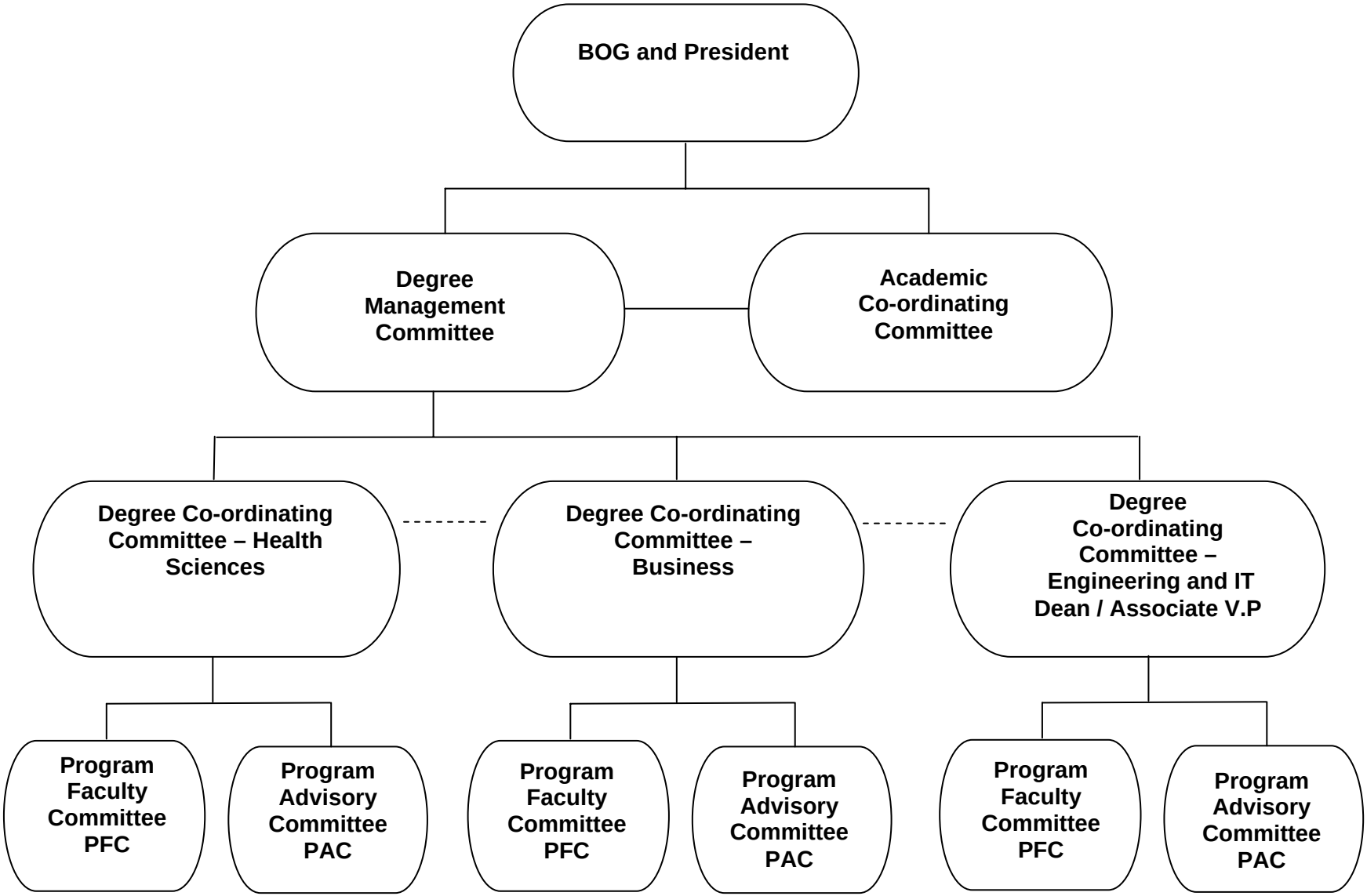
10. Admissions staff communicates the admission decisions to applicants. Admission will be conditional upon completion of the Program Bridging Module.

11. Accepted applicants wishing to attend Conestoga College Institute of Technology and Advanced Learning confirm their acceptance to the program and /or wait list.

12. Confirmed applicants are contacted by the Chair/Co-ordinator and informed that they must register in the Program Bridging Module courses.

13. Upon completion of the Program Bridging Module, advanced standing students may continue in the degree program subject to completing requirements such as co-op and liberal studies electives.

Degree Management Committee and Structure



Degree Management Committee

E. Dahlin	B.A.Sc., M.A.Sc., M.B.A., P.Eng. Associate Vice President, Business Development and Applied Research
M. Raasok	B.Sc.N., M.Sc.N., Reg.N. Associate Vice President, Health Sciences, Community Services and Bio Technology
C. Koch	B.A., M.Ed., C.A. Associate Vice President, Liberal and Media Studies.
M. McClements	B.A.Sc., M.B.A., P.Eng. Associate Vice President Engineering and Information Technology/Trades and Apprentice
J. Wadia Chair	B.Arch, M.Arch., ARIBA. Executive Director, Office of the VP Academic
F. Mensink	B.Math., M.B.A., C.A., C.G.A. Associate Vice President, School of Business

External Reviewers	
M. Zeytinouglu	Professor, Department of Electrical and Computer Engineering Ryerson University **Role:** External year end program review
G. Locker	Professor of Civil Engineering and Dean of Engineering, Lakehead University (retired) **Role:** External reviewer, Bridging Module

Appendix 5.2.2: Advanced Placement Policies

PLAR Prior Learning Assessment and Recognition

1. INTRODUCTION

This procedure describes the process to be used for Prior Learning Assessment and Recognition.[4]

2. SCOPE

This procedure applies to all students who wish to be assessed for credit for prior learning. It also applies to instructional personnel who may evaluate portfolios, tests, assignments to determine eligibility for college credits.

3. DEFINITIONS

None.

4. RESPONSIBILITIES

The overall responsibility for PLAR rests with the Dean/Director or designate of the School that has academic responsibility for the course the student is challenging. The PLAR Employee Handbook contains work instructions for all departments associated with the PLAR process

5. PROCEDURE

See Flow Chart for how a student goes through the PLAR process.

6. RELATED DOCUMENTATION

PLAR Handbook for Employees

7. QUALITY RECORDS

PLAR Registration Form
PLAR Grade Form

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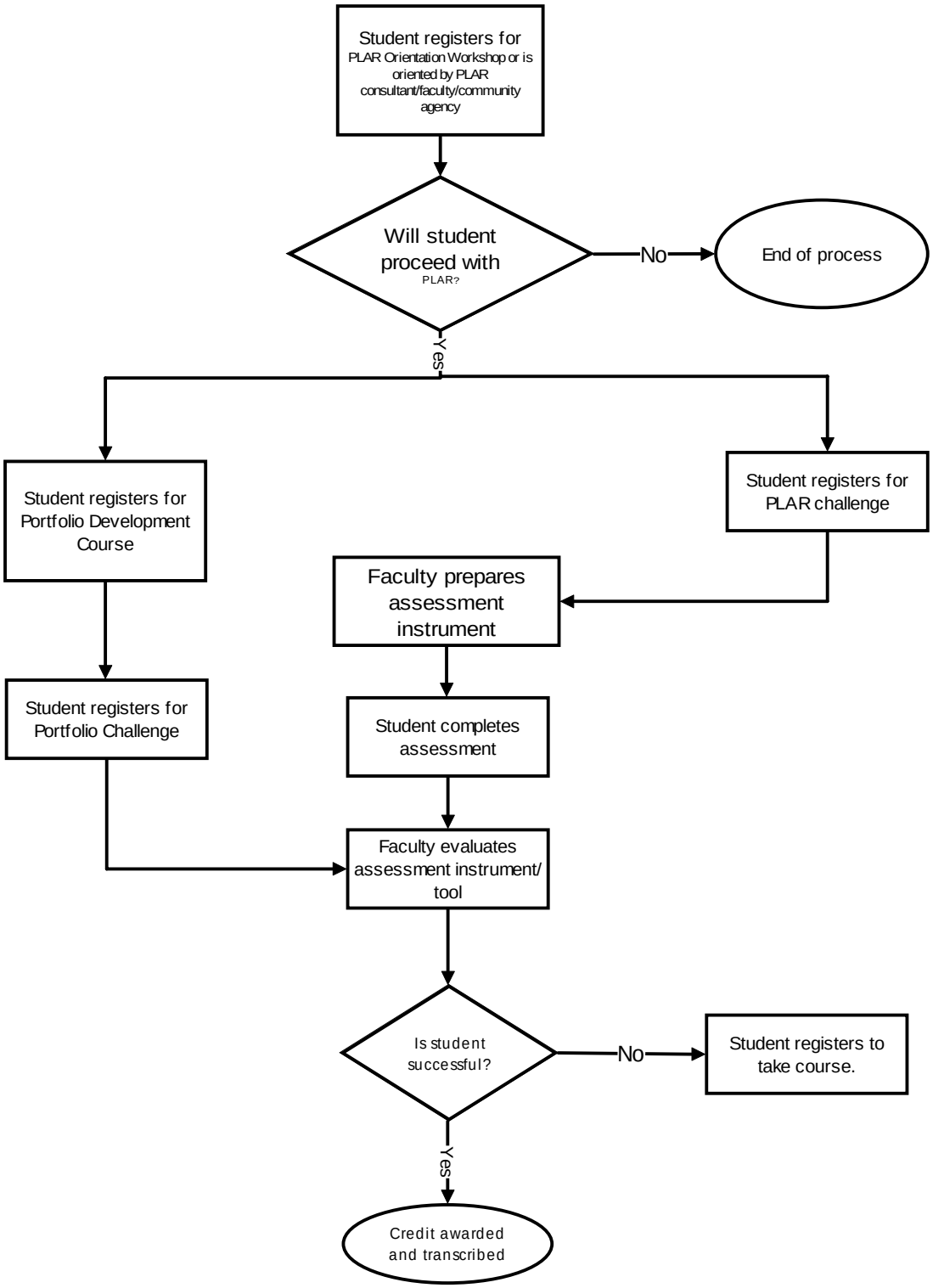
[4] PEQAB and/or other regulatory requirements may limit the application of the policy.


Student registers for PLAR Orientation Workshop or is oriented by PLAR consultant/faculty/community agency
Will student proceed with PLAR?
No
End of process
Yes
Student registers for Portfolio Development Course
Student registers for PLAR challenge
Faculty prepares assessment instrument
Student registers for Portfolio Challenge
Student completes assessment
Faculty evaluates assessment instrument/ tool
Is student successful?
No
Student registers to take course.
Yes
Credit awarded and transcribed

1. POLICY

Conestoga College recognizes that learning occurs in all aspects of life and not just in educational institutions.

Courses successfully completed in other post-secondary institutions will be recognized when appropriate documents are presented and equivalency is determined.

Responsibility for assessment and recognition of equivalency rests with the program academic team.

The management of this process includes the following documented College procedure.

2. PURPOSE

Advanced Standing, Exemptions and Transfer of Credits are granted to students when appropriate documentation is presented. The following terms describe the various methods a student can use to obtain advanced standing, exemptions or transfer credits.

3. SCOPE

This procedure provides guidelines for program coordinators/faculty to make decisions regarding a student's request for Advanced Standing, Exemptions and Transfer of Credits.

4. DEFINITIONS

Advanced Standing	The admission of a student into a program in a semester beyond semester one of that program based upon previous post-secondary learning and/or life and work experience.
Exemption	The waiving of a course for students who have proven they have comparable learning. Course learning outcomes will be the criteria for determining exemptions.
Comparable Learning	The learning outcomes of the course in question are equivalent to the course under review.
Equivalent Learning	The learning outcomes in one course are comparable to the learning outcomes in another course.
Transfer of Credit	The granting of course credits to students who have previously achieved the learning outcomes. This may be through learning achieved in any other post-secondary institution or another post-secondary program within Conestoga College, or through experiential learning (PLAR Credits). Transfer of credit is not granted to Information Technology (IT) courses completed more than two years previously. For all other courses the time limit is seven years, unless otherwise noted in the Program Data Pack under Admission Requirements.

	The maximum credit allowed through Transfer of Credits and PLAR is 50% of the program credits. Therefore, at least 50% of the program credits must be taken under the direct supervision of Conestoga College faculty.
Internal Transfer	The automatic transfer of credit(s) for a student that moves from one Conestoga program to another and where course numbers are identical. The grade that was given in the first instance is used.
External Transfer	The waiving of courses for which credit was completed at a recognized post-secondary institution other than Conestoga College and based on official transcripts and supporting documents showing course content and hours. The notation "G" is used for the grade.
Official Transcript	The Transcripts prepared by a University or College Registrar that contain the academic achievements of a student and which bare the official stamp of the educational institution

5. PROCEDURE

5.1 External Credits

5.1.1 Students submit official documents for external credits to the Program Coordinator.

5.1.2 The Program Coordinator makes a determination, completes the Application Exemption/Transfer Credit form and forwards it with the official documents to the Dean/Designate's office.

5.1.3 The Dean/Designate signs the form and forwards it with the official documents to the Registrar's Office.

5.1.4 The Dean/Designate of the School of Liberal Studies determines all non-specified general education credits and completes the Application Exemption/Transfer Credit form and forwards it with the official documents to the Registrar's Office.

5.2 Internal Transfer Credits

5.2.1 When a course number is identical, the Registrar's Office will give an automatic credit. The course grade from the original course will stand.

5.2.2 All other internal transfer credits are granted by the receiving program. Students submit an Application for Exemption/Transfer Credit form and the required documents to the Coordinator of the receiving program.

5.2.3 The Program Coordinator makes a determination, completes the Application for Exemption/Transfer Credit form and forwards it with the official documents to the Dean/Designate's office.

5.2.4 The Dean/Designate reviews and signs the form and forwards it with the official documents to the Registrar's Office.

5.2.5 The Dean/Designate of the School of Liberal Studies determines all non-specified general education credits and completes the Application for Exemption/Transfer Credit form and forwards it with the official documents to the Registrar's Office

Appendix 5.2.3: Degree Completion Arrangements

Admission Requirements –Transfer Credit & Credentials

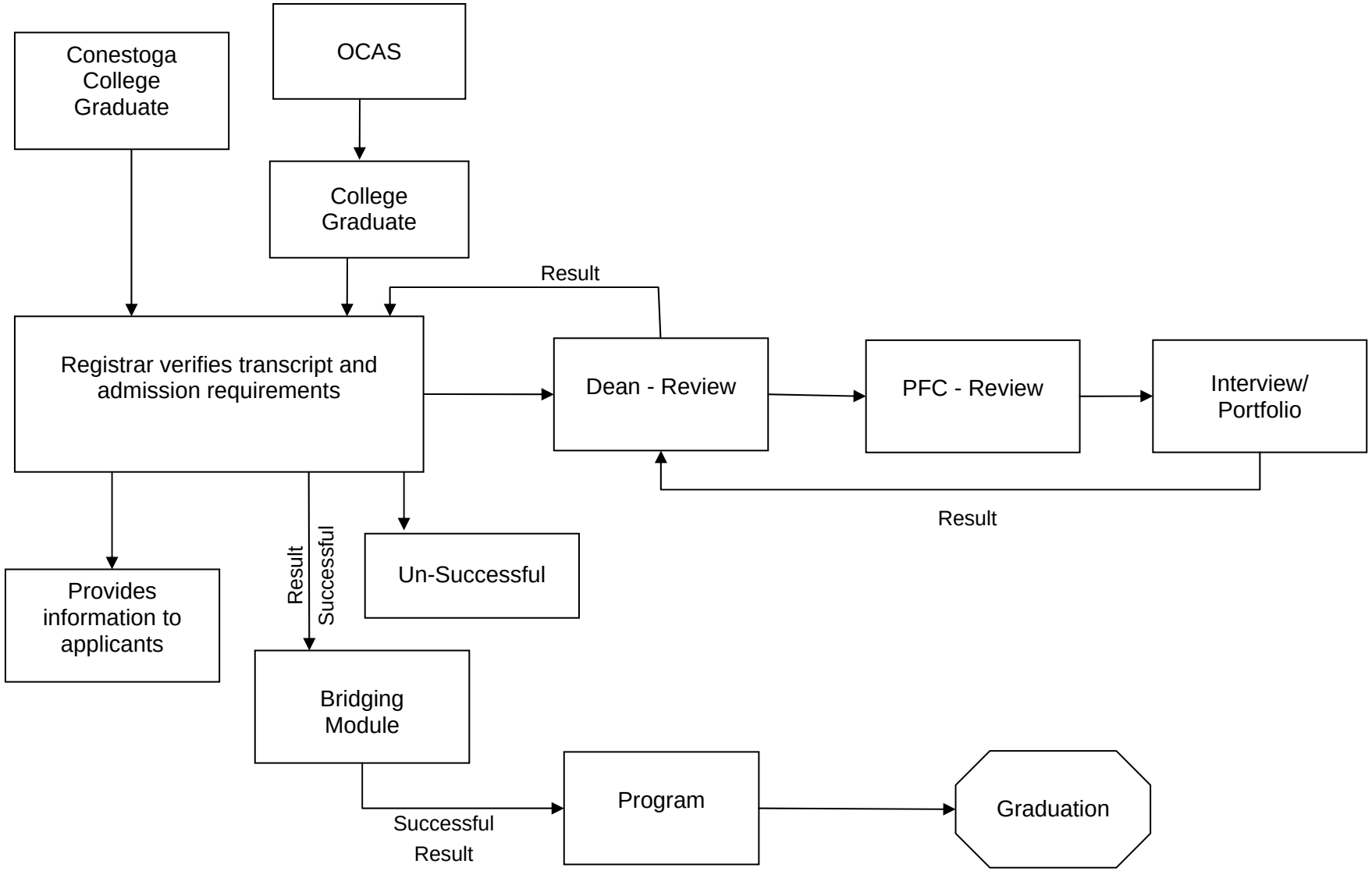
Degree Programs

The following admission requirements are for Entry in Degree Programs where a student is applying for entry in to other than the First Year of the college degree program after graduating from a three year CAAT program having an Affinity to the program.

	College Admission Requirements*	**Integrated Telecommunications and Computer Technologies**
Academic	Graduates of three year CAAT diploma program with program affinity are eligible for application. Applicants from articulated and non-articulated programs will have a minimum grade point B (70%) average to qualify for admission to the Program Bridging Module. Applicants from articulated programs will be granted advanced standing based on the program articulation map. Applicants from non-articulated programs will be granted advanced standing based on individual assessment of the credentials. No more than 50% of the total number of credits/hours will be based on prior learning assessment and/or advanced standing. No credits will be given for life experience and the final thesis or capstone project. Applicant will be required to successfully complete Program Bridging Module prior to	Applicants will be required to present a portfolio as per the Program Bridging Module Guidelines Applicants will be required to attend an interview of 30 minutes with an interview committee comprising of program faculty, senior student and administration. The role of the senior student will be assisting the applicant in making educated decisions. Applicants from an articulated 3 year CAAT diploma program will be required to complete a project (54 hours), courses 1-4 (see below) prior to entering 5th semester of the degree program and courses 5-7 prior to entering 8th semester of the degree program: 1. Embedded Systems - 42 hours 2. Digital Signal Processing – 36 hours 3. Process Control – 36 hours 4. Operating Systems – 42 hours Total 1-4: 156 hrs 5. Project Management - 20 hours 6. Group Dynamics -30 hours 7. Business Foundations - 45 hours Total 5-7: 95 hrs Transfer Credit students will be required to complete minimum two work terms prior to graduating from the degree program.

	attending the regular semester. (Please refer to the Program Bridging Module Requirements).	
Related work/volunteer /travel experience	College considers other factors as well as grades. All qualified applicants will be sent an Applied Degree Admission Information Form that must be completed. Preference will be given to applicants who have had international experience through travel, work or residency. This form is also used for making appropriate fine tuning of the bridging module. These factors complement the academic requirements stated above.	
Other (e.g., portfolio, specialized testing, interview, G.R.E., etc.)	Applicants for transfer credit will be required to attend an interview. Applicants will be required to submit a portfolio/project as required by individual program for evaluation at the time of the interview.	
Admission Procedures	Applicants submit a completed Ontario College Application form to the Ontario College Application Service (OCAS) if they are not Conestoga students. Prior Conestoga Students submit a completed Conestoga Application form with required transcripts. Academic strength is calculated by averaging marks from the three years of grades.	

Transfer Credit Application Flowchart



Appendix 5.2.4: Gap Analysis

While reviewing this table please refer to the following two sets of affinity program outcomes shown on the next two pages

No	Current ITCT Degree Program Outcomes Gap Analysis	Electronics Engineering Technology Outcomes met #	Computer Engineering Technology Outcomes met #
1	Apply scientific and engineering information to creatively transform ideas and concepts into a product definition that will satisfy quality standards and customer requirements.	2,4,7 to 11,13,12	All
2	Evaluate, refine and solve engineering problems requiring the exercise of sound technical judgments and knowledge of engineering principles and practices.	4,7to 11,13,16	1p,3,4,7
3	Determine the need for and conduct research to design and conduct experiments to solve complex electrical/electronic problems.	2	
4	Design, develop, test, configure and maintain electronic systems by the application of both digital and analog techniques using a variety of electronic instruments.	3p,7to 11,13	4,5,6
5	Interface computer hardware, software and electronic instrumentation into totally integrated systems to provide solutions to a variety of communication systems problems.		
6	Design, model and analyze systems that transmit, receive and process electromagnetic waves via various transmission media.	12	
7	Design, construct and analyze wired and wireless network systems and their components.	12	2
8	Select, configure and connect control devices and measurement mechanisms to monitor, control and troubleshoot manufacturing processes.	6p,15	
9	Integrate engineering skills and knowledge with current business strategies to provide cost-effective and economically sound solutions to product realization problems.		9
10	Adhere to professional, ethical and legal codes of practice and comply with industrial, labour and environmental legislation.	17p	8
11	Apply concepts of human relations and organizational behaviour to establish and maintain effective working teams.		
12	Demonstrate leadership skills while working with diverse teams.		
13	Communicate effectively and persuasively through oral, graphic, or print media.	1	9
14	Understand, value and respect cultural diversity in global, societal, economical, and environmental contexts.		
15	Develop and activate plans for lifelong learning and professional development to maintain technological currency.	17p	8p

Synopsis of the Vocational Learning Outcomes
Computer Engineering Technology Programs

The graduate has reliably demonstrated the ability to

1. diagnose, solve, troubleshoot, and document technical problems involving computing devices using appropriate methodologies.
2. integrate multiple software and hardware components using appropriate network architecture.
3. participate in analyzing, planning, designing, and developing the architecture of computing devices and systems.
4. plan, install, configure, modify, test, and maintain a variety of computer systems to meet functional requirements.
5. apply principles of digital and analog circuits to the implementation of embedded computing devices.
6. analyze, build, test, implement, and maintain applications.
7. evaluate and document security issues associated with a variety of computing devices and propose alternatives to increase product reliability.
8. articulate, defend, and conform to workplace expectations found in technology environments.
9. contribute to the successful completion of the project applying the project management principles in use.

Synopsis of the Vocational Learning Outcomes
Electronics Engineering Technology Programs

The graduate has reliably demonstrated the ability to

1. communicate information effectively, credibly, and accurately by analyzing, interpreting, and producing electrical and electronics drawings and other related documents and graphics.
2. apply the principles of advanced mathematics* and science to analyze* and solve complex technical problems related to electronics engineering.
3. select and use a variety of troubleshooting techniques and test equipment to assess electronics circuits, equipment, systems, and subsystems.
4. design, build, troubleshoot* working prototypes of electronics circuits, equipment, systems, and subsystems to meet job requirements,* functional specifications,* and relevant standards.
5. modify, maintain and repair electronics equipment and systems to ensure that they function properly.
6. select for purchase electronics equipment, components, and systems that fulfill the job requirements* and functional specifications.*
7. design, analyze,* and troubleshoot* logic and digital circuits.
8. design, analyze,* and troubleshoot* passive ac and dc circuits.
9. design, analyze,* and troubleshoot* active circuits.
10. design, analyze,* and troubleshoot* microprocessor*-based systems.
11. design, analyze,* and troubleshoot* control systems.
12. design, analyze,* and troubleshoot* communication systems.
13. develop and use computer programs to support electronics engineering.
14. apply knowledge of basic shop practices to electronics engineering workplaces.
15. assist in the specifying, coordinating, and conducting of quality control and quality assurance programs and procedures.
16. prepare and maintain records and documentation.
17. complete all work in compliance with relevant law, policies, procedures, regulations, and ethical principles.

Appendix 5.2.5: Bridging Courses

The Bridging Module:

This bridging module is designed for those applicants to the programme who meet the academic criteria listed in the section Programme Admission Requirements – Transfer Credit.

Qualified candidates will engage in the following process and will be required to successfully complete three phases of the Bridging Module.

Phase 1

Interview / Portfolio Review

This includes a review of applicant's experience and an interview of 30 minutes with the interview committee consisting of faculty, administration and a senior student.

Phase 2

Bridging Projects and Bridging Lectures

This module includes:

- Bridging Module Project - 54 hours
- Bridging Module Lectures - 156 hours

Phase 3

Foundational Coursework in Particular Areas of the first two year of the ITCT Programme

This includes:

- Project Management and Methods – 20 hours **(Current 1st year Degree course, Course Outline provided with original proposal)**
- Group Dynamics – 30 hours - (**Current 2nd year Degree course, Course Outline provided with original proposal)**
- Business Foundations – 45 hours - (**Current 2nd year Degree course, Course Outline provided with original proposal)**

Phase 1. Interview/Experience Review

a) Goals:

The goals of the Interview/Experience Review phase of the Admissions process are to provide applicants with a venue through which they may:

- meet with faculty and students of the programme
- clarify any questions regarding the programme
- demonstrate the particular nature of their interest in and suitability for the programme through discussion and review of their previous work and interests (extra-curricular, academic and professional, for example previous software and hardware design exercises)

b) Process:

As a condition of acceptance to the Bridging Studio and Bridging Lectures, each applicant will participate in an interview and review of his/her portfolio.

The interview/portfolio review of each applicant seeking advanced standing in the programme will take place over a designated period of time. Applicants seeking advanced standing will be advised of the particular schedule prior to the designated time. Applicants will also have the opportunity to review the ITCT facilities in the form of an ‘open-house’, where applicants may review the Studio environment and engage in informal discussions with senior students of the programme.

c) Requirements:

During their scheduled Interview/Portfolio Review session, the applicant will:

1. Participate in a 30-minute individual interview with two faculty members, one administrator and one student of the ITCT programme. The purpose of the interview is to engage the applicant in discussion about their background and interest in the programme through a review of their portfolio.

2. The candidate will complete a brief questionnaire outlining their curricular and extra-curricular background. This questionnaire will allow applicants to augment or highlight information provided during the interview and portfolio review process.

3. Provide a portfolio of work for discussion illustrating his/her work and interests.

   The content of the portfolio should be selected and formatted so as to enable the applicant to present particular interests and experiences which have led him/her to make an application to the programme, and demonstrate particular skills which will be of use in the work in the programme.

Phase 2. Bridging Project and Bridging Lectures

a) Goals:

The goals of the Bridging Project and Bridging Lectures phase of the process are to provide applicants with a venue through which they may:

- acquire exposure to / experience in the team-based and project-based learning structure of the programme
- demonstrate their ability to succeed in an advanced standing position within the programme
- receive discrete instruction in particular aspects of the programme
- identify with faculty areas requiring additional upgrading and address same through self-directed learning strategies

b) Process:

Applicants who are successful in Phase 1 of the Bridging Module, will participate in an intensive session of work in which they will receive discrete lectures and apply their skills in the team development of a Bridging Module project of 54 hours of classroom studies and a Lecture Series of 156 hours (refer to course outlines).

As a condition of advanced standing for acceptance to other than Semester 1 of the ITCT programme, each applicant will develop the Project during the 54 hour project module and participate in all of the Lectures in the 156 hour Series. Applicants may be required to complete assigned work including projects, case studies, field trips and presentations.

The Bridging Module Project and Lectures will take place during a designated period of time and must be successfully completed prior to admission into an advanced standing position within the programme.

c) Requirements:

During Bridging Module Project and Lectures phase, the applicant will:

1. Attend the Bridging Module Lectures to supplement their experience and education to date.

2. Apply skills toward a project-based learning approach to the Bridging Module Project.

3. Work in student teams to complete and present the Bridging Module Project.

Phase 3. Foundational Coursework in Particular Areas of the ITCT Programme

a) Goals

The goals of the third phase of the Bridging Module are to ensure all students are versed in foundational prerequisite curricula which are specific and particular to the ITCT programme.

b) Process

Applicants will be required to successfully complete the required coursework prior to the completion of their second year of residency in the programme. The candidate will be assigned a probationary status until completion of the coursework. Probationary status will be removed upon successful completion of this phase. Required coursework will include the following three courses and may include additional coursework subject to the results of phase two requirements.

(Subject to availability of course offerings, applicants may complete the foundational coursework at any time during their application process.)

c) Requirements

Foundational course work includes the following three courses at a minimum:

• Project Management Methods and Tools - 20 Hours

• Group Dynamics – 30 Hours

• Business Foundations – 45 Hours

Successful completion of all phases of the Bridging Module is a condition of attaining non-probationary status in the ITCT programme.

Bridging Course Title: Embedded Systems

Years of Study 2 **Semester** Bridge **Course Ref #:** equiv to EECE2390

Course/Subject Description:

The system level design, programming and testing of embedded systems. Working from a system specification, the hardware/firmware implementation of real-time embedded control systems and digital signal processing systems are examined.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☐	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify
☐	Clinical Practicum		

Learning Outcomes/Topics:

- Apply a systematic methodology to the design, prototyping and implementation of the hardware for a real-time embedded control system.
- Use software engineering principles to design, write and test the software for a real-time embedded control system.
- Design interface hardware and software to sense, display, command and control simple engineering processes.
- Select appropriate cpu, memory devices, and input/output (I/O) subsystems for specific design problems.
- Design, capture, and layout printed circuit boards using industry standard tools (such as ORCAD)
- Evaluate, select and use appropriate development tools for embedded systems, such as in-circuit emulators, compilers, assemblers and linkers.
- Assess the benefits of current implementation technologies (processors, controllers) and current design technologies (compilers, simulators, synthesis tools) with respect to specific design problems.
- Design, implement and debug a 16 or 32-bit controller with external memory, busses and I/O sub-systems.
- Design and implement and debug complex, multi layer printed circuit boards (PCB) with an emphasis on noise reduction, power distribution and thermal requirements.
- Examine the design issues involved in multiprocessor communications and architecture, such as cache coherency and shared memory design.
- Examine and implement the hardware and timing requirements required by a real-time kernel.

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce

material which students further investigate through research projects and assignments.

Actual Contact Hours: 42 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☐	Demonstrations
☒	Assignments	☒	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students:

Embedded controller hardware kit.

Textbook Requirements:

The HCS12/9S12: Introduction to Software & Hardware Interfacing (Huang)

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course
Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular ITCT homeroom.

Equipment Requirements

Regular ITCT homeroom, as existing.

Bridging Course Title: Digital Signal Processing

Years of Study 2 **Semester** Bridge **Course Ref #:** equiv to EECE2420

Course/Subject Description:

The design, programming, testing and evaluation of digital signal processing systems and their algorithms capable of performing signal filtering operations.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☒	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify
☐	Clinical Practicum		

Learning Outcomes/Topics:

- Demonstrate the mathematics necessary to analyze periodic and non-periodic signals in the time domain and in the frequency domain.
- Select and use routines to obtain parameters necessary for digital signal processing. e.g. coefficients for IIR and FIR filters, FFT, etc.
- Use mathematical analysis and modeling software to implement digital signal processing components and systems.
- Investigate the stability of DSP systems using analysis software.
- Specify, design, implement and test FIR and IIR filters for real world applications in telecommunications.
- Examine the differences in CPU architecture between general purpose processors and those targeted for DSP applications.
- Investigate the use of DSP systems for other telecommunications applications.
- Use transforms to solve complex differential equations used in DSP algorithms.
- Explain filter specifications such as: ripple, frequency response, attenuation, distortion and noise.

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce material which students further investigate through research projects and assignments.

Actual Contact Hours: 36 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☒	Demonstrations
☒	Assignments	☒	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students:

Textbook Requirements:

Understanding Digital Signal Processing 2nd Edition, Lyons. (Prentice Hall)

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course

Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular ITCT homeroom.

Equipment Requirements

Regular ITCT homeroom.

Bridging Course Title: Process Control

Years of Study 2 **Semester** Bridge **Course Ref #:** equiv to CNTR2090

Course/Subject Description:

The design, implementation, testing and evaluation of industrial process control systems. Topics include sensor technology, the science of measurement, signal conditioning, analog and digital controllers, and actuator technology.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☐	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify
☐	Clinical Practicum		

Learning Outcomes/Topics:

- Model and evaluate the system interaction and response of open loop and closed loop control systems.
- Match the elemental characteristics of any required thermal, mechanical and optical transducers to the overall system requirements of an industrial process control or monitoring system.
- Specify and implement appropriate signal conversions (analog, digital, pneumatic, hydraulic) and actuators (electrical, pneumatic, hydraulic) that can translate low level energy control signals into a level of action proportional with the process under control.
- Compare and contrast discontinuous (two-position, multi-position, floating point) and continuous (proportional-integral, proportional-derivative, three-mode) control modes.
- Use Laplace transforms to determine the transient response of a system, and Fourier series and transforms to determine the frequency-domain response of a system.
- Design, implement and analyze the basic elements of a process control loop using electronic analog techniques.
- Design, implement and analyze the basic elements of a process control loop using an embedded controller.
- Compare, contrast, specify and use image-processing algorithms used for object recognition

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce material which students further investigate through research projects and assignments.

Actual Contact Hours: 36 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☒	Demonstrations
☒	Assignments	☒	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students:

None.

Textbook Requirements:

Modern Control Technology, Kilian 3rd Edition (Thomson)

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course

Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular ITCT homeroom.

Equipment Requirements

Regular ITCT homeroom.

Bridging Course Title: Operating Systems

Years of Study 2 **Semester** Bridge **Course Ref #:** equiv to INFO 2150

Course/Subject Description:

An in-depth study of the organization of operating systems for various computer platforms. Aspects of programming covered include process scheduling, process synchronization, multi-process computation, deadlock avoidance, file system organization and security.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☒	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify
☐	Clinical Practicum		

Learning Outcomes/Topics:

- Compare and contrast the role of operating systems in various commercial computer systems.
- Compare, evaluate and demonstrate techniques used for process and thread creation, communications and synchronization, in both single and multiple processor configurations
- Compare, evaluate and demonstrate techniques used for storage management.
- Compare, evaluate and demonstrate techniques used for resource and I/O management.
- Design and program both user applications and system level programs using operating system constructs.
- Compare the design, implementation and resource requirements of soft and hard real-time systems.

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce material which students further investigate through research projects and assignments.

Actual Contact Hours: 42 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☒	Demonstrations
☒	Assignments	☒	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students:

None.

Textbook Requirements:

Operating System Concepts, 7th Edition, Silberschatz, Galvin and Gagne. Wiley

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course

Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular ITCT homeroom.

Equipment Requirements

Regular ITCT homeroom.

Foundational Course Title: Project Management Methods and Tools

Years of Study 1 **Semester** 1 / 2 (Fall/Winter) **Course Ref #:** MGMT 1320/1440

Course/Subject Description:

The preparation of electronics professionals to work as part of an engineering team. The practical skills that encourage teamwork and enable creative problem solving, efficient engineering design and successful project management are emphasized.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☐	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify
☐	Clinical Practicum		

Learning Outcomes/Topics:

- Demonstrate an understanding of the history, importance and overall processes of project management.
- Apply project scope management techniques to ensure the scope of projects is effectively managed.
- Create project schedules to ensure project timelines are effectively managed.
- Discuss the importance of project cost management to ensure project budgets are effectively managed.
- Assess project stakeholder needs in order to develop effective project communications.
- Develop an appreciation for project risk management to ensure that project risks are effectively managed.
- Develop project human resources management approaches to ensure that project team members perform effectively.
- Discuss the importance of other project management topics including project quality management and project procurement management.

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce material which students further investigate through research projects and assignments.

Actual Contact Hours: 20 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☐	Demonstrations
☒	Assignments	☐	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students:

None.

Textbook Requirements:

Schwalbe, Kathy, Information Technology Project Management, Fourth Edition, Thomson Course Technology, ISBN 619-21526-7

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course

Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular ITCT homeroom.

Equipment Requirements

Regular ITCT homeroom.

Foundational Course Title: Interpersonal Conflict Management

Years of Study 2 **Semester** Fall **Course Ref #:** LIBS7180

Course/Subject Description:

Without exception, any relationship of any depth has conflict, and conflict will not go away simply because individuals are reluctant to deal with it. Conflict can be regarded as a negative force to be avoided or controlled, or it can be seen as an opportunity for strengthening relationships, self-awareness and development. The course will examine the many factors that contribute to interpersonal conflict, and discuss appropriate skills and strategies to manage conflict effectively.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☐	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify
☐	Clinical Practicum		

Learning Outcomes/Topics:

- Discuss the nature of conflict.
- Analyze several personal approaches to identifying and resolving conflict
- Describe the process of clarifying goals in managing conflict
- Describe the process of managing power in conflict
- Apply various communications techniques to resolve conflict situations
- Compare various conflict tactics and styles
- Apply collaborative and competitive tactics for bargaining and negotiation
- Discuss third party interventions in managing conflict
- Discuss the role of forgiveness and reconciliation in resolving conflict

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce material which students further investigate through research projects and assignments.

Actual Contact Hours: 30 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☐	Demonstrations
☒	Assignments	☐	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students:

None.

Textbook Requirements:

Class notes provided by instructor.

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course

Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular classroom

Equipment Requirements

None.

Foundational Course Title: Business Foundations

Years of Study 2 **Semester** Winter **Course Ref #:** BUS 2060

Course/Subject Description:

This is a survey course of business functions for students in the Integrated Telecommunication and Computer Technologies program. Topics will include basic financial accounting, finance, marketing, organizational behaviour, and strategic planning.

Method(s) of Instruction

☐	Electronic/On-line	☐	Video Conference
☒	Lab	☐	Workshop
☒	Lecture	☐	Case Study
☐	Satellite Delivery	☐	Field Trips
☐	Seminar	☐	Software Applications
☐	Small Group Tutorial	☐	Other (please Specify

Learning Outcomes/Topics:

1. Recognize and employ financial accounting terminology as reflected in the accounting equation.
2. Calculate the value of ending inventory, cost of the goods sold, and the economic order quantity for inventory.
3. Identify the costs and appropriate categories of long-term assets like patents, copyrights, and trademarks.
4. Use the basic tools of financial analysis to analyze the profitability of the corporation from an external point of view.
5. Prepare a detailed cash budget.
6. Apply and use capital budgeting techniques used to evaluate investment in long term assets.
7. Evaluate and contrast the lease versus purchase decision.
8. Prepare a marketing plan to launch a new product.
9. Discuss how effective financial and strategic planning contributes to the value of the corporation.
10. Explain the significance of conflict and develop strategies to manage conflict.
11. Describe the factors that influence individual behaviour and performance.
12. Explain the leading theories of motivation and apply them to improve employee productivity.
13. Contrast various leadership models to determine an effective leadership style.
14. Determine the best organizational structure given various organizational types and sizes.

15. Identify the forces which bring change to the organization and strategies to deal effectively with those changes.
16. Explain how the study of organizational behaviour can influence the effectiveness of an organization.
17. Explain the elements of organizational structure including span of control, centralization vs. decentralization, formalization and departmentalization (including functional, divisional, matrix and team based).

Describe how the delivery mode(s) facilitates(s) learning to meet the learning outcomes of each course: lectures and assignments compliment each other. The lectures introduce material which students further investigate through research projects and assignments.

Actual Contact Hours: 45 hours

Method(s) and Frequency of Evaluation of Student Performance

☒	Tests/Quizzes	☐	Demonstrations
☒	Assignments	☐	Presentations
☐	Examinations	☒	Project Evaluation
☐	Clinical Evaluation		

Resources to be purchased/provided by students: None.

Textbook Requirements: Class notes provided by instructor.

Information about course designer/developer

☒ Course Designed by Faculty Eligible to Teach this course

☐ Course Designed by Other.

Faculty qualified to teach the course and/or statement "faculty to be hired"

Faculty on staff

If the method of instruction includes on-line delivery (technology based, computer-based and web-based), what percentage of the course content will be offered on-line?

0 % (If greater than zero, complete Appendix 6.5.3)

Faculty qualifications required to teach/supervise the course

Minimum Masters Degree plus Relevant Experience, Ph.D. Preferred

Classroom/Lab Requirements

Regular Classroom

Equipment Requirements None.

Appendix 6.3.2: Course Descriptions

Course Name ELECTRICAL FOUNDATIONS – A (2006 - 2007)
And Code ELEC1160
Course Description

The development of foundation skills and knowledge in electrical theories, circuit design utilizing passive components under dc, switched dc and ac conditions, ac sinusoidal sources and measurement, and common measuring instruments.

Course Name ELECTRONIC FOUNDATIONS – A (2006 - 2007)
And Code ELCN1030
Course Description

An introduction to electronic devices and their applications. The analysis, design, building and testing of circuits that incorporate electronic devices wired to perform amplification, processing and generation of signals.

Course Name SCIENCE OF ENGINEERING - A (2006 - 2007)
And Code SCIE1230
Course Description

An examination of physics, chemistry and biology as a foundation of engineering. Their application to engineering problems is explored.

Course Name ENGINEERING DESIGN & MANUFACTURING PRINCIPLES - A (2006 - 2007)
And Code MANU1010
Course Description

The principles of engineering design and the problem solving process. Current technologies and techniques used to manufacture electronic circuits, systems and single layer printed circuit boards are covered.

Course Name APPLIED MATHEMATICS FOR ELECTRICAL FOUNDATIONS – A (2006 - 2007)
And Code MATH1610
Course Description

The application of selected algebraic, trigonometric and basic statistical principles and methods to the design and analysis of electrical and electronic circuits.

Course Name DIGITAL FOUNDATIONS - A (2006 - 2007)
And Code EECE1370
Course Description

The design of combinational and sequential logic circuits, the construction and troubleshooting of simple and complex digital circuits, and the interfacing of digital and analog signals and devices.

Course Name SOFTWARE ENGINEERING PRINCIPLES - A (2006 - 2007)
And Code SENG1020
Course Description
The application of various software life cycle models to the design, formal specification, architecture, testing, validation and verification of diverse computational problems. Issues in software quality assurance and software maintenance are also explored. Emphasis is placed on problems more appropriate for procedural programming languages.

Course Name MICROPROCESSOR SYSTEMS - A (2006 - 2007)
And Code EECE1390
Course Description
An exploration of the architecture, capabilities and programming of various microprocessor families. Various computational and control problems are solved using a combination of hardware and software solutions.

Course Name APPLIED MATHEMATICS FOR DIGITAL FOUNDATIONS - A (2006 - 2007)
And Code MATH1590
Course Description
The introduction of numbering systems, binary arithmetic and the application of Boolean algebra and related mapping techniques to the design and analysis of digital and microprocessor circuits.

Course Name ENGINEERING PROJECT I (2006 - 2007)
And Code EECE1340
Course Description

The design, implementation and evaluation of several individual and group projects that integrate the fundamental electrical and electronic knowledge and skills learned this semester. Appropriate problem solving, communication and time management skills are emphasized.

Course Name STYLE IN SCIENTIFIC AND TECHNICAL WRITING (2006 - 2007)
And Code COMM1340
Course Description

This course will prepare students to communicate technical information effectively in the field of computer and telecommunications technologies. Students will study the technical communication theory/practice and apply the knowledge to creating, critiquing, and presenting technical documents including summaries, descriptions, instructions, and memoranda/letters.

Course Name PROJECT MANAGEMENT AND METHODS - A (2006 - 2007)
And Code MGMT1320
Course Description

The preparation of electronics professionals to work as part of an engineering team. The practical skills that encourage teamwork and enable creative problem solving, efficient engineering design and successful project management are emphasized.

Course Name SCIENCE, TECHNOLOGY AND SOCIETY (2006 - 2007)
And Code LIBS7040
Course Description
This theme-based course aims to provide an understanding of the historical, social, economic and political context within which scientific and technological advancement takes place. Innovation is a social product, often an expression of current ideology or a response to a social need. Conversely technological and scientific innovation can transform the structure of society, its value system and institutions. Through a series of lectures, guest speakers and student-centred activities, this course will assess the impact, the benefits, consequences and implications of the inter-relationship between society and science and technology.

Course Name ELECTRICAL FOUNDATIONS - B (2006 - 2007)
And Code ELEC1170
Course Description
The development of foundation skills and knowledge in electrical theories, circuit design utilizing passive components under dc, switched dc and ac conditions, ac sinusoidal sources and measurement, and common measuring instruments.

Course Name ELECTRONIC FOUNDATIONS - B (2006 - 2007)
And Code ELCN1040
Course Description
An introduction to electronic devices and their applications. The analysis, design, building and testing of circuits that incorporate electronic devices wired to perform amplification, processing and generation of signals.

Course Name SCIENCE OF ENGINEERING - B (2006 - 2007)
And Code SCIE1240
Course Description
An examination of physics, chemistry and biology as a foundation of engineering. Their application to engineering problems is explored.

Course Name ENGINEERING DESIGN & MANUFACTURING PRINCIPLES - B (2006 - 2007)
And Code MANU1130
Course Description
The principles of engineering design and the problem solving process. Current technologies and techniques used to manufacture electronic circuits, systems and single layer printed circuit boards are covered.

Course Name APPLIED MATHEMATICS FOR ELECTRICAL FOUNDATIONS - B (2006 - 2007)
And Code MATH1620
Course Description
The application of selected algebraic, trigonometric and basic statistical principles and methods to the design and analysis of electrical and electronic circuits.

Course Name DIGITAL FOUNDATIONS - B (2006 - 2007)
And Code EECE1380
Course Description
The design of combinational and sequential logic circuits, the construction and troubleshooting of simple and complex digital circuits, and the interfacing of digital and analog signals and devices.

Course Name SOFTWARE ENGINEERING PRINCIPLES - B (2006 - 2007)
And Code SENG1030
Course Description
The application of various software life cycle models to the design, formal specification, architecture, testing, validation and verification of diverse computational problems. Issues in software quality assurance and software maintenance are also explored. Emphasis is placed on problems more appropriate for procedural programming languages.

Course Name MICROPROCESSOR SYSTEMS - B (2006 - 2007)
And Code EECE1400
Course Description
An exploration of the architecture, capabilities and programming of various microprocessor families. Various computational and control problems are solved using a combination of hardware and software solutions.

Course Name APPLIED MATHEMATICS FOR DIGITAL FOUNDATIONS - B (2006 - 2007)
And Code MATH1600
Course Description
The introduction of numbering systems, binary arithmetic and the application of Boolean algebra and related mapping techniques to the design and analysis of digital and microprocessor circuits.

Course Name ENGINEERING PROJECT II (2006 - 2007)
And Code EECE 1350
Course Description
The design, implementation and evaluation of several individual and group projects that integrate the fundamental digital and computing knowledge and skills learned this semester. Appropriate problem solving, communication and time management skills are emphasized.

Course Name STYLE IN SCIENTIFIC AND TECHNICAL WRITING II (2006 - 2007)
And Code COMM1350
Course Description
This course will prepare students to communicate technical information effectively in the field of computer and telecommunications technologies. It will reinforce the knowledge and skills acquired in COMM1340 about technical communication theory/practice and prepare students to apply them to creating technical reports and longer technical messages. Students will also develop analytical, collaborative, problem-solving, and oral presentation skills through assigned projects.

Course Name PROJECT MANAGEMENT AND METHODS - A (2006 - 2007)
And Code MGMT1440
Course Description
The preparation of electronics professionals to work as part of an engineering team. The practical skills that encourage teamwork and enable creative problem solving, efficient engineering design and successful project management are emphasized.

Course Name TELECOMMUNICATIONS FOUNDATIONS (2006 - 2007)
And Code TCOM2050
Course Description
An introduction to modern telecommunications including the electromagnetic spectrum, basic components of communication systems, and both analog and digital modulation and demodulation techniques.

Course Name PHYSICS OF SIGNAL TRANSMISSION (2006 - 2007)
And Code PHYS1070
Course Description
An examination of the transmission of mechanical waves, electromagnetic waves and electric signals in various media. Signal transmission and wave propagation are studied.

Course Name SIGNAL PROCESSING (2006 - 2007)
And Code EECE2430
Course Description
An exploration of the techniques used to condition information for its optimal transmission in both analog and digital formats.

Course Name ELECTRONICS DESIGN FOR THE REAL WORLD (2006 - 2007)
And Code MANU2030
Course Description

An examination of the legal, socio-economic and ethical issues that impact the design and manufacture of electronic equipment and systems.

Course Name APPLIED MATHEMATICS FOR TELECOMMUNICATIONS FOUNDATIONS (2006 - 2007)
And Code MATH2300
Course Description
The application of selected calculus, analytic geometry, probability and statistical principles and methods to the design and analysis of telecommunication circuits.

Course Name ENGINEERING PROJECT III (2006 - 2007)
And Code EECE2400
Course Description
The design, implementation and evaluation of several individual and group projects that integrate the fundamental telecommunications knowledge and skills learned this semester. Appropriate problem solving, communication and time management skills are emphasized.

Course Name PROCESS CONTROL (2006 - 2007)
And Code CNTR2090
Course Description
The design, implementation, testing and evaluation of industrial process control systems. Topics include sensor technology, the science of measurement; signal conditioning, analog and digital controllers, and actuator technology.

Course Name OPERATING SYSTEMS(2006 - 2007)
And Code INFO2150
Course Description
An in-depth study of the organization of operating systems for various computer platforms. Aspects of programming covered include process scheduling, process synchronization, multi-process computation, deadlock avoidance, file system organization and security.

Course Name PROJECT MANAGEMENT AND METHODS - A (2006 - 2007)
And Code MGMT1440
Course Description
The preparation of electronics professionals to work as part of an engineering team. The practical skills that encourage teamwork and enable creative problem solving, efficient engineering design and successful project management are emphasized.

Course Name EMBEDDED SYSTEMS (2006 - 2007)
And Code EECE2390
Course Description
The system level design, programming and testing of embedded systems. Working from a system specification, the hardware/firmware implementation of real-time embedded control systems and digital signal processing systems are examined.

Course Name DIGITAL SIGNAL PROCESSING (2006 - 2007)
Course Description

The design, programming, testing and evaluation of digital signal processing systems and their algorithms capable of performing signal filtering operations.

Course Name APPLIED MATHEMATICS FOR PROCESS CONTROL (2006 - 2007)
And Code MATH2230
Course Description
The application of selected calculus, series and transform principles and methods to the design and analysis of process control and digital signal processing circuits.

Course Name ENGINEERING PROJECT IV (2006 - 2007)
And Code EECE2410
Course Description
The design, implementation and evaluation of several individual and group projects that integrate the fundamental technical knowledge and skills learned in previous semesters with the control concepts learned this semester. Appropriate problem solving, communication and time management skills are emphasized as well as the effects mechanical components have on a system.

Course Name BUSINESS FOUNDATION (2006 - 2007)
And Code BUS2060
Course Description
This is a survey course of business functions for students in the Integrated Telecommunication and Computer Technologies program. Topics will include basic financial accounting, finance, marketing, organization behaviour, and strategic planning.

Course Name ELECTRONICS MANUFACTURING PROCESSES (2006 - 2007)
And Code MANU3070
Course Description

The design, fabrication and testing of multi-layer printed circuit boards (PCBs) including manual, automated and robotic assembly methods.

Course Name SYSTEM VERIFICATION AND VALIDATION (2006 - 2007)
And Code QUAL3060
Course Description
The design, evaluation and implementation of testing methods to verify and validate the current and future performance of software and hardware systems.

Course Name QUALITY MANAGEMENT SYSTEM (2006 - 2007)
And Code QUAL3050
Course Description
The definition, design and implementation of practical quality systems for the design, manufacture, distribution and support of electronic and software products.

Course Name LIFE-CYCLE ENGINEERING (2006 - 2007)
And Code IENG3050
Course Description
The methods and techniques used to weigh the costs and benefits of product design decisions as they apply to the entire life of a product from concept to retirement.

Course Name APPLIED MATHEMATICS FOR MANUFACTURING (2006 - 2007)
And Code MATH3050
Course Description
The application of selected statistical, simulation, graphing and modeling principles and methods in the evaluation of the dynamics and performance of hardware and software components, systems and manufacturing processes.

Course Name ENGINEERING PROJECT V (2006 - 2007)
And Code EECE3200
Course Description
The design, implementation and evaluation of several individual and group projects that integrate the fundamental technical knowledge and skills learned in previous semesters with the manufacturing concepts learned this semester. Appropriate problem solving, communication and time management skills are emphasized as well as the effects mechanical components have on a system.

Course Name TECHNICAL COMMUNICATIONS AND VISUAL MEDIA (2006 - 2007)
And Code COMM1170
Course Description
This is the second of two communications courses designed for students in the applied degree program—Integrated Automated Manufacturing Technologies. It will focus on reports, web pages, and will build on skills developed in the first course. Students will design and produce digital presentations, analyze complex technical documents for style, content, and visual effectiveness. They will also create user manuals, publishable articles, and analytical reports. Further topics include visual media theory, perception and attention, and collaboration.

Course Name NETWORK ARCHITECTURE AND PROTOCOLS (2006 - 2007)
And Code INFO3040
C**ourse Description**
An in-depth exploration of layered network architectures, protocols, standards, and related hardware and software components.

Course Name SOFTWARE SYSTEMS (2006 - 2007)
And Code SENG3010
Course Description
An examination of the key properties of software systems in the mobile, and distributed worlds and the applicability of mainstream software engineering methods and techniques (e.g., object-orientation, component-based development, software architecture) to these domains.

Course Name NETWORK ADMINISTRATION AND SECURITY (2006 - 2007)
And Code INFO3030
Course Description

Effective management of a network and its resources including security goals, alternate security strategies, and current options for security systems. Consideration is given to economic, industrial, and user group dynamics.

Course Name INTERNETWORKING (2006 - 2007)
And Code INFO4010
Course Description
The selection, setup, configuration, management and performance analysis of the hardware and software resources required for the implementation and support of reliable internetworks.

Course Name APPLIED MATHEMATICS FOR NETWORKING AND CODING (2006 - 2007)
And Code MATH3140
Course Description
The application of selected information theory, simulation and mathematical modeling principles and methods to the design, management and testing of networks. Statistical models of communication channels are used to predict the errors produced when attempting to transmit digital signals over a given channel. Applications of queuing theory and Erlang's formula are covered.

Course Name ENGINEERING PROJECT IV (2006 - 2007)
And Code EECE3120
Course Description
The design, implementation and evaluation of several individual and group projects that integrate the fundamental technical knowledge and skills learned in previous semesters with the networking concepts learned this semester. Appropriate problem solving, communication and time management skills are emphasized.

Course Name RECONFIGURABLE COMPUTING (2006 - 2007)
And Code EECE4010
Course Description

The use of programmable and reconfigurable logic devices in the implementation of application specific computing systems. The significance of reconfigurable computing lies not only in its ability to deliver computing structures with the speed of dedicated hardware circuits, but with the programmability of software.

Course Name RF ELECTRONICS (2006 - 2007)
And Code EECE4090
Course Description

The design, implementation and testing of radio frequency (RF) circuitry, such as amplifiers, filters, mixers, modulators, oscillators and impedance matching circuits, operating at frequencies in the low GHz range. Emphasis is placed on RF measurements and techniques to solve high-frequency related problems including electromagnetic emission and interference, effect of stray capacitance and unwanted oscillations.

Course Name MOBILE COMMUNICATIONS AND WIRELESS NETWORKS (2006 - 2007)
And Code EECE4070
Course Description

The setup, configuration, traffic measurements and protocol analysis of a variety of wireless and mobile communication networks including wireless personal area networks (PAN) and local area networks (LAN). Larger wireless networks, such as metropolitan area networks (MAN), cellular mobile networks and satellite communication systems, are modeled and simulated. An exploration of the technologies, standards and protocols of emerging wireless technologies such as wireless security, CDMA, RFID, Bluetooth, ad-hoc network and multi-antenna systems is also included.

Course Name APPLIED MICROWAVE TECHNIQUES (2006 - 2007)
And Code EECE4100
Course Description

An analysis of microwave transmission systems including their use of active and passive components. Selection of appropriate components is examined, along with the use of microwave measurement instrumentation. An exploration of mature as well as emerging microwave technologies is also included.

Course Name ENGINEERING PROJECT VII (2006 - 2007)
And Code EECE4030
Course Description

The design, implementation and evaluation of several individual and group projects that integrate the technical knowledge and skills learned in previous semesters with the telecommunications and computing knowledge and skills learned this semester. Appropriate problem solving, communication and time management skills are emphasized.

Course Name ASSESSING EMERGING TECHNOLOGIES (2006 - 2007)
And Code EECE4050
Course Description

The identification of emerging technologies and the techniques used to predict and evaluate the impact of technological change.

Course Name SOFTWARE RADIO AND WIRELESS SERVICE PROVISION (2006 - 2007)
And Code EECE4080
Course Description

An exploration of software methods used to implement the functionality of radio systems using reconfigurable software radio communication systems.

Course Name HIGH SPEED COMMUNICATION SYSTEMS (2006 - 2007)
And Code EECE4060
Course Description

The exploration, modeling, simulation and analysis of high-speed telecommunication systems, networks, standards and technologies. The areas of study include high-speed switching technologies such as gigabit ethernet, gigabit IP router, asynchronous transfer mode (ATM) and frame relay. Also included are high-speed transmission technologies such as satellite and fiber-optic transmissions, and synchronous digital hierarchy/ synchronous optical network (SDH/SONET) multiplexing technology.

Course Name ENTERPRISE AND CONSUMER APPLICATIONS (2006 - 2007)
And Code EECE4020
Course Description

A review of the trends and issues in the wireless Internet business. The effects of enterprise applications on the technical, business and management aspects of an organization are examined. Consumer applications and the impact they have on the social, privacy, security and financial aspects of today's world are explored.

Course Name ENGINEERING PROJECT VIII (2006 - 2007)
And Code EECE4040
Course Description

The design, implementation and evaluation of several individual and group projects that integrate the technical knowledge and skills learned in previous semesters with the telecommunications and computing knowledge and skills learned this semester. Appropriate problem solving, communication and time management skills are emphasized.

Course Name LAW, ETHICS AND PROFESSIONAL PRACTICE (2006 - 2007)
And Code LIBS7060
Course Description

An examination of the law, ethics and professional practice related to the work of engineering professionals in Canada. The social, historical and philosophical contexts underlying engineering professional's legal responsibilities, foundations of ethical decision making processes, principles of professional liability and the general duties of engineering professionals towards the society.

Appendix 6.3.3.2: Academic Course Schedule

TERM	Year and Sem	Ref No	Course Title	Total DW Course Sem Hours	Total DO Course Sem Hours	Total DL Course Sem Hours	Total Hours	Proposed Instructor (or indicate if faculty to be recruited	Highest qualification earned (or required of faculty to be hired), and, only where applicable, highest qualifications in progress
1	4 weeks- Foundation Module	1	Orientation		7		7		
		2	Personal Awareness		9		9		M.A.
		3	Communications		16		16		Ph.D.
		4	Group Dynamics		39		39		M.A./M.Sc./Ph.D.
		5	Assessments		8		8		M.Sc./Ph.D.
		6	Math / Science		46		46		M.Sc./Ph.D.
		7	Project		19		19		M. Sc.
		8	Site Visits		6		6		M.Sc./Ph.D.
			4 week total	0	150	0	150		
	Year 1 Sem 1 13 weeks	9	ELEC 1160 Electrical Foundations	20			20	A. Tugulea	Ph.D.
		10	ELCN 1030 Electronic Foundations	20			20	A. Tugulea	Ph.D.
		11	SCIE 1230 Science of Engineering			24	24	J. Smith	Ph.D.
		12	MANU 1010 Engineering Design and Manufacturing	20			20	J. Smith	Ph.D.
		13	Math 1610 Applied Mathematics for Electrical Foundations	20			20	J. Smith	Ph.D.
		14	EECE 1370 Digital Foundations	20			20	N. Nelson	M. Sc.
		15	SENG 1020 Software Engineering Principles	20			20	N. Nelson	M. Sc.
		16	EECE 1390 Microprocessor Systems	20			20	N. Nelson	M. Sc.
		17	MATH 1590 Applied Math for Digital Foundations	20			20	N. Nelson	M. Sc.
		18	EECE 1340 Engineering Project I	30	22		52	J. Smith & Breadth Faculty	Ph.D.
		19	COMM 1340 Style in Scientific and Technical Writing			24	24	D. Guo	Ph.D.
		20	MGMT 1320 Project Management Methods and Tools		24		24	D. Barrett	M.B.A.
		21	LIBS7040 Science, Technology and Society		39		39	A. Charles	M.A.
			13 week total	190	85	48	323		
2	Year 1 Sem 2 16 weeks	22	ELEC 1170 Electrical Foundations	20			20	A. Tugulea	Ph.D.
		23	ELCN 1040 Electronic Foundations	20			20	A. Tugulea	Ph.D.
		24	SCIE 1240 Science of Engineering			24	24	J. Smith	Ph.D.
		25	MANU 1130 Engineering Design and Manufacturing	20			20	J. Smith	Ph.D.
		26	Math 1620 Applied Mathematics for Electrical Foundations	20			20	J. Smith	Ph.D.
		27	EECE 1380 Digital Foundations	20			20	N. Nelson	M. Sc.
		28	SENG 1030 Software Engineering Principles	20			20	N. Nelson	M. Sc.
		29	EECE 1400 Microprocessor Systems	20			20	N. Nelson	M. Sc.
		30	MATH 1600 Applied Math for Digital Foundations	20			20	N. Nelson	M. Sc.
		31	EECE 1340 Engineering Project II	30	20		50	J. Smith & Breadth Faculty	Ph.D.
		32	COMM 1350 Style in Scientific and Technical Writing			24	24	D. Guo	Ph.D.
		33	MGMT 1440 Project Management Methods and Tools		24		24	D. Barrett	M.B.A.
		34	Liberal Studies Elective		45		45	varies	M.A./M.Sc./Ph.D.
			15 week total	190	89	48	327		
				380	324	96	800		
3									
4	Year 2 Sem 1 16 weeks	35	TCOM 2050 Telecommunication Foundations	64			64	M. Kabir	Ph.D.
		36	PHYS 1070 Physics of Signal Transmission			48	48	D. Dykar	Ph.D.
		37	EECE 2430 Signal Processing	64			64	D. Dykar	Ph.D.
		38	MANU 2030 Electronics Design for the Real World	48			48	M. Kabir	Ph.D.
		39	MATH 2300 Applied Mathematics for Telecommunication Foundations	64			64	J. Cole	M. Sc. (in progress)
		40	EECE 2400 Engineer Project III	51	16		67	J. Cole & Breadth Faculty	M. Sc. (in progress)
		41	Liberal Studies Elective		45		45	varies	M.A./M.Sc./Ph.D.
			15 week total	291	61	48	400		

5	Year 2 Sem 1 16 weeks	42	CNTR 2090 Process Control	64			64	B. Nelson	M. A.Sc.
		43	INFO 2150 Operating Systems	48			48	W. Stefanuk	M. A.Sc.
		44	EECE 2390 Embedded Systems	64			64	A. Jeffrey	B. Sc./B.S.E.E.
		45	EECE 23420 Digital Signal Processing	48			48	W. Stefanuk	M. Sc.
		46	MATH 2230 Applied Mathematics for Process Control	64			64	J. Smith	Ph.D.
		47	EECE 2410 Engineering Project IV	48	16		64	J. Smith & Breadth Faculty	Ph.D.
		48	BUS 2060 Business Foundations		48		48	H. Trinh	M.B.A.
			15 week total	336	64	0	400		
6									
7	Year 3 Sem 1 16 weeks	49	MANU 3070 Electronics Manufacturing Processes	64			64	S. George-Cosh	M. Sc.
		50	QUAL 3060 System Verification and Validation	64			64	P. Roeser	M. Sc.
		51	QUAL 0305 Quality Management Systems	48			48	M. Hare	M. Sc.
		52	IENG 3050 Life Cycle Engineering	48			48	J. Smith	Ph.D.
		53	MATH 3050 Applied Mathematics for Manufacturing	64			64	P. Roeser	M. Sc.
		54	EECE 3200 Engineering Project V	51	16		67	P. Roeser & Breadth Faculty	M. Sc.
		55	COMM 1170 Advanced Technical Communications & Visual Media			45	45	K. Townson	M.A.(I.S.)
			15 week total	339	16	45	400		
8									
9	Year 3 Sem 2 16 weeks	56	INFO 3040 Network Architectures and Protocols	64			64	M. Kabir	Ph.D.
		57	SENG 3010 Software Systems	64			64	P. Roeser	M. Sc.
		58	INFO 3030 Network Administration & Security	48			48	TBD	Ph.D.
		59	INFO 4010 Internetworking	48			48	M. Kabir	Ph.D.
		60	MATH 3140 Applied Mathematics for Networking and Coding	64			64	P. Roeser	M. Sc.
		61	EECE 3120 Engineering Project VI	51	16		67	TBD	Ph.D.
		62	Liberal Studies Elective		45		45	varies	M.A./M.Sc./Ph.D.
			15 week total	339	61	0	400		
10									
11	Year 4 Sem 1 16 weeks	63	EECE 4010 Reconfigurable Systems	64			64	A. Tugulea	Ph.D.
		64	EECE 4090 RF Electronics	64			64	M. Kabir	Ph.D.
		65	EECE 4070 Mobile Communications and Wireless Networks	64			64	M. Kabir	Ph.D.
		66	EECE 4100 Applied Microwave Techniques	64			64	A. Tugulea	Ph.D.
		67	PLAN4010 Elective		48		48	TBD	M.B.A.
		68	EECE 4030 Engineering Project VII	51	16		67	M. Kabir A. Tugulea	Ph.D.
		69	Liberal Studies Elective		45		45	varies	M.A./M.Sc./Ph.D.
			15 week total	307	109	0	416		
12	Year 4 Sem 2 16 weeks	70	EECE 4050 Assessing Emerging Technologies		48		48	TBD	Ph.D.
		71	EECE 4080 Software Radio & Wireless Service Provision	64			64	M. Kabir	Ph.D.
		72	EECE 4060 High Speed Communication Systems	64			64	M. Kabir	Ph.D.
		73	EECE 4050 Enterprise and Consumer Applications	48			48	TBD	Ph.D.
		74	BUS 3090 Elective		48		48	TBD	M.B.A.
		75	EECE 4040 Engineering Project VIII	51	16		67	TBD	Ph.D.
		76	LIBS 7060 Law, Ethics & Professional Practice			45	45	TBD	M.A./M.Sc./Ph.D.
			15 week total	227	112	45	384		
			Subtotal Course Hours	2219	747	234	3200		
			Total Program Hours		3200				
			Percentage of Program offered in DO and DL course		31		Must be at least 20% of total program		
			Percentage of the breadth courses offered in DO courses		76		Must be at least 75% of the total DO and DL courses		
			Percentage of the breadth courses offered in DL courses		24		Must not be greater than 25% of the total DO and DL courses		

Appendix 6.5.1: Program Structure Requirements

Year	August/September	January	April
Year One	Foundation Module (4 Weeks)	Semester 2	Co-op opportunity
	Semester 1		
Year Two	Semester 3	Semester 4	Co-op opportunity
Year Three	Semester 5	Co-op opportunity	Semester 6
Year Four	Co-op opportunity	Semester 7	Semester 8

The Program Structure was modified based on the subsequent advice of the industry and the Program Advisory Committee. The new structure is an enhancement and it addresses some of the industrial and pedagogical dynamics. In particular:

4. This provides for 4 work term opportunities as compared to 3 in the original proposal.
5. The new sequencing of co-op work term provides for greater interaction with the industry enhancing students' experience both in depth and breadth.
6. Includes a four week foundation module concept which was presented to the Panel at the time of the review. The Foundation Module as planned improves the total program content, providing a very vibrant learning culture, thus enhancing retention of candidates. The foundation module is shared by all of the degree programs, providing students with a solid interactive culture and learning skills.

Appendix 8.7.2: Enrollment Projections and Staffing Implications

In our original proposal we projected and enrollment of 30 new students in the first year. While we have not met this goal our projection going forward remains the same. We are proposing to continue with the same plan of an intake of 30 as originally proposed, and as the degree becomes more recognized we strongly feel that we will realize this objective in the near future.

Our staffing model in the original proposal called for 9.5 full-time staff, including technical support staff and breadth faculty. We have recruited and or allocated 5.5 full- time faculty equivalents and one technical support for the program. Moving forward, we will complete our full staffing prior to the start of the final year of the program.

Standards Adopted after the Pilot Project:

"Academic Freedom and Integrity" and "Student Protection"

Have you received a ministerial consent for a program post-pilot project? If "no", you are required to establish your institutional policies for this standard as a part of your renewed application. This is to be done by attaching the following appendices: • 12.1.1 Academic Freedom Policy • 12.1.2. Academic Honesty Policy • 12.1.3. Academic Honesty Procedure • 12.2. Policy on Intellectual Products • 12.3 Policy on Ethical Research Practices	[X] Yes [ ] No [ ] Attached [ ] Attached [ ] Attached [ ] Attached [ ] Attached
IIf "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 honesty? If "yes", attach **Appendix 12.1.1** Academic Freedom Policy, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to academic honesty? IIf "yes", attach **Appendix 12.1.2** Academic Honesty Policy, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
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? If "yes" attach **Appendix 12.1.3** Academic Honesty Procedure, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to intellectual products? If "yes" attach **Appendix 12.2** Policy on Intellectual Products, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Have there been any revisions, deletions, or additions to the policies and/or procedures pertaining to ethical research practices? If "yes", attach **Appendix 12.3** Policy on Ethical Research Practices, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached

Student Protection

The applicant values and upholds integrity and ethical conduct in its relations with students.

Benchmarks for assessing student protection

1. Information provided in any advertising, brochures, calendars, and other publications about the formal recognition of credits or credentials specifically mentions the party granting such recognition.
2. 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.
3. The applicant has satisfactory policies and procedures that protect student and consumer interests in the following areas:
   a) the resolution of students' academic appeals, complaints, grievances, and/or other disputes;
   b) payment schedule of fees and charges;
   c) student dismissal; and
   d) withdrawals and refunds.
4. Prior to registration, students are provided with and confirm in writing their awareness of policies (and procedures) pertaining to:
   a) method of course delivery;
   b) academic honesty;
   c) admissions;
   d) credit transfer arrangements with and recognition by other institutions;
   e) credit transfer arrangements for incoming students;
   f) prior learning assessment;
   g) entrance examinations;
   h) dispute resolution;
   i) grading;
   j) intellectual property rights;
   k) the ability of international students admitted to the program to meet program requirements for degree completion;
   l) payment of fees and charges;
   m) scholarships and other financial assistance;
   n) student complaints and grievances;
   o) student dismissal;
   p) student support and services;
   q) tuition; and
   r) withdrawals and refunds.

Have you received a ministerial consent for a program post-pilot project? If "no", you are required to establish your institutional policies for this standard as a part of your renewed application. This is to be done by attaching the following appendices: • **13.1** Academic Calendar Information • **13.2.1** Dispute Resolution • **13.2.2** Fees and Charges • **13.2.3** Student Dismissal • **13.2.4** Withdrawals and Refunds • **13.3** Student Protection Information	[X] Yes [ ] No [ ] Attached [ ] Attached [ ] Attached [ ] Attached [ ] Attached [ ] Attached
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. If "yes", attach as **Appendix 13.1.a**., Credential Recognition Information, an explanation of and rationale for the change.	[ ] Yes [X] No [ ] Attached
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. If "yes", attach as **Appendix 13.1.b**, Organization Information, an explanation of and rationale for the change.	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to dispute resolution? If "yes", attach **Appendix 13.2.1** Dispute Resolution, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to payment schedule of fees and charges? If "yes", attach **Appendix 13.2.2** Fees and Charges, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached

Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to student dismissal from the program? If "yes", attach **Appendix 13.2.3** Dismissal, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
Are you proposing to make any revisions, deletions, or additions to the policies and/or procedures pertaining to withdrawals and refunds? If "yes", attach **Appendix 13.2.4** Withdrawals and Refunds, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached
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? If "yes", attach **Appendix 13.3** Confirmation of Awareness, and a brief explanation of the change(s).	[ ] Yes [X] No [ ] Attached