RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

Building Design CAD Technology

Curriculum Validation – Program Renewal

Final Report August 2013

Submitted to:

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Introduction

The Building Design CAD Technology program is part of a Civil Engineering Technology cluster of diploma programs that provide students with career training in construction engineering, environmental, and geomatics technologies.

After successfully completing the first year of Civil Engineering Technology, with a minimum cumulative grade point average (CGPA) of 2.00, students participate in a six-month co-operative education work term. Students subsequently enter one of six (6) specializations:

- Architectural/Engineering Technology
- Environmental Technology
- Geomatics Technology
- Municipal Engineering Technology
- Structural Engineering Technology
- Building Design CAD Technology

The Building Design CAD Technology program originated as a one (1) year program, under a different name and in another School within the College. It was moved into the Civil Engineering Technology cluster in 1998. The program differs from the others in the cluster in that:

- It is a total of 20 months or 2 years, while the others are 32 months or 3 years
- It is not accredited, while the others are accredited

The program is typically full and graduates find employment.

In nominating the program for renewal, the program Chair indicated a need to clarify the occupation that is the basis for the program and to examine the relationship of the program to the other majors, particularly Architectural/Engineering Technology, in meeting the needs of industry.

The intent of the Curriculum Validation process is to analyze the status of the program and to chart a course for program renewal. The process uses a structured format resulting in a 5-year renewal plan.

Curriculum Validation Deliverables

The Building Design CAD Technology Curriculum Validation process involved 7 interrelated deliverables:

1. Environmental Scan and Analysis of the key findings of similar programs across Canada
2. Industry Occupational Analysis
3. Graduate Skills and Abilities and Gap Analysis Chart

4. Graduate Profile
5. Program Renewal Plan
6. A 5 Year Program Renewal Plan in Gantt Chart format
7. Final Report

Outcomes from the Deliverables

Environmental Scan and Key Findings (Appendix A)

The Environmental Scan provides the faculty and chair with information about similar programs that are offered in Colleges and Universities locally and nationally.

Given the need to examine the relationship of the Building Design CAD Technology program to the other majors, particularly Architectural/Engineering Technology, it was determined that the environmental scan should be conducted in two (2) phases:

Phase 1

With the assistance of Building Design CAD Technology faculty and Chair, Program & Curriculum Development staff identified programs in Canadian Colleges that are similar to either the Building Design CAD Technology or the Architectural/Engineering Technology programs.

Program & Curriculum Development staff completed a website based scan of twenty-two (22) programs identified at twelve (12) colleges (including Red River College).

The scan collected information under the following categories:

- Name of Institution, Location
- Program Description
- Program Length
- Program Streams or Specializations
- Courses
- Accreditation

Key findings of this initial scan are:

Program Structure

- Red River College (RRC) and New Brunswick Community College (NBCC) programs have a common first year followed by the opportunity for several specializations. At the other ten (10) colleges, the programs are independent of each other
- Programs at the Southern Alberta Institute of Technology (SAIT) enable students to select a major in semester four (4) of four (4)
- Programs at Algonquin College, George Brown College and Loyalist College have more than one exit point (e.g. certificate, diploma, advanced diploma)

Program Emphasis

- Programs place varying emphasis on each of the following:
    - Design development
    - Contracts, estimating, project management
    - Drafting, computer aided design, presentation, modeling
    - Structures, building science, building systems

    - Specialties such as renovation, disassembly, GIS, landscape, multi-family
    - Foundation skills such as communication, math, chemistry
    - Professional ethics
- Programs have either a predominantly architectural or a predominantly engineering emphasis and the program name typically represents the emphasis. Programs at British Columbia Institute of Technology (BCIT), Nova Scotia Community College (NSCC), and Red River College (RRC), have names that suggest a dual emphasis.
    - BCIT – Architectural and Building Engineering Technology
    - NSCC – Architectural Engineering Technician
    - RRC – Architectural / Engineering Technology
- The BCIT and NSCC programs are predominantly architectural while the RRC program provides a more equal emphasis on architecture and engineering.

This Phase 1 Environmental Scan is available as a mind map (PDF version) in Appendix A1 of the online version of the report.

Phase 2
Based on a review of the information gathered in Phase 1, the Building Design CAD Technology faculty and Chair identified nine (9) programs with an architecture emphasis, in addition to the Building Design CAD Technology program at Red River College, for a more in-depth scan.

Information about each program was gathered from websites by Program and Curriculum Development staff. The Curriculum Validation Facilitator subsequently engaged faculty to make telephone or email contact with program contacts.

The scan gathered information under the following categories:

- Name of Institution, Location, Contact Person
- Size of Program
- Credential Issued
- Program Features
- Curriculum Model
- Curriculum Content
- Student Assessment
- Current and Coming Challenges
- Curriculum Renewal
- Partnerships
- Additional Information (Other and Comments)

The following programs were scanned:

- Algonquin College, Ottawa, ON – **Architectural Technician / Technology**
- British Columbia Institute of Technology (BCIT), Burnaby, BC – **Architectural and Building Engineering Technology**
- Fanshawe College, London, ON – **Architectural Technology**
- Holland College, PEI – **Architectural Technology**
- Loyalist College, Belleville, ON – **Architectural Technician / Technology**
- Northern Alberta Institute of Technology (NAIT), Edmonton, AB – **Architectural Technology**

- Nova Scotia Community College, Bridgewater & Dartmouth, NS – **Drafting-Architectural**
- Red River College (RRC), Winnipeg, MB – **Building Design CAD Technology**
- Southern Alberta Institute of Technology (SAIT), Calgary, AB – **Architectural Technologies-Architectural major**
- Southern Alberta Institute of Technology (SAIT), Calgary, AB – **Architectural Technologies-Building Development major**

Key Findings from the Environmental Scan

Credentials Awarded
All of the programs scanned award a Diploma following two (2) years of study. Three (3) Ontario programs (Algonquin College, Fanshawe College and Loyalist College) award Advanced Diplomas following three (3) years of study. One Ontario program awards a Certificate following one (1) year of study.

Program Exit Points
With the exception of Algonquin College and Loyalist College, all of the programs have just one (1) exit point. The Algonquin College program has two (2) exit points – a Technician Diploma at the end of two (2) years and a Technology Advanced Diploma at the end of three (3) years. The Loyalist College program has the same 2 exit points, with an additional exit point – a Certificate at the end of one (1) year.

Entrance Requirements
Entrance into programs at Algonquin College, Holland College, Loyalist College, NSCC and RRC is first qualified, first admitted. Entrance into programs at BCIT, Fanshawe College, NAIT and SAIT is competitive. Programs that require more than a 50% minimum in some or all high school courses are BCIT, Holland College and NAIT.

Experiential Component
Co-op placements are a component of the programs at Algonquin College, Fanshawe College, NSCC (optional) and RRC. Programs at BCIT and Loyalist College include brief work practicums while the programs at NAIT and SAIT include a 1 week work experience. The program at Holland College does not include an experiential component.

Program Delivery
Full time delivery is available for all of the programs. At Algonquin College, the Technician level of the program is also available as a Weekend offering. NAIT reports working toward part-time and online delivery.

Streams
The programs at RRC and SAIT each share common semesters with more than one (1) stream. At RRC, upon completion of two (2) common semesters, students can choose from among six (6) Technology program specializations – Architectural/Engineering; Building Design CAD; Environmental; Geomatics; Municipal Engineering; and Structural Engineering. At SAIT, upon completion of three (3) common semesters, students can chose from among two (2) program majors – Architectural; and Building Development.

Curriculum
The full environmental scan (Appendix A) includes a list of the courses for each program, as well as a Chart of Course Comparisons that provides an initial sort of all courses into common categories.

NSCC reports a unique marine focus on shipyards and dockyards.

Regarding Building Information Modeling (BIM)

- Algonquin College: 2 courses – BIM I & BIM II
- Loyalist College: Started teaching Revit 7 years ago to 3rd year students only. Have stopped teaching of AutoCAD Architecture (ADT)
- NAIT: 2 courses – Computer Applications III BIM & Computer Applications (BIM) REVIT
- NSCC: 3 courses: Building Information Modeling I, Building Information Modeling II & Building Information Modeling III
- RRC: BIM introduced in Advanced CAD course
- SAIT: Touch on BIM extensively

Regarding Building Green with LEED

- Fanshawe College: 1 course – Sustainability in the Built Environment
- Loyalist College: Currently teach principles of LEED but not to examine and do not provide any LEED certification or preparation for certification
- NAIT: Discussed in lectures that deal with products and materials Sustainable Building Techniques
- NSCC: LEED integrated into curriculum
- RRC: Not currently part of this specialization
- SAIT: Touch on this extensively & 1 course – Sustainable Methods

Construction and the Environment

- Loyalist: Is taught informally through a number of courses
- NAIT: Discussed in lectures that deal with products and materials
- RRC: Not currently part of this specialization
- SAIT: Touch on this extensively

Curriculum Renewal
Programs are similar in that they report industry advisory committees that provide regular input related to curriculum and institutional review processes that typically follow a five (5) year cycle.

Student Assessment
Programs are similar with respect to student assessment, typically reporting that:

- assessment is largely determined by the instructor
- assessment is based on the nature of the course content
- criteria for grading is provided to students with the assignment
- rubrics are used for drawings and reports

Current / Coming Challenges

Colleges report challenges in several areas:

- Students
    - Students entering from high school lack proficiency in math and literacy skills
    - Dropping enrolments
- Curriculum
    - Sustainability
    - Heritage issues, conservation
    - Preserving traditional woodworking techniques, partnership with carpentry department to record and reproduce heritage details
    - Meeting industry expectations
- Program structure
    - Just moved to 15 week OBE credit based program. Certain courses have been rolled into one
    - Demand for evening and weekend programming so that students do not have to give up their jobs
    - Limited time available to meet industry needs within the current program length
- Other
    - Increasing costs
    - Province of Ontario is considering transferring certification of building officials from Ontario Building Officials Association to the colleges

Articulation

Programs report articulation arrangements as follows:

- Graduates of programs at Algonquin College, Holland College, Loyalist College and SAIT can take advantage of agreements for articulation to degree programs at other post-secondary institutions. NAIT reports ongoing negotiations with the University of Manitoba.
- Graduates of programs at BCIT, NAIT, RRC and SAIT can take advantage of articulation agreements to degree programs at their own institutions.
- RRC reports agreements giving advanced standing for students entering the program with specific credits from high school or other Manitoba colleges.
- High school students may take Construction Renovation Techniques at Loyalist College and receive dual credits – both high school credit and college credit.

Accreditation

Programs report being accredited as follows:

- Algonquin College and Holland College are accredited by the Canadian Technology Accreditation Board (CTAB). RRC reports seeking accreditation at the Technician level with CTAB and its affiliate, the Certified Technicians and Technologists Association of Manitoba.
- BCIT is accredited by the Architectural Institute of British Columbia (AIBC).
- Loyalist College is accredited by CTTAM.
- NSCC is accredited by TechNova – The Certifying Body for Engineering and Applied Science Technicians and Technologists.

Certification

Programs report the following professional certifications available to graduates:

- BCIT graduates are eligible for membership with the Architectural Institute of British Columbia (AIBC) and may apply for registration as an Architectural Technologist after completing two years of relevant experience and the registration examination.
- The Canadian Institute of Quantity Surveyors (CIQS) will accept graduates as Associate Members and gives credit in a similar manner. Associate Members of CIQS have the ability to attain the professional designations Professional Quantity Surveyor (PQS) or Construction Estimator Certified (CEC) upon completion of the relevant credits and experience.
- Holland College graduates may apply for associate membership with the Association of Certified Engineering Technicians and Technologists of Prince Edward Island (ACETTPEI). After gaining two years of work experience, graduates may apply for full membership and receive the professional designation of CET (Certified Engineering Technologist).
- Loyalist College graduates meet all of the academic requirements established by the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) for professional certification as Certified Technicians (C.Tech.) – and graduates of the three year Architectural Technology program, as Applied Science Technologists (A.Sc.T.) or Certified Engineering Technologists (C.E.T.).
- Graduates certified as an OACETT A.Sc.T. or C.E.T. may join the Ontario Association for Applied Architectural Sciences (OAAAS) and through it, qualify to become a member of the Ontario Association of Architects as a Licensed Technologist OAA.
- NAIT graduates, after two years of relevant work experience and meeting other criteria, may become affiliate members of The Alberta Association of Architects (AAA), and be known as certified architectural technologists.
- RRC graduates, upon meeting certain criteria, are eligible for certification by the Architectural and Building Technologists Association of Manitoba (abtam).

Programs report the following memberships available to students:

- BCIT full-time students may apply for Student Associate status with the Architectural Institute of British Columbia (AIBC).
- NAIT students can join Alberta Society of Engineering Technologists (ASET).
- RRC students are eligible for student membership with the Architectural and Building Technologists Association of Manitoba (abtam).

Industry Occupational Analysis (Appendix B)

The Industry Occupational Analysis is one component of the curriculum development process at Red River College and provides the program with a description of regional occupational needs. Included in the process is the identification of emerging and retiring industry trends.

The Industry Occupational Analysis for the Building Design CAD Technology program was held on February 6 & 13, 2013, facilitated by Robert Cordingley, Craig Edwards and Lorna Smith. Nine (9) expert practitioners in the field were asked to identify the major competencies and related skills for the occupation of Architectural Technologist. As well, they were asked to rate each identified skill to indicate the level of independence, in performing the skill, required of a new hire.

To facilitate any future decisions about seeking program accreditation from the Canadian Council of Technicians & Technologists (CCTT), the National Technology Benchmarks for Architectural and Building Technology were provided to the practitioners as a reference.

The resulting Building Design CAD Technology Occupational Analysis identified the following scope, emerging trends and retiring trends:

Scope

Architectural Technologists working in:

- Residential & commercial
- New construction & renovation
- Small & large firms:
  - Architectural
  - Engineering
  - Construction
  - Suppliers
- Public sector
- Manitoba & other provinces

Emerging Industry Trends

- BIM –The way of fitting into a BIM team is different than for a CAD team. Requires teamwork and communication
- Integration of "silos"
- Building science has become more important due to regulations, etc.
- Integrated Project delivery (IPD)
- Cloud based services and software tools
- Architectural and engineering firms working more closely

Retiring Industry Trends

- "Silos" of various roles in the field are breaking down
- Eventually CAD, but this will take a long time

Identified Issues

- Use of low end software used by unskilled individuals
- Lack of knowledge of building technologies in students – RRC and university

Please see the detailed Occupational Analysis in **Appendix B.**

Graduate Skills and Abilities and Gap Analysis Chart (Appendix C)

During two half-day workshops on April 23 and 25, 2013, faculty used the Industry Occupational Analysis chart to outline their assessment of what would constitute realistic learning expectations of the program. They then compared those expectations to the current instruction in the program to identify any gaps in training.

The outcome of this workshop was a single, composite chart that outlines the graduate skills and abilities. This chart, located in **Appendix C**, serves as the focus for curriculum renewal and the basis for the development of program learning outcomes.

Graduate Profile (Appendix D)

Through the use of the *Graduate Skills and Abilities Chart*, the Graduate Profile Outcome statements were developed by the faculty at a workshop on May 2, 2013. A Graduate Profile is a set of outcome statements that describe the essential and enduring knowledge, skills and abilities expected of a graduate of a program. The graduate profile provides the focus for program and course revision to ensure that all learning outcomes and assessments are relevant to the expected learning of students in the program. Please see the detailed Graduate Profile in **Appendix D.**

Program Renewal Goals and Actions (Appendix E)

A visioning workshop with the Building Design CAD Technology faculty and Chair on May 7, 2013 challenged participants to identify, "What should be done over the next 5 years to maintain and enhance program excellence?"

As part of the pre-visioning that day, participants reviewed the preceding four deliverables as well as Graduate Satisfaction and Employment Reports and Student Evaluation of Program Reports for several years.

The goals identified at this visioning session are articulated in the graphic below.
Please see the full set of goals and related action items in **Appendix E**.

5 Year Program Renewal Program (Appendix F)

The program renewal plan is the result of translating the preceding five deliverables into a coherent plan for the renewal of the program. The Program Renewal Plan will serve as the basis for the improvement of the Building Design CAD Technology program.

After reviewing the five deliverables, including the Goals and Action items, the Chair in consultation with the Curriculum Consultant, set priorities and identified the sequence of the goals and action items within the 5 year renewal plan.

Please see the Gantt chart for the Renewal Plan sequence and timeline in **Appendix F**. The Chair and faculty are committed to renewing the program over the next 5 year period.

Appendix A – Environmental Scan and Key Findings

- A1: Building Design CAD Technology Environmental Scan
- A2: Building Design CAD Technology Chart of Course Comparisons

A1: Environmental Scan – Building Design CAD Technology

College Scanned	College – Full Name Address
Algonquin College	Algonquin College Algonquin Centre for Construction Excellence 1385 Woodroffe Avenue Ottawa, Ontario, Canada K2G 1V8 (613) 727-4723 **Cynthia Poulin**, Program Coordinator (613) 727-4723 ext. 5805 poulinc@algonquincollege.com
British Columbia Institute of Technology (BCIT)	British Columbia Institute of Technology 3700 Willingdon Avenue Burnaby, British Columbia Canada, V5G 3H2 Telephone: (604) 434-5734 Toll-free: 1-866-434-1610 **Michael Currie**, Program Head (604) 453-4023 Michael_Currie@bcit.ca
Fanshawe College	Fanshawe College of Applied Arts and Technology 1001 Fanshawe College Blvd London, ON N5V 1W2 **Gary Gerard**, Program Coordinator (519) 452-4414 E-mail: ggerard@fanshawec.ca
Holland College	Holland College 300 Kent St. Charlottetown, PE C1A 4Z1 **Bruceyene Collins** (902) 629-4206 bcollins@hollandcollege.com Applied Science & Technology Office

Loyalist College	Loyalist College Wallbridge-Loyalist Road P.O. Box 4200 Belleville, ON K8N 5B9 **Chuck Barsony** cbarsony@loyalistc.on.ca (613) 969-1913 Toll free: 1-888-569-2547
The Northern Alberta Institute of Technology (NAIT)	The Northern Alberta Institute of Technology (NAIT) 11762 – 106 Street Edmonton, AB T5G 2R1 (780) 471-6248 Toll Free: 1-877-333-6248 Program info: arc@nait.ca (780) 471-8988 **Peter Blank** CET *Associate Chair* – Environmental Design Technology L260 – 10240 Princess Elizabeth Avenue Edmonton, AB T5G 2R1 780.491.3097 Fax: 780.471.8811 pblank@nait.ca
Nova Scotia Community College (NSCC)	Nova Scotia Community College Lunenburg Campus 75 High Street Bridgewater, NS B4V 1V8 (902) 543-4608 lunenburg.info@nscc.ca Waterfront Campus 80 Mawiomi Place Dartmouth, NS B2Y 0A5 (902) 491-1100 Fax: (902) 491-1795 waterfront.info@nscc.ca **Brent Kaulback,** Program Chair

Red River College (RRC)	Red River College Department of Civil Engineering Technology A131 – 2055 Notre Dame Ave Winnipeg MB R3H 0J9 **Jerry Johnstone**, Chair Civil Engineering Technology 204-632-2221 jjohnstone@rrc.ca
Southern Alberta Institute of Technology (SAIT)	Southern Alberta Institute of Technology (SAIT) 1301 – 16 Avenue NW Calgary, AB T2M 0L4 1-877-284-7248 **Reva Ramsden,** Academic Chair (completed electronically) (403) 284-8367 Architectural Technologies
College Scanned	**URL**
Algonquin College	Technician http://www2.algonquincollege.com/acce/program/architectural-technician/ Technology http://www2.algonquincollege.com/acce/program/architectural-technology/
BCIT	http://www.bcit.ca/study/programs/5910diplt#
Fanshawe College	http://www.fanshawec.ca/programs-courses/full-time-programs/aty1
Holland College	http://www.hollandcollege.com/admissions/full_time_programs/architectural_technology/
Loyalist College	http://www.loyalistcollege.com/programs-and-courses/full-time-programs/architectural-techniciantechnology#curriculum
NAIT	http://www.nait.ca/program_home_76091.htm
NSCC	http://www.nscc.ca/learning_programs/programs/PlanDescr.aspx?prg=DRAA&pln=DRAFTINGAR
RRC	http://me.rrc.mb.ca/Catalogue/ProgramInfo.aspx?RegionCode=WPG&ProgCode=BUIDF-DP
SAIT	http://sait.ca/pages/cometosait/academic/diplomas/aat.shtml

College Scanned	Program Size
Algonquin College	**Number of Students** Not stated **Number of Faculty** Not stated
BCIT	**Number of Students** Not stated **Number of Faculty** Not stated
Fanshawe College	**Number of Students** Not stated **Number of Faculty** Not stated
Holland College	**Number of Students** Not stated **Number of Faculty** Not stated
Loyalist College	**Number of Students** • Second smallest college in Ontario with 3200 students • 65 1st year students • 36 2nd year students • 15 3rd year students **Number of Faculty** • 4 full time, 6 part time
NAIT	**Number of Students** • 95 1st year students • 90 2nd year students **Number of Faculty** • 13 instructors including Program Chairs and Associate Chairs

NSCC	**Number of Students** Yearly intake into 1st year is: • 30 students (Waterfront Campus) • 15 students (Lunenberg Campus) • Total of 70 students enrolled at any given time **Number of Faculty** Not stated
RRC	**Number of Students** • 192 fall + 30 winter = 222 seats in year 1 (common) Civil Engineering Technology • 26 seats in Building Design CAD (1 of 6 specializations beginning in year 2) **Number of Faculty** • 5 instructors teach in the Building Design CAD specialization, they may also teach in other specializations
SAIT	**Number of Students** Yearly intake into 1st year is: • 160 students (fall) • 32 students (winter) **Number of Faculty** • Number of faculty varies depending on how many industry professionals teach part time for the program (10-16)
Credentials	
College Scanned	**Certificate, Diploma or Applied Degree**
Algonquin College	Architectural Technician Diploma Architectural Technology Advanced Diploma
BCIT	Architectural and Building Engineering Technology Diploma
Fanshawe College	Architectural Technology Advanced Diploma, Co-op
Holland College	Architectural Technology Diploma
Loyalist College	Residential Drafting and Design Certificate Architectural Technician Diploma Architectural Technology Advanced Diploma
NAIT	Architectural Technology Diploma
NSCC	Drafting – Architectural Diploma

RRC	Building Design CAD Diploma
SAIT	Architectural Technologies Diploma
Program Features	
College Scanned	**Length, Division of Academic Year, Entrance Requirements, PLAR, Special Selection Process, Graduation Requirements**
Algonquin College	**Length** • 2 year – Architectural Technician Diploma • 3 year – Architectural Technology Advanced Diploma **Division of Academic Year** • 2 levels per year • Fall and winter start dates **Entrance Requirements** College Eligibility • Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing senior English and/or Mathematics courses at the Basic Level, or with Workplace or Open courses, will be tested to determine their eligibility for admission; **OR** • Academic and Career Entrance (ACE) certificate; OR • General Educational Development (GED) certificate; OR • Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing ($40 subject to change) Program Eligibility • English, Grade 12 (ENG4C or equivalent) • Mathematics, Grade 12 (MAP4C or equivalent) with a grade of 60% or higher, or Grade 11 (MCF3M) • Must have use of a laptop or mobile computing device that meets designated hardware requirements **Selection Criteria** • Technician Program – not stated • Technology Program – Should the number of students exceed the number of seats, selection will be based on academic performance in the Technician program **RPL (Recognition of Prior Learning)** Not stated

BCIT	**Length** 2 years **Division of Academic Year** 2 levels per year • Year 1, Level 1 (15 weeks) • Year 1, Level 2 (20 weeks) • Year 2, Level 3 (15 weeks) • Year 2, Level 4 (20 weeks) **Entrance Requirements** • High school graduation • English 12 (C+)* and English language proficiency • Physics 11 (C+)* or Physics 12 (C+)* • One of the following math requirements: o Principles of Mathematics 12 (C+)* o Applications of Mathematics 12 (C+)* o Pre-Calculus 12 (C+)* **Note:** Foundations of Mathematics 12 is not acceptable • Resume • Letter of Intent Minimum 500-word description of your interest/background in the building industry, your motivation/purposes in pursuing the two-year diploma program, and your career goals/aspirations. You may also include your own perspective/observations or opinions concerning the building industry in BC. The letter MUST be hand-written. **Selection Criteria** The selection process is competitive. Due to the large number of applications and limited number of student seats, Architectural & Building Engineering Technology (ABET) cannot accept all qualified applicants. The program does not guarantee admission to applicants who meet the minimum entrance requirements. The program mandate is to select those applicants deemed to have the best opportunity for success. Preference will be given to applicants who have a grade of B or better in the entrance requirements. Post-secondary academic experience and/or construction industry experience will enhance the application. **RPL (Recognition of Prior Learning)** Equivalent Part-time Studies courses may be transferable to the diploma program based on the recommendations of the diploma instructor and the program head. Students must already be accepted into the diploma program and have earned a minimum 70% final grade in the equivalent course. Transfer credits for similar courses from other post-secondary schools may also be considered. It is recommended that completion of the equivalent course be within one year of starting the diploma program. Students may receive transfer credits for a maximum of three (3) diploma courses per term. In cases where students can demonstrate significant completion of Level 1 and/or Level 2, additional transfer credits may be considered by the Program Head.

Fanshawe College	**Length** 3.3 – 3.7 years **Division of Academic Year** • September and January Admission (Students entering the 1st level of the program in January will continue into level 2 of the program in the summer term) • 15 week terms: Sept – Dec, Jan – April, May – Aug **Entrance Requirements** OSSD with courses from the College (C), University (U), University/College (M), or Open (O) stream WITH: - Any Grade 12 English (C) or (U) - Any Grade 12 Mathematics* (C) or (U) OR Academic and Career Entrance Certificate (ACE)** OR Pre-Technology Ontario College Certificate** OR Ontario High School Equivalency Certificate (GED) AND: - Any Grade 12 Mathematics* (C) or (U) OR Mature Applicant with standing in the required courses stated above Note: Grade 12 Mathematics for College Technology (C) preferred. Applicants who lack required courses may be admitted to the program subject to appropriate prior upgrading. **Students admitted to the Fanshawe College Pre-Technology and Academic and Career Entrance Technology stream programs are guaranteed admission the following year to a Technology career program provided that they successfully complete their Pre-Technology Ontario College Certificate or Academic and Career Entrance Certificate and fulfill any other specified conditions. Normally these students are admitted to their first choice program. **Selection Criteria** Where the number of eligible applicants exceeds the available spaces in the program, the Applicant Selection Criteria will be: 1) Preference for Permanent Residents of Ontario 2) Receipt of Application by February 1st 3) Achievement in the Admission Requirements **RPL (Recognition of Prior Learning)** Credit for any course in the program will be given to students who can demonstrate that they have the required skills to meet the objectives of the course.

Holland College	**Length** 2 years **Division of Academic Year** Not stated **Entrance Requirements** • Academic Grade 12 or equivalent • A minimum of 65% in each of the following courses; Grade 12 academic English, grade 12 academic math and grade 11 or 12 physics • Applicants with a mark of 80% or higher in Grade 12 academic math may be exempt from the physics requirement • Resume including work and volunteer experience with applicable dates, membership in groups, associations or athletics, awards and distinctions, and any other information about yourself relevant to the program **Selection Criteria** Not stated **RPL (Recognition of Prior Learning)** Not stated
Loyalist College	**Length** • 1 year – Residential Drafting and Design Certificate • 2 year – Architectural Technician Diploma • 3 year – Architectural Technology Advanced Diploma **Division of Academic Year** • 2 semesters per year • 14 weeks per semester • September intake only **Entrance Requirements** • OSSD/OSSGD or equivalent with courses at the general, advanced, (C), (U), (M) or (O) level, and • Grade 12 English (C) level or equivalent **OR** • mature applicant **Selection Criteria** • Year 1 (Certificate program) – first qualified, first admitted (no ranking) • Year 2 (Diploma program) – completion of year 1 (Residential Drafting and Design Certificate) • Year 3 (Advanced Diploma) – completion of year 2 (students who complete the two-year program with a cumulative average of 60% or better will be awarded an Architectural Technician Diploma and will be eligible for admission to the third year of study)

Loyalist College (cont'd)	**RPL (Recognition of Prior Learning)** Applicants may receive recognition for prior learning, or transfer of credit from another college or university. The PLAR office screens applicants and vets them through Architectural Technology staff who either; accept credit based on grade of familiar program, ask for evidence, or ask candidate to write a challenge exam.
NAIT	**Length** 2 years **Division of Academic Year** • 2 semesters per year • 15 weeks per semester • 28 hours per week of class time **Entrance Requirements** • Grade 12 English • Math 30 Pure or Applied • One of: Science 30, Physics 30 or Chemistry 30 • 65% overall average Students must have access to a laptop computer for the duration of the program. **Selection Criteria** • Competitive entrance • Admissions are first come, first served with preference to better marks and credentials • Applicants with applicable degrees, high school design study courses: DES3075/DES3095, and/or industry related training may be considered for preferential admission • Usually a one-on-one interview with the Chair as there is no set standard for credits from other institutions (international students) **RPL (Recognition of Prior Learning)** Same as above
NSCC	**Length** 2 years **Division of Academic Year** • 3 semesters • Semesters 1 & 2 – 15 weeks • Work Program – 5 weeks **Entrance Requirements** High school diploma or equivalent

NSCC (cont'd)	**Selection Criteria** First come, first served **RPL (Recognition of Prior Learning)** Case by case basis
RRC	**Length** 20 months **Division of Academic Year** • Year 1, Academic term 1 (August – April) • Year 1, Co-op term 2 (May – Oct) • Year 2, Academic term 3 (Nov – April) **Entrance Requirements** Manitoba Grade 12. Note: A strong science background and Applied Math 40S or Pre-Calculus Math 40S are recommended. • Students who are at least 19 years of age on or before September 30 in their year of registration and do not meet the regular admission requirements, may apply under the special admission criteria. Students must have successfully completed one credit of English 40S and one credit of Math 40S. • Admission preference is given to Manitoba residents who are Canadian citizens or permanent residents (landed immigrants). • Students are required to purchase a laptop computer and related software for use throughout the program. Applicants of Aboriginal ancestry may wish to consider the ACCESS Civil Engineering Technology program. The ACCESS Civil Engineering Technology program includes four Civil Engineering Technology program courses and four ACCESS courses. The courses reduce the number of credits taken in subsequent years and help build confidence, strengthen cultural identity, and allow a smooth and solid transition into the regular program and the world of work. A set of Aboriginal guiding principles has been incorporated into the program to ensure it is culturally appropriate and sensitive to the needs of Aboriginal students and the Aboriginal community. **Selection Criteria** • Year 1 – First qualified, first entered • To enter subsequent terms (both academic and co-op) in any of the specializations, including Building design CAD, and to graduate, students need a minimum cumulative grade point average (CGPA) of 2.00 **RPL (Recognition of Prior Learning)** There are no courses in this program designated as RPL courses.

SAIT	**Length** 2 years **Division of Academic Year** • 2 semesters per year • 15 weeks per semester **Entrance Requirements** Alberta High School Diploma or equivalent with at least 50% in the following courses or their equivalents: • Pure Math 30 or Applied Math 30 or Math 30-1 or Math 30-2, AND, • English Language Arts 30-1 or English Language Arts 30-2, AND, • A Grade 12 Science All applicants to SAIT Polytechnic must demonstrate English Language Proficiency prior to admission, including students educated in Canada. **Selection Criteria** Early admission will be offered to applicants who have achieved, or will achieve, a combined minimum average of 65% in the following courses or their equivalents: Pure Math 30, English Language Arts 30-1, and a Grade 12 Science. Remaining applicants will be ranked according to the admission requirements and offered seats accordingly. Preference will be given to applicants with Pure Math 30 and English Language Arts 30-1 or their equivalents. **RPL (Recognition of Prior Learning)** Yes
Curriculum Model	
College Scanned	**Experiential Component, Program Majors/Streams, Delivery Options (e.g. full-time and/or part-time, Distance Education, Online)**
Algonquin College	**Experiential Component** Technician program – With departmental approval, students who maintain a college-prescribed academic standing may take part in a co-operative placement during the summer months. For students with a fall start date, the co-op work term is at the end of Level 02 and for students with a Winter start date, the co-op work term is at the end of Level 03. Technology program – With department approval, students who maintain a college prescribed academic standing may take part in two co-operative placements during the summer months.

Algonquin College (cont'd)	**Program Majors / streams / exit points** • 2 year – Architectural Technician Diploma • 3 year – Architectural Technology Advanced Diploma **Delivery Options** • Full time • Weekend – Technician program only Programs are delivered using a variety of instruction modes - classroom or lab, entirely online, or in a hybrid which combines classroom sessions with online learning activities.
BCIT	**Experiential Component** Each Elective course includes a brief industry-based work practicum. **Program Majors / streams / exit points** One exit point after 2 years **Delivery Options** Full time
Fanshawe College	**Experiential Component** Four paid co-op work terms beginning in year 2 (minimum 3 required beginning 2013/2014) **Program Majors / streams / exit points** One exit point **Delivery Options** Not stated
Holland College	**Experiential Component** None **Program Majors / streams / exit points** One exit point **Delivery Options** Full time
Loyalist College	**Experiential Component** One-month work placement at the end of year 3 **Program Majors / streams / exit points** • 1 year – Residential Drafting and Design Certificate – occasionally students exit the program at this point • 2 year – Architectural Technician Diploma – rarely do students exit at this point • 3 year – Architectural Technology Advanced Diploma – most students exit at this point **Delivery Options** • Program is only offered on a full time basis • The program is not available via distance education

NAIT	**Experiential Component** First-year students participate in a 5-day unpaid work experience with Habitat for Humanity. Second-year students, with good academic standing, are placed in a 5-day unpaid work experience with architectural offices in Edmonton and, at the student's choice, in Calgary or other cities. **Delivery Options** • Full time • Working toward part-time / online
NSCC	**Experiential Component** This program is eligible for an optional co-op credit course comprised of paid employment (of at least 12-weeks) in a field related to the program between first and second year. **Delivery Options** • Full time • CAD courses online
RRC	**Experiential Component** There is one 6 month co-op work term in the middle of the program, from May to Oct. The College does not guarantee employment. **Program Majors / streams** Civil Engineering Technology programs have a common 1st year. In the 2nd (and 3rd) years, students select one of the following program specializations (total program length): • Architectural/Engineering Technology (32 months) • Environmental Protection Technology (32 months) • Geomatics Technology (32 months) • Municipal Engineering Technology (32 months) • Structural Engineering Technology (32 months) • Building Design CAD Technology (20 months) **Delivery Options** Full time
SAIT	**Experiential Component** 1 week of practical work experience in Semester 4 **Program Majors / streams** First 3 semesters are common. In semester 4, can enter Architectural major or Building Development major. **Delivery Options** • Full time • Currently, no part-time or online delivery options

Curriculum Content			
College Scanned	**Course titles, Course hours (credit and/or contact, Link to syllabus and/or course outlines if they are available**		
Algonquin College	**Level 1**		**Hours**
	ARC8401	Working Drawings I	75
	ARC8421	Construction Methods and Materials I	45
	CAD8407	Architectural Cad I	45
	GED8000	Is that Ethical?	45
	DSN8401	Visual Communication I	45
	ENL1813T	Communications I	45
	MAT8050	Geometry and Trigonometry	45
	Level 2		
	ARC8402	Working Drawings II	75
	ARC8422	Construction Methods and Materials II	45
	BSC8451	Environmental Systems I	45
	CAD8409	Architectural Cad II	45
	DSN8402	Visual Communication II	45
	HIS8482	History of Architecture I	45
	MAT8051	Algebra	45
	Level 3		
	ARC8403	Working Drawings III	75
	ARC8423	Construction Methods and Materials III	45
	ARC8430	Codes and Standards	45
	BSC8452	Environmental Systems II	45
	CAD8414	Bim I	45
	DSN8431	Architectural Design I	45
	Choose one	GED0188 General Education Elective	45
	Level 4		
	ARC8404	Working Drawings IV	75
	ARC8424	Construction Methods and Materials IV	45
	ARC8510	Construction Documentation I	45
	CAD8415	Bim II	45
	DSN8432	Architectural Design II	45
	ENG8491	Structures I	45
	ENL1819T	Reporting Technical Information	60
	Architectural Technician Diploma		
	Level 5		
	ARC8405	Working Drawings V	75
	ARC8425	Construction Methods and Materials V	45
	ARC8497	Architectural Project I	45
	ARC8511	Construction Documentation II	30
	BSC8453	Environmental Systems III	45
	ENG8492	Structures II	45
	Choose one	GED0018 General Education Elective	45

Algonquin College (cont'd)	**Level 6**		
	ARC8406	Working Drawings VI	75
	ARC8426	Construction Methods and Materials VI	45
	ARC8498	Architectural Project II	60
	BSC8454	Environmental Systems IV	45
	CON8476	Business Principles	45
	Architectural Technology Advanced Diploma		
	BIM Two courses – BIM I & II		
	Building green with "LEED" Not stated		
	Construction and the Environment Not stated		
BCIT	**Level 1 (15 weeks)**		**Credits**
	BLDG 1000	Architectural Drafting	3.0
	BLDG 1050	Construction Materials/Processes 1	3.0
	BLDG 1200	Building Construction 1	6.0
	BLDG 1405	Architectural CAD 1	3.0
	BLDG 1600	Structures 1 for Building	3.0
	COMM 1140	Technical Communication 1 for Building	3.0
	MATH 1401	Technical Math for Architectural/Building Eng.	5.0
	PHYS 1140	Applied Physics for Building 1	4.0
	Level 2 (20 weeks)		
	BLDG 2001	Site-Responsive Planning and Design	5.5
	BLDG 2005	Planning Regulations*	2.5
	BLDG 2050	Construction Materials/Processes 2*	2.0
	BLDG 2100	Introduction to Building Science*	2.5
	BLDG 2150	Introduction to Economics for Building*	2.5
	BLDG 2200	Building Construction 2	8.0
	BLDG 2305	Construction Estimating 1	4.5
	BLDG 2405	Architectural CAD 2*	2.0
	BLDG 2600	Structures 2 for Building	4.0
	COMM 2256	Technical Communication 2 for Building*	2.0
	MATH 2403	Statistics for Building*	3.5
	PHYS 2148	Applied Physics for Building 2*	3.0
	* denotes a half term course		
	Level 3 (15 weeks)		
	BLDG 3200	Building Construction 3	6.0
	BLDG 3251	Construction Contracts	3.0
	BLDG 3300	Construction Estimating 2	4.0
	BLDG 3450	Computer Applications for Building	3.0
	BLDG 3600	Structures 3 for Building	3.0
	ELEX 1810	Electrical Systems	3.0

BCIT (cont'd)	MSYS 3880	Heating, Ventilating and Air Conditioning	4.0
	and one of the following elective courses:		
	BLDG 3000	Architectural Technology 1	6.0
	BLDG 3050	Economics - Construction Operations 1	6.0
	BLDG 3100	Building Science 1	6.0
	Level 4 (20 weeks)		
	BLDG 4200	Building Construction 4	8.0
	BLDG 4250	Construction Specifications*	2.0
	BLDG 4303	Construction Estimating 3*	2.5
	BLDG 4400	Computer Applications in Construction Management*	2.0
	BLDG 4500	Codes and Regulations (Building Law in Canada)*	2.0
	BLDG 4515	Green Building Principles*	2.0
	BLDG 4550	Systems Integration for Building*	2.5
	COMM 3256	Tech Communication 3 for Bldg*	2.0
	BLDG 4600	Structures 4 for Building*	2.0
	ELEX 2805	Illumination*	1.5
	MSYS 3980	Plumbing*	1.5
	And one of the following groups of electives:		
	Architectural		
	BLDG 4000	Architectural Technology 2	10.5
	BLDG 4405	Computer Graphics for Architectural*	2.0
	or		
	Economics / Construction Operations		
	BLDG 4050	Economics - Construction Operations 2	10.5
	BLDG 4305	Computer Based Estimating*	2.0
	or		
	Building Science		
	BLDG 4100	Building Science 2	10.5
	BLDG 4105	Computer Applications for Building Science*	2.0
	* denotes a half-term course		
	BIM		
	Not stated		
	Building green with "LEED"		
	Not stated		
	Construction and the Environment		
	Not stated		

Fanshawe College	**Level 1**	**Credits**
	Take all of the following Mandatory Courses:	
	ARCH-1001 Architectural Design 1	3.00
	CADD-1041 Architectural AutoCAD 1	4.00
	WRIT-1039 Reason & Writing 1-Technology	3.00
	DRAF-1059 Architectural Fundamentals 1	3.00
	MATS-1002 Materials & Methods 1	3.00
	MATH-1061 Statics	3.00
	ARCH-1006 History of Architecture	3.00
	ENVR-1017 Sustainability in the Built Environment	3.00
	Level 2	
	Take all of the following Mandatory Courses:	
	CADD-1042 Architectural AutoCAD 2	4.00
	ARCH-1030 Architectural Design 2 & Project 2	9.00
	ARCH-1004 Ontario Building Code I	2.00
	MATS-1007 Materials & Methods 2	3.00
	MECH-1009 Mechanics of Materials	3.00
	MATH-1041 Architectural Mathematics	3.00
	SFTY-1029 Health & Safety	3.00
	Level 3	
	Take all of the following Mandatory Courses:	
	ARCH-3015 Architectural Design 3 & Project 3	9.00
	ARCH-1021 Ontario Building Code 2	2.00
	ENGR-1004 Environmental Engineering-Electrical	2.00
	MATS-3009 Materials & Methods 3	3.00
	CONS-1012 Quantities	3.00
	ENGR-3007 Structural Engineering 1	3.00
	SURV-1002 Surveying	3.00
	Level 4	
	Gen Ed - Take a 3 credit General Education elective course	
	Take all of the following Mandatory Courses:	
	ARCH-3016 Architectural Design 4 & Project 4	9.00
	CADD-3030 Building Information Modeling	3.00
	ENGR-1006 Environmental Engineering (HVAC)	4.00
	MATS-3010 Materials & Methods 4	3.00
	ENGR-3009 Structural Engineering 2	2.00
	Level 5	
	Gen Ed - Take a 3 credit General Education elective course	
	Take all of the following Mandatory Courses:	
	URBN-1025 Urban Environmental Studies	2.00
	ARCH-5001 Building Science 1	3.00
	ARCH-5009 Architectural Design 5 & Project 5	9.00
	ECON-1010 Building Economics	3.00
	ARCH-3007 Specifications 1	2.00
	ENGR-5007 Structural Engineering 3	3.00

Fanshawe College (cont'd)	**Level 6** **Take all of the following Mandatory Courses:** ARCH-5010 Architectural Design 6 & Project 6 — 9.00 ARCH-5005 Building Science 2 — 3.00 ARCH-5006 Architectural Office Procedures — 3.00 ARCH-5007 Specifications 2 — 3.00 ENGR-5009 Structural Engineering 4 — 2.00 COMM-5005 Technical Report Prod for Bldg Tech'y — 2.00 **BIM** Not stated **Building green with "LEED"** Course "Sustainability in the Built Environment" **Construction and the Environment** Not stated
Holland College	**Take the following course(s), minimum grade: 65%** **Hours** ARCTEC-1000 Surveying Fundamentals — 45 ARCTEC-1010 Drafting Fundamentals — 60 ARCTEC-1030 Technical Mathematics — 60 ARCTEC-1040 Physics — 45 ARCTEC-1050 Technical Communications — 45 ARCTEC-1060 Introduction to CAD — 60 ARCTEC-1070 Architectural CAD I — 60 ARCTEC-1080 Building Codes, Standards & Regulations — 45 ARCTEC-1090 Site Fundamentals — 30 ARCTEC-1100 Heritage Recording — 60 ARCTEC-1110 Architectural Working Drawings I: Residential — 60 ARCTEC-1125 History of Architecture — 30 ARCTEC-1130 Materials and Methods I: Light Wood Frame Construction — 45 ARCTEC-1140 Materials and Methods II: Thermal and Moisture Protection — 45 ARCTEC-1150 Building Systems I: HVAC, Plumbing and Electrical — 45 ARCTEC-2000 Introduction to Statics — 45 ARCTEC-2010 Introduction to Structures — 45 ARCTEC-2020 Architectural CAD II — 45 ARCTEC-2030 Advanced CAD — 45 ARCTEC-2040 Contract Administration — 45 ARCTEC-2050 Introduction to Sustainable Design — 45 ARCTEC-2060 Architectural Working Drawings II: Commercial — 90 ARCTEC-2070 Technical Thesis — 90 ARCTEC-2085 Materials and Methods III: Concrete and Steel Construction — 30 ARCTEC-2095 Materials and Methods IV: Building

Holland College (cont'd)	Envelope 45 ARCTEC-2100 Building Systems II: HVAC, Plumbing and Electrical 45 ARCTEC-2110 Building Systems III: Sound Control and Fire Protection Systems 45 COMP-1000 Computer Essentials 45 **BIM** Not stated **Building green with "LEED"** Not stated **Construction and the Environment** Not stated
Loyalist College	**First Year – Semester One** ARCH 1000 Architectural Drafting Studio 1 ARCH 1001 Presentation 1 ARCH 1002 Issues in Design & Environment BLDG 1000 Building Methods and Materials BLDG 1001 Building Construction Codes and Standards 1 CADD 1000 CAD 1 MATH 1002 Computations **First Year – Semester Two** ARCH 1003 Architectural Drafting Studio 2 ARCH 1004 Design 1 ARCH 1005 Intro to Architecture BLDG 1002 Statics BLDG 1006 Building and the Environment BLDG 1007 Building Construction Codes and Standards 2 CADD 1001 CAD 2 **Residential Drafting and Design Certificate** **Second Year – Semester Three** ARCH 2000 Presentation 2 ARCH 2004 Project Coordination and Research 1 BLDG 2000 Building Construction Codes and Standards 3 BLDG 2015 Mechanical and Electrical Systems BLDG 2018 Strength of Materials for Architecture CADD 2000 CAD 3 HIST 2000 Cultural History **Second Year – Semester Four** ARCH 2002 Design 2 ARCH 2003 Project Coordination and Research 2 BLDG 2002 Building Construction Codes and Standards 4 BLDG 2003 Structures and Drafting 1 BLDG 2013 Contracts, Specifications and Estimating

Loyalist College (cont'd)	BUSI 3000 Entrepreneurship CADD 2001 CAD 4 SURV 2004 Introduction to Surveying **Architectural Technician Diploma** **Third Year – Semester Five** ARCH 3000 Core Project 1 BLDG 3000 Structures and Drafting 2 BLDG 3013 Construction Management HIST 3000 History of Architecture **Third Year – Semester Six** ARCH 3001 Core Project 2 BLDG 3001 Structures and Drafting 3 PLAC 3002 Career and Research Placement PLAC 3017 Placement **Architectural Technology Advanced Diploma** **BIM** Started teaching Revit 7 years ago to 3rd year students only. Have dropped teaching of AutoCAD Architecture (ADT). **Building green with "LEED"** Currently teach principles of LEED but not to examine and do not provide any LEED certification or preparation for certification. **Construction and the Environment** Construction and the Environment are taught informally through a number of courses.
NAIT	**YEAR 1 Semester 1 Hours** ASE109 Effective Communications I 32 ASM149 Technical Mathematics for Architectural Technologists 32 EDT100 Introduction to Construction Drawings & Detailing 96 EDT110 Design Studio I 80 EDT120 Products and Materials I 32 EDT130 Construction Work Experience 32 EDT140 Structures I 32 EDT150 2-D AutoCAD Essentials 64 EDT160 History of the Built Environment 48 **Semester 1 – revised for 2012** EDT1100 Introduction to Construction Documents and Detailing 4.5 EDT1120 Design Studio I – Introduction to Design and Presentation 3.0 EDT1130 Computer Applications I – CAD 3.0

NAIT (cont'd)	EDT1150	Math & Structures	3.0
	EDT1170	Introduction to Site Safety	3.0
	Semester 2		
	ASE209	Effective Communications II	32
	ARC202	Construction Documents II	160
	ARC211	Design Studio II	96
	ARC220	Products & Materials II	32
	ARC240	Structures II (Statics and Strength of Materials)	64
	EDT260	Building Code	32
	EDT270	Sustainable Building Techniques	32
	Semester 2 – revised for 2012		
	ARC1200	Steel Construction Documents	4.5
	ARC1210	Building Technologies I – Steel & Masonry Construction	3.0
	ARC1220	Design Studio II – Conceptual Design	4.5
	ARC1230	Computer Applications II – 3D CAD	3.0
	ARC1240	Professional Communication I – Technical English	3.0
	YEAR 2	**Semester 3**	
	ASE309	Effective Communications III	32
	ELS330	Electrical & Mechanical Services	48
	ARC303	Construction Documents	160
	ARC311	Design Studio III	112
	ARC340	Structures III (Wood & Steel Design)	48
	ARC351	3-D CAD I	48
	Semester 3 – revised for 2012		
	ARC2300	Concrete Construction Documents I – Plans / Elevations	4.5
	ARC2310	Building Technologies II – Concrete Construction	3.0
	ARC2320	Design Studio III – Functional Design	3.0
	ARC2330	Computer Applications III – BIM	3.0
	ARC2340	Professional Communications II – Specifications	3.0
	Semester 4		
	ARC403	Construction Document IV	160
	ARC412	Design Studio IV	112
	ARC440	Structures IV (Reinforced Concrete Design)	64
	ARC451	3-D CAD II (Revit)	48
	ARC472	Professional Practice	64
	Semester 4 – revised for 2012		
	ARC2400	Concrete Construction Documents II – Sections / Details	4.5
	ARC2410	Building Technology III – Building Envelope and Interior Details	3.0

NAIT (cont'd)	ARC2430 Computer Applications IV – Presentation 3.0 ARC2440 Professional Communications III – Business Practice 3.0 Electives – One of the following: EDT2510 Sustainable Building Technologies 3.0 EDT2520 Architecture Design Studio 3.0 EDT2550 Urban Design 3.0 EDT2560 Structures 3.0 **BIM** • ARC 2330 Computer Applications (BIM) REVIT • ARC451 3-D CAD II (Revit) **Building green with "LEED"** • Discussed in lectures that deal with products and materials **Construction and the Environment** • Discussed in lectures that deal with products and materials
NSCC	AETE 3014 Architecture II AETE 3017 Architecture III CADD 3010 Architectural CAD Level II CADD 3020 Architectural CAD Level III COMM 1227 Communications I COMM 1228 Communications II DRAA 1001 Architectural Drafting I DRAA 1002 Applied Mathematics I DRAA 1004 Computer Aided Drafting I DRAA 1006 Applied Mathematics II DRAA 1009 Architectural Drafting II DRAA 1010 Architectural CADD Level I DRAA 1011 Construction Practices I DRAA 1012 Design Project I DRAA 3002 Architectural Computer Applications DRAA 3006 Construction Practices II DRAA 3010 Technical Communications DRAA 3014 Construction Practices III DRAA 3015 Work Experience – DRAA DRAA 3016 Building Services – Electrical DRAA 3017 Building Services – Mechanical DRAA 3101 Estimating Fundamentals DRAA 3102 Estimating Project ENVI 1010 Building Information Modeling I ENVI 3010 Building Information Modeling II ENVI 3020 Building Information Modeling III SAFE 1000 Introduction to WHMIS SAFE 1001 Introduction to NS OH&S Act

NSCC (cont'd)	**Interesting / unique courses or features** Marine focus – shipyards & dockyards **BIM** BIM courses **Building green with "LEED"** LEED integrated into curriculum **Construction and the Environment** Not stated
RRC	**YEAR 1 TERM 1 (Common)** COURSE — **Hours** CIVC-1051 Surveying 8 CIVL-1004 Algebra & Trigonometry 9 CIVL-1015 Chemistry 6 CIVL-1048 Statics and Strength of Materials 8 COMM-1233 Technical Communication 7 COMP-1113 Computer Applications 6 DRAF-1041 Technical Drafting 6 SEMR-0229 WHMIS Workshop 0 SEMR-9209 General Safety Training 0 **YEAR 1 TERM 2** COURSE WRKE-1008 Co-op Work Placement 9 **YEAR 2 TERM 3 (Building Design CAD)** COURSE CIVC-1044 Project Administration 6 CIVL-2004 Advanced CAD 5 CIVL-2016 Applied Technical Project 6 CIVL-2019 Architectural Detailing 8 CIVL-2028 Building Standards 6 CIVL-2029 Building Science 6 CIVL-2050 Structural Detailing 7 **BIM** Introduced in Advanced CAD **Building green with "LEED"** Not currently part of this specialization **Construction and the Environment** Not currently part of this specialization

SAIT	**First Year Semester 1**		**Credit**
	ARCH-215	Architectural Drafting I	6.0
	ARCH-241	Architectural Design and Presentation I	3.0
	ARCH-260	Architectural History: Theory and Design	1.5
	ARCH-265	Building Systems Technology I	6.0
	COMM-325	Team Building and Group Projects	1.5
	First Year	**Semester 2**	
	ARCH-251	Architectural Design and Presentation II	3.0
	ARCH-270	Building Systems Technology II	3.0
	ARCH-275	Architectural Drafting II	6.0
	ARCH-280	Introduction to Structures	1.5
	CODE-233	Building Code I	1.5
	COMM-260	Technical Communications	3.0
	Second Year	**Semester 3**	
	ARCH-243	Mechanical/Electrical System	1.5
	ARCH-340	Basic Structural Components	1.5
	ARCH-360	Building Systems Technology III	6.0
	ARCH-363	Building Code	1.5
	ARCH-374	Architectural CAD Applications	3.0
	ESTM-260	Estimating I	1.5
	Second Year	**Semester 4 (Architectural Major)**	
	ARCH-350	Principles of Construction Documentation	1.5
	ARCH-355	Sustainable Methods	1.5
	ARCH-384	Building Science	3.0
	PRAC-378	Architectural Practicum	1.5
	SURV-232	Surveying	1.5
	Electives:		
	ARCH-370	Building Systems Tech IV	6.0
	and		
	ARCH-371	Arch. Design & Presentation	1.5
	or		
	ARCH-390	Res. Building Systems Tech IV	6.0
	and		
	ARCH-391	Res. Arch. Design & Presentation	1.5
	Second Year	**Semester 4 (Building Development Major)**	
	ARCH-355	Sustainable Methods	1.5
	ARCH-364	Construction Contract Administration	1.5
	ARCH-381	Construction Practices	3.0
	ARCH-384	Building Science	3.0
	ESTM-360	Estimating II	3.0
	PRAC-378	Architectural Practicum	1.5
	SURV-232	Surveying	1.5
	We have a semester exchange with Box Hill Institute in Melbourne Australia and we offer a 10 day Study Tour to Chicago every May.		
	BIM, Building green with "LEED", Construction and the Environment Touch on all three of these extensively.		

Curriculum Renewal	
College Scanned	**Process, Frequency**
BCIT	Not stated
Algonquin College	Not stated
Fanshawe College	Not stated
Holland College	Not stated
Loyalist College	Advisory Committees are mandatory. They are made up of industry representatives, many of whom are former graduates of the program. They meet twice per year. Program reviews are also mandated every 5 years under Program Quality Assessment Review.
NAIT	Advisory committee provides input and feedback on course content. Our school has a survey review that goes out every 5 years to validate course content with industry.
NSCC	Program Advisory Committee meets a minimum of once per year. • Typically a five year program review cycle
RRC	The program has an advisory committee. Each academic program has an opportunity to be nominated by the Senior Academic Committee (SAC) for Program Renewal on a 5-year cycle and to receive assistance in establishing or renewing its curriculum for change and/or improvement.
SAIT	Advisory committee meets twice a year at a minimum. We review our curriculum often.

Student Assessment	
College Scanned	**Content theory assessment, Skills assessment (e.g. Labs), Assessment practices for any experiential components (practicum, clinical, work experience, Co-op education)**
Algonquin College	Not stated
BCIT	Not stated
Fanshawe College	Not stated
Holland College	Not stated
Loyalist College	Student assessment is based on the nature of the course content. Some utilize assignments, mid and final exams; others are more project-driven with less or no emphasis on final exams.
NAIT	Marking by instructors based on info provided to students at initial assignment stage value marks for presentation techniques, design, professionalism etc. • No assessment of 5 day work experience
NSCC	Program is largely project based. Employer assessment forms are on the NSCC website, and is a requirement for graduation.
RRC	• Determined by instructor • Rubrics used for drawings and reports • Co-op formally assessed on basis of completion of term and related paper. Informal assessment by co-op employer
SAIT	We assess all theory, labs and experiential component.
Current and Coming Challenges	
College Scanned	**Content, Delivery of program, Changes to Industry Requirements**
Algonquin College	Not stated
BCIT	Not stated
Fanshawe College	Not stated
Holland College	Not stated

Loyalist College	• Students entering from high school lack proficiency in math and literacy skills • Dropping enrolments • Increasing costs • Demographics to job opportunities • Province of Ontario is considering taking certification of building officials away from Ontario Building Officials Association and giving it to the colleges
NAIT	Just moved to 15 week OBE credit based program. Certain courses have been rolled into one.
NSCC	• Sustainability • Heritage issues, conservation • Preserving traditional woodworking techniques, partnership with carpentry department to record and reproduce heritage details
RRC	• Meeting industry expectations • Demand for evening and weekend programming so that students do not have to give up their jobs • Limited time available within the current program length
SAIT	Not stated
Partnerships	
College Scanned	**High School, Post-secondary, Business & Industry, Government, Union, International**
Algonquin College	**Articulation** Graduates of the program may be eligible to receive credit towards: **Architectural Technician** Athabasca University (Canada) • Bachelor of Information • Advanced standing of 36 credits Davenport University (USA) • Bachelor of Business Administration – Applied Business • Advanced standing of 60 credit hours towards a 4-year degree of a minimum total of 120 semester credit hours **Architectural Technology** Davenport University (USA) • Bachelor of Business Administration – Applied Business • Advanced standing of 90 credit hours towards a 4-year degree of a minimum total of 120 semester credit hours Conestoga College • Bachelor of Applied Technology (Architecture - Project and Facility Management) • Graduates with a minimum B average are eligible for direct entry into the third year of the program following completion of a 3 week bridging module

Algonquin College (cont'd)	**Community Partnerships** Not stated **Accreditation** The Architectural Technician and Technology programs are each accredited by the Canadian Technology Accreditation Board (CTAB). **Certification** Not stated
BCIT	**Articulation** Graduates of the program may be eligible to receive credit towards: • Bachelor of Technology in Architectural Science (BCIT) • Bachelor of Technology in Construction Management (BCIT) **Community Partnerships** Not stated **Accreditation** The Architectural and Building Engineering Technology diploma program is accredited by the Architectural Institute of British Columbia (AIBC). **Certification** Full-time students may apply for Student Associate status with the Architectural Institute of British Columbia (AIBC). Graduates are eligible for membership and may apply for registration as an Architectural Technologist after completing two years of relevant experience and the registration examination. The Canadian Institute of Quantity Surveyors (CIQS) will accept graduates as Associate Members and gives credit in a similar manner. Associate Members of CIQS have the ability to attain the professional designations Professional Quantity Surveyor (PQS) or Construction Estimator Certified (CEC) upon completion of the relevant credits and experience.
Fanshawe College	**Articulation** McMaster University • Bachelor of Technology – Civil Engineering Infrastructure • Graduates with a minimum GPA of 3.0 may receive credit towards this program **Community Partnerships** Not stated **Accreditation** Not stated **Certification** Not stated

Holland College	**Articulation** Graduates of the program may be eligible to receive credit towards: Memorial University of Newfoundland • Bachelor of Technology degree • Complete an additional 12 courses. This may be completed through distance education University of New Brunswick St John • Bachelor of Applied Management • Two years of credit toward the degree **Community Partnerships** Not stated **Accreditation** The Architectural Technology program is accredited by the Canadian Technology Accreditation Board of the Canadian Council of Technicians and Technologists. **Certification** Graduates may apply for associate membership with the Association of Certified Engineering Technicians and Technologists of Prince Edward Island (ACETTPEI). After gaining two years of work experience, graduates may apply for full membership and receive the professional designation of CET (Certified Engineering Technologist).
Loyalist College	**Articulation** Credit transfer agreements are in place for a degree outside of architecture, with the following institutions as of September 2012: • Algoma University College • Athabasca University • Davenport University • Griffith University • Laurentian University • University of Ontario Institute of Technology Informal agreements are in place with other institutions and new transfer agreements are added annually. **Community Partnerships** High school students may take Construction Renovation Techniques at the college and receive not only a high school credit, but a college credit for that course as well. **Accreditation** Program is accredited by CTTAM. **Certification** Graduates of the Loyalist Architectural Technician program meet all of the academic requirements established by the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) for professional certification as Certified Technicians (C.Tech.) – and graduates of the three

Loyalist College (cont'd)	year Architectural Technology program, as Applied Science Technologists (A.Sc.T.) or Certified Engineering Technologists (C.E.T.). Graduates certified as an OACETT A.Sc.T. or C.E.T. may join the Ontario Association for Applied Architectural Sciences (OAAAS) and through it, qualify to become a member of the Ontario Association of Architects as a Licensed Technologist OAA.
NAIT	**Articulation** Architectural Technology graduates can earn a second diploma - Interior Design Technology - with one more year of study, giving them two diplomas in just three years. Graduates are also eligible to enter NAIT's Bachelor of Technology Management program, and can earn their BTech degree with just two additional years of full-time study. Part-time and online BTech courses are also available, providing convenient study options. • Ongoing negotiations with University of Manitoba **Community Partnerships** Provide in school presentations for our school in the high schools. **Accreditation** Not stated **Certification** • After two years of relevant work experience and other criteria, graduates may become affiliate members of The Alberta Association of Architects (AAA), and be known as certified architectural technologists • Students can join ASET (Alberta Society of Engineering Technologists)
NSCC	**Articulation** Not stated **Community Partnerships** Not stated **Accreditation** Program is accredited by TechNova – The Certifying Body for Engineering and Applied Science Technicians and Technologists. **Certification** Not stated

RRC	**Articulation** Graduates of high school vocational education programs with CAD or drafting may be eligible for advanced standing credit in the Civil Engineering Technology programs. Upon completion of first-year Civil/CAD Technology at Assiniboine Community College or University College of the North, applicants will be given advanced standing. Graduates of the Building Design CAD program can, with bridging, transfer credits to the Construction Management degree program at RRC. **Community Partnerships** Not stated **Accreditation** Accreditation is being sought at the Technician level with the following: • Certified Technicians and Technologists Association of Manitoba • Canadian Council of Technicians and Technologists **Certification** • Students are eligible for student membership with the Architectural and Building Technologists Association of Manitoba (abtam) • Graduates of the program, upon meeting certain criteria, are eligible for certification by abtam
SAIT	**Articulation** Through SAIT Polytechnic transfer agreements and institution partnerships, graduates of this SAIT program may be eligible for credit at the following universities and colleges: • Athabasca University • NAIT • SAIT Polytechnic • Thompson Rivers University • University of Calgary • University of New Brunswick, Saint John Transfer options may also be available at other post-secondary institutions where credits from SAIT programs are evaluated on an individual basis. **Community Partnerships** Not stated **Accreditation** Not stated **Certification** Not stated

College Scanned	Comments
Algonquin College	Not stated
BCIT	Not stated
Fanshawe College	Not stated
Holland College	Not stated
Loyalist College	Comments as discussed with Chuck Barsony, Loyalist College on November 7, 2012.
NAIT	Not stated
NSCC	Not stated
RRC	Not stated
SAIT	Not stated

A2: Chart of Course Comparisons

A2: Chart of Course Comparisons

RRC (credits)	ALGONQUIN (hours)	BCIT (credits)	FANSHAWE (credits)	HOLLAND (hours)
LEGEND	**LEGEND** • 4 semesters for Architectural Technician Diploma • Additional 2 semesters for Architectural Technology Diploma	**LEGEND** • Electives	**LEGEND**	**LEGEND**
• Algebra & Trigonometry 9	• Geometry and Trigonometry 45 • Algebra 45	• Technical Math for Architectural/Building Eng. 5.0 • Statistics for Building 3.5	• Architectural Mathematics 3.00	• Technical Mathematics 60
• Technical Comm. 7	• Communications I 45 • Reporting Technical Information 60	• Technical Communication 1 for Building 3.0 • Technical Communication 2 for Building 2.0 • Technical Communication 3 for Building 2.0	• Reason & Writing 1-Technology 3.00 • Technical Report Prod for Bldg Tech'y 2.00	• Technical Communications 45
• Chemistry 6 • Statics and Strength of Materials 8		• Applied Physics for Building 1 4.0 • Applied Physics for Building 2 3.0	• Statics 3.00 • Mechanics of Materials 3.00	• Physics 45 • Introduction to Statics 45
	• Construction Methods and Materials I 45 • Construction Methods and Materials II 45 • Construction Methods and Materials III 45 • Construction Methods and Materials IV 45 • Construction Methods and Materials V 45 • Construction Methods and Materials VI 45	• Construction Materials /Processes 1 3.0 • Construction Materials /Processes 2 2.0	• Materials & Methods 1 3.00 • Materials & Methods 2 3.00 • Materials & Methods 3 3.00 • Materials & Methods 4 3.00	• Materials and Methods I: Light Wood Frame Construction 45 • Materials and Methods II: Thermal and Moisture Protection 45 • Materials and Methods III: Concrete and Steel Construction 30 • Materials and Methods IV: Building Envelope 45

LOYALIST	NAIT (hours)	NOVA SCOTIA	SAIT	
LEGEND • Residential Drafting and Design Certificate • 2 semesters, in addition to "Residential Drafting and Design Certificate", for Architectural Technician Diploma • 2 semesters, in addition to "Architectural Technician Diploma", for Architectural Technology Advanced Diploma	**LEGEND** • ~~2011 – 2012 course~~ • 2012 – 2013 course • Electives	**LEGEND**	**LEGEND** • Common 3 semesters • Semester, in addition to "Common", for Architectural major • Semester, in addition to "Common", for Building Development major	
• Computations	• ~~Technical Mathematics for Architectural Technologists 32~~ • Math and Structures 3.0	• Applied Mathematics I • Applied Mathematics II		
	• ~~Effective Comms. I 32~~ • ~~Effective Comms. II 32~~ • ~~Effective Comms. III 32~~ • Professional Communication I – Technical English 3.0	• Communications I • Communications II • Technical Communications	• Technical Communications 3.0	
• Statics				
• Building Methods and Materials • Strength of Materials for Architecture	• ~~Products and Materials I 32~~ • ~~Products & Materials II 32~~			

RRC (credits)	ALGONQUIN (hours)	BCIT (credits)	FANSHAWE (credits)	HOLLAND (hours)
• WHMIS Workshop 0 • General Safety Training 0			• Health & Safety 3.00	
• Co-op Work Placement 9	• Optional co-op work term 1 • Optional co-op work term 2			
• Surveying 8			• Surveying 3.00	
• Computer Applications 6		• Computer Applications for Building 3.0		• Computer Essentials 45
• Project Administration 6	• Is That Ethical? 45 • Business Principles 45	• Intro to Economics for Building 2.5 • Construction Est. 1 4.5 • Construction Est. 2 4.0 • Construction Est. 3 2.5 • Construction Contracts 3.0 • Computer Apps in Construction Mngt 2.0 • Economics: Construction Operations 1 (Elective) 6.0 • Economics - Construction Operations 2 (Elective) 10.5 • Computer Based Estimating (Elective) 2.0	• Architectural Office Procedures 3.00 • Building Economics 3.00	• Contract Administration 45

LOYALIST	NAIT (hours)	NOVA SCOTIA	SAIT	
	• Introduction to Site Safety 3.0	• Introduction to WHMIS • Introduction to NS OH&S Act		
• Career & Research Placement • Placement	• ~~Construction Work Experience 32~~	• Work Experience - DRAA	• Architectural Practicum 1.5 • Architectural Practicum 1.5	
• Introduction to Surveying			• Surveying 1.5 • Surveying 1.5	
		• Architectural Computer Applications		
• Project Coordination and Research 1 • Project Coordination and Research 2 • Construction Management • Contracts, Specifications and Estimating • Entrepreneurship	• ~~Professional Practice 64~~ • Professional Communications III – Business Practice 3.0	• Estimating Fundamentals • Estimating Project	• Estimating I 1.5 • Estimating II 3.0 • Construction Practices 3.0 • Construction Contract Administration 1.5	

RRC (credits)	ALGONQUIN	BCIT	FANSHAWE	HOLLAND
• Applied Technical Project 6	• Architectural Project I 45 • Architectural Project II 60		• Architectural Fundamentals 1 3.00	• Technical Thesis 90
• Technical Drafting 6 • Advanced CAD 5	• Architectural Cad I 45 • Architectural Cad II 45	• Architectural Drafting 3.0 • Architectural CAD 1 3.0 • Architectural CAD 2 2.0	• Architectural AutoCAD 1 4.00 • Architectural AutoCAD 2 4.00	• Drafting Fundamentals 60 • Introduction to CAD 60 • Architectural CAD I 60 • Architectural CAD II 45 • Advanced CAD 45
• Architectural Detailing 8	• Architectural Design I 45 • Architectural Design II 45	• Site-Responsive Planning and Design 5.5	• Architectural Design 1 3.00 • Architectural Design 2 and Project 2 9.00 • Architectural Design 3 and Project 3 9.00 • Architectural Design 4 and Project 4 9.00 • Architectural Design 5 and Project 5 9.00 • Architectural Design 6 and Project 6 9.00	• Site Fundamentals 30 • Architectural Working Drawings I: Residential 60 • Architectural Working Drawings II: Commercial 90
	• History of Architecture I 45		• History of Architecture 3.00	• History of Architecture 30
• Structural Detailing 7	• Structures I 45 • Structures II 45	• Structures 1 for Building 3.0 • Structures 2 for Building 4.0 • Structures 3 for Building 3.0 • Structures 4 for Building 2.0	• Structural Engineering 1 3.00 • Structural Engineering 2 2.00 • Structural Engineering 3 3.00 • Structural Engineering 4 2.00	• Introduction to Structures 45

LOYALIST	NAIT	NOVA SCOTIA	SAIT	
• Core Project 1 • Core Project 2		• Design Project I	• Team Building and Group Projects 1.5	
• CAD 1 • CAD 2 • CAD 3 • CAD 4	• ~~2-D AutoCAD~~ • ~~Essentials 64~~ • ~~3-D CAD I 48~~ • ~~3-D CAD II (Revit) 48~~ • Computer Apps I – • CAD 3.0 • Computer Apps II – • 3D CAD 3.0 • Computer Apps III – • BIM 3.0 • Computer Apps IV – Presentation 3.0	• Architectural Drafting I • Architectural Drafting II • Computer Aided • Drafting I • Architectural CADD Level I • Architectural CAD Level II • Architectural CAD • Level III	• Architectural CAD Applications 3.0 • Architectural • Drafting I 6.0 • Architectural • Drafting II 6.0	
• Intro to Architecture • Design 1 • Design 2	• ~~Design Studio I 80~~ • ~~Design Studio II 96~~ • ~~Design Studio III 112~~ • ~~Design Studio IV 112~~ • Design Studio I - Intro to Design & • Presentation 3.0 • Design Studio II – Conceptual Design 4.5 • Design Studio III – Functional Design 3.0 • Architecture Design Studio (Elective) 3.0	• Architecture II • Architecture III	• Architectural Design and Presentation I 3.0 • Architectural Design and Presentation II 3.0 • Arch. Design & Presentation (Elective) 1.5 or • Res. Arch. Design & Presentation (Elective) 1.5	
• Cultural History • History of Architecture	• ~~History of the Built Environment 48~~		• Architectural History: Theory and Design 1.5	
• Structures and Drafting 1 • Structures and Drafting 2 • Structures and Drafting 3	• ~~Structures I 32~~ • ~~Structures III (Wood & Steel Design) 48~~ • ~~Structures IV (Reinforced Concrete Design) 64~~ • Structures • (Elective) 3.0		• Introduction to Structures 1.5 • Basic Structural Components 1.5	

RRC (credits)	ALGONQUIN	BCIT	FANSHAWE	HOLLAND
• Building Science 6		• Introduction to Building Science 2.5 • Building Science 1 (Elective) 6.0 • Building Science 2 (Elective) 10.5 • Computer Applications for Building Science (Elective) 2.0	• Building Science 1 3.00 • Building Science 2 3.00	
• Building Standards 6	• Codes and Standards 45	• Planning • Regulations 2.5 • Codes and Regulations (Building Law in Canada) 2.0	• Ontario Building Code I 2.00 • Ontario Building Code 2 2.00	• Building Codes, Standards and Regulations 45
	• Environmental • Systems I 45 • Environmental • Systems II 45 • Environmental • Systems III 45 • Environmental • Systems IV 45	• Electrical Systems 3.0 • Heating, Ventilating and Air Conditioning 4.0 • Systems Integration for Building 2.5 • Illumination 1.5 • Plumbing 1.5	• Environmental Engineering-Electrical 2.00 • Environmental Engineering (HVAC) 4.00	• Building Systems I: HVAC, Plumbing and Electrical 45 • Building Systems II: HVAC, Plumbing and Electrical 45 • Building Systems III: Sound Control and Fire Protection Systems 45
	• Construction Documentation I 45 • Construction Documentation II 30	• Construction Specifications 2.0	• Specifications 1 2.00 • Specifications 2 3.00	
		• Green Building • Principles 2.0	• Sustainability in the Built Environment 3.00	• Introduction to Sustainable Design 45

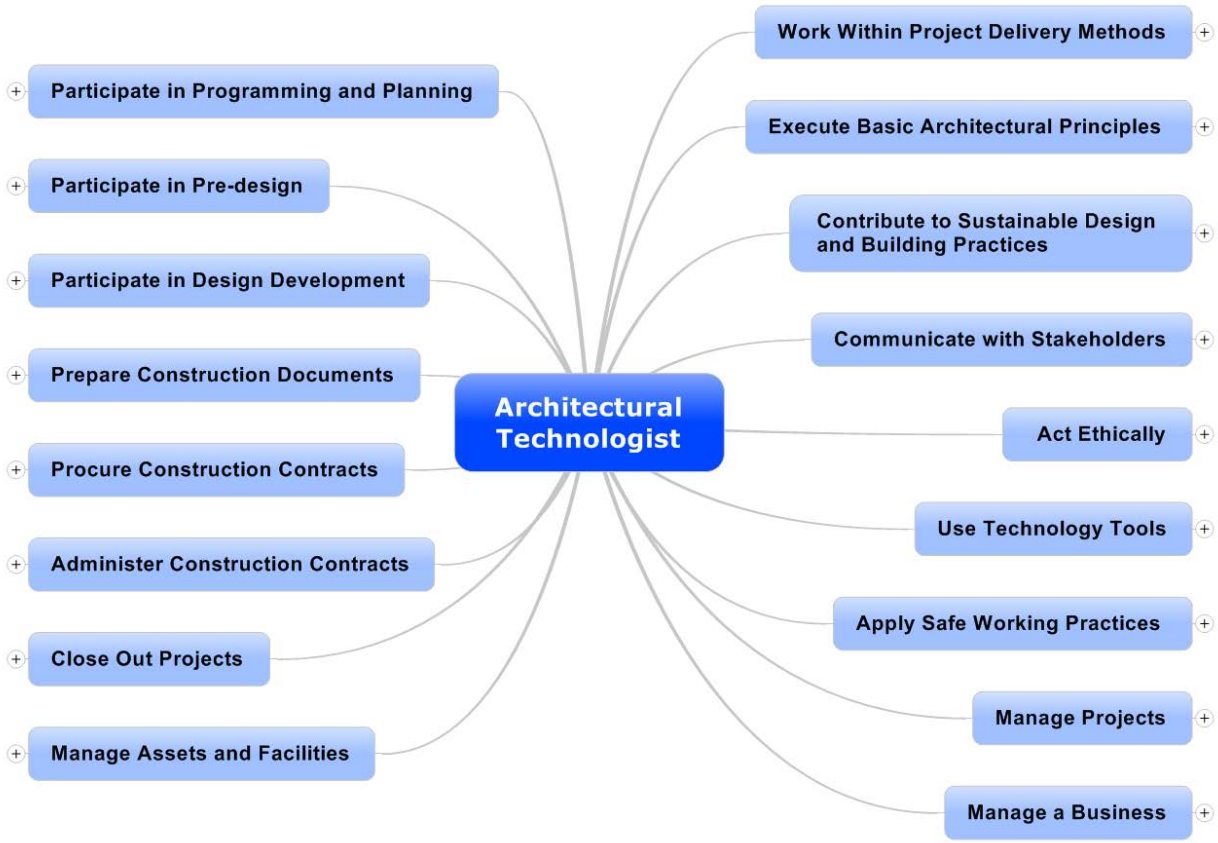
LOYALIST	NAIT	NOVA SCOTIA	SAIT	
			• Building Science 3.0 • Building Science 3.0	• Building Science 6
• Building Construction Codes and Standards 1 • Building Construction Codes and Standards 2 • Building Construction Codes and Standards 3 • Building Construction Codes and Standards 4	• ~~Building Code 32~~		• Building Code I 1.5 • Building Code 1.5	• Building Standards 6
• Mechanical and Electrical Systems	• ~~Electrical & Mechanical Services 48~~	• Building Services - Electrical • Building Services - Mechanical	• Building Sys Tech I 6.0 • Building Sys Tech II 3.0 • Building Sys Tech III 6.0 • Building Sys Tech IV (Elective) 6.0 or • Res. Building Sys Tech IV (Elective) 6.0 • Mechanical/Electrical System 1.5	
	• ~~Constr Documents II 160~~ • ~~Constr Documents 160~~ • ~~Constr Document IV 160~~ • Professional Communications II – Specifications 3.0		• Principles of Construction Documentation 1.5	
• Issues in Design & Environment • Building and the Environment	• ~~Sustainable Building Techniques 32~~ • Sustainable Building Technologies (Elective) 3.0		• Sustainable Methods 1.5 • Sustainable Methods 1.5	

RRC (credits)	ALGONQUIN	BCIT	FANSHAWE	HOLLAND
	• Bim I 45 • Bim II 45		• Building Information Modeling 3.00	
No match / match not determined	• General Educ Elective 45 • General Educ Elective 45 • Visual Communication I 45 • Visual Communication II 45 • Working Drawings I 75 • Working Drawings II 75 • Working Drawings III 75 • Working Drawings IV 75 • Working Drawings V 75 • Working Drawings VI 75	• Bldg Construction 1 6.0 • Bldg Construction 2 8.0 • Bldg Construction 3 6.0 • Bldg Construction 4 8.0 • Architectural Technology 1 (Elective) 6.0 • Architectural Technology 2 (Elective) 10.5 • Computer Graphics for Architectural (Elective) 2.0	• General Educ elective 3.00 • General Educ elective 3.00 • Urban Environmental Studies 2.00 • Quantities 3.00	• Heritage Recording 60

LOYALIST	NAIT	NOVA SCOTIA	SAIT	
		• Building Information Modeling I • Building Information Modeling II • Building Information Modeling III		
• Arch Drafting Studio 1 • Arch Drafting Studio 2 • Presentation 1 • Presentation 2	• ~~Introduction to Construction Drawings & Detailing 96~~ • ~~Structures II (Statics and Strength of Materials) 64~~ • Introduction to Construction Documents and Detailing 4.5 • Steel Construction Documents 4.5 • Concrete Construction Documents I – Plans/Elevations 4.5 • Concrete Construction Documents II – Sections/Details 4.5 • Building Technologies I – Steel & Masonry Construction 3.0 • Building Technologies II – Concrete Constr 3.0 • Building Technologies III – Building Envelope and Interior Details 3.0 • Urban Design (Elective) 3.0	• Construction Practices I • Construction Practices II • Construction Practices III		

Appendix B – Industry Occupational Analysis

Architectural Technologist
Occupational Analysis
February 6 & 13, 2013



Facilitators

Robert Cordingley, Craig Edwards & Lorna Smith
Centre for Teaching Excellence, Innovation & Research
Red River College

Scope

Architectural Technologists working in:

- Residential & commercial
- New construction & renovation
- Small & large firms:
  - Architectural
  - Engineering
  - Construction
  - Suppliers
- Public sector
- Manitoba & other provinces

Trends

Emerging Trends

- BIM --The way of fitting into a BIM team is different than for a CAD team. Requires teamwork and communication
- Use of low end software used by unskilled individuals
- Integration of "silos"
- Building science has become more important due to regulations, etc.
- Integrated Project delivery (IPD)
- Cloud based services and software tools
- Architectural and engineering firms working more closely

Retiring Trends

- Lack of knowledge of building technologies in students - RRC and university
- "Silos" of various roles in the field are breaking down
- Eventually CAD, but this will take a long time

Skill Rating Scale

The rating scale is as follows:

Can perform this skill competently with more than acceptable speed and/or quality and can teach the skill to others

Can perform this skill competently without assistance and/or supervision

Can perform this skill satisfactorily but requires periodic assistance and/or supervision

Can perform some parts of this skill satisfactorily but requires assistance and/or supervision to perform the entire skill

1 Participate in Programming and Planning

1.1 1 Produce schedules of accommodation and space requirements

1.2 2 Participate in project initiation

1.3 1 Generate a project charter

1.4 1 Develop a project plan

2 Participate in Pre-design

2.1 Evaluate Buildings and Sites

2.1.1 3 Site measure existing buildings and sites

2.1.2 3 Prepare measured drawings of existing buildings and sites

2.1.3 3 Collect and/or co-ordinate field data

3 Participate in Design Development

3.1 Apply Building Science Principles

3.1.1 2 Use systematic approaches to solve technical problems

3.1.2 3 Apply mathematical and scientific principles to design and detail projects

3.1.3 2 Create details to control air and water mitigation

3.1.4 2 Create details to control heat loss and energy efficiency

3.1.5 2 Create details which consider construction sequence

3.1.6 2 Evaluate the performance properties and compatibility of equipment and materials

3.1.7 2 Evaluate testing, for quality assurance, of materials, methods, and equipment

3.1.8 2 Evaluate climatic factors and principles and their influence on building design and detailing

3.2 Coordinate Building Systems

3.2.1 2 Coordinate the work of the architectural and engineering disciplines (e.g. structural, mechanical, electrical, environmental, municipal, process)

3.2.2 2 Coordinate clearances, locations, and interferences between architectural and engineering systems.

3.2.3 2 Coordinate requirements of service providers (e.g. telecommunications, power, security, etc)

3.3 Prepare Basic Construction Cost Estimates

3.3.1 2 Evaluate construction cost estimates and schedules of probable costs

3.3.2 2 Prepare basic construction cost estimates and schedules of probable costs

3.3.2.1 3 Measure and record quantities

3.3.3 2 Evaluate time studies to produce accurate unit prices of construction activities

3.4 Analyze Structural Components and Systems

3.4.1 2 Apply allowable loading combinations including live and dead loads

3.4.2 2 Apply structural design elements to layout beams, columns, walls, and floor systems in structural steel, timber and reinforced concrete

3.4.3 2 Analyze construction drawings for structural steel, reinforcing steel layouts and formwork designs

3.4.3.1 2 Verify steel placement

3.4.4 3 Layout foundations, walls, beams, slabs and columns

3.4.5 2 Determine appropriate foundation type for the application

3.5 Participate in Interior Design

3.5.1 3 Prepare furniture and equipment layouts

3.5.2 3 Prepare custom details (e.g. millwork, ceilings, doors, windows and frames, etc)

3.5.3 3 Prepare reflected ceiling plans

3.5.4 3 Prepare schedules (e.g. door and hardware, finishes, etc)

3.5.5 3 Prepare floor finish plans

3.6 Comply with Codes, Bylaws and Regulations

3.6.1 3 Determine codes applicable to the function of a building

3.6.1.1 3 *Analyze gross building areas*

3.6.2 3 Apply applicable codes

3.6.3 2 Interpret the principles behind code regulations

3.6.4 3 Apply the principles behind code regulations

3.6.5 2 Interpret municipal, provincial, and federal regulations that pertain to the environment

3.6.6 3 Apply barrier-free design principles, as defined by building codes

3.6.7 2 Negotiate with authority having jurisdiction

3.7 Manage Building Information Models

3.7.1 2 Perform daylighting analysis

3.7.2 2 Analyze power use

3.7.3 2 Apply model sequencing

3.7.4 2 Set up model for multiple team members to work on single file

3.7.5 3 Adhere to BIM standards

3.7.6 3 Import models from consultants

3.7.7 2 Perform clash detection

3.7.8 2 Setup coordination between models

3.7.9 3 Manage model content

3.7.10 2 Develop model content

3.7.11 2 Model design options, phases and revisions

3.7.12 3 Export text data

3.7.13 2 Integrate data between drawings / models and database applications

3.8 Manage Computer Aided Design

3.8.1 3 Comply with CAD standards

3.8.2 3 Comply with best practices

3.8.3 3 Prepare CAD files

3.8.4 3 Manage CAD files

3.8.5 3 Archive CAD files

3.8.6 3 Distribute CAD files

3.9 2 Produce digital animation / walk through of architectural scenes

3.10 2 Create views of digital models

3.11 2 Produce photo-realistic renderings of architectural forms

3.12 2 Apply structural, mechanical, electrical, and environmental theory and research when assisting in designing, detailing, implementing, and evaluating construction projects.

3.13 2 Interpret reports, cost estimates and project documentation

3.14 1 Prepare reports, cost estimates and project documentation

4 Prepare Construction Documents

4.1 Prepare Drawings

4.1.1 2 Prepare construction drawings and technical annotation

4.1.2 1 Prepare document set mock up

4.1.3 3 Modify construction drawings

4.1.4 2 Prepare graphic information using drawing elements, symbols, and conventions

4.1.5 2 Produce hand-drawn sketches delineating plans, sections, elevations and plan details, section details and elevation details

4.1.6 2 Produce building component schedules

4.1.7 2 Prepare demolition documents

4.2 Prepare Specifications

4.2.1 2 Prepare project specifications using formats such as National Master Specification (NMS)

4.2.2 2 Modify construction specifications

4.2.3 3 Coordinate specifications with drawings

4.2.4 3 Conduct product research

5 Procure Construction Contracts

5.1 2 Interpret different types of contracts

5.2 2 Apply basic legal principles affecting the review and administration of contracts

5.3 2 Prepare contract documents

5.4 2 Prepare Bid Documents

5.5 2 Prepare and issue addenda as required

5.6 2 Receive bids

5.7 2 Analyze bids

5.8 1 Prepare recommendations to award

5.9 2 Obtain building permits

6 Administer Construction Contracts

6.1 2 Review shop drawings

6.2 2 Interpret working drawings to assess construction activities and ensure compliance of work

6.3 2 Prepare site review reports

6.4 2 Prepare site instructions

6.5 2 Prepare Proposed Change Notices, Change Orders and Change Directives

6.6 2 Prepare certification for payment

6.7 3 Schedule site visits

6.8 2 Manage the results of quality-assurance testing

6.9 2 Develop deficiency lists

6.10 2 Coordinate testing, commissioning and training

6.11 2 Coordinate project mock-ups

7 Close Out Projects

7.1 3 Compare drawings to as-built conditions

7.1.1 3 Take site measurements

7.2 3 Record as-built conditions

7.3 2 Conduct warranty review

7.4 3 Obtain and review operations and maintenance manuals

7.5 2 Prepare certificates of substantial completion and letters of certification

7.6 2 Obtain occupancy permits

8 Manage Assets and Facilities

8.1 2 Plan for tenant improvements

8.2 1 Manage inventories

8.3 1 Develop emergency preparedness plans

8.4 1 Develop environmental plans

8.5 1 Develop master plans

8.6 1 Manage leases

8.7 1 Manage utilities

9 Work Within Project Delivery Methods

9.1 3 Identify delivery methods and their key features (integrated project delivery, design-bid-build, design-build, public private partnerships, construction management, project management)

10 Execute Basic Architectural Principles

10.1 2 Apply the principles of acoustics, color, and lighting in the design

10.2 2 Apply human form, scale and spatial perception

10.3 3 Apply project design objectives

10.4 2 Apply sustainable design strategies

10.5 3 Conduct research and analysis that informs design process

11 Contribute to Sustainable Design and Building Practices

11.1 3 Research the environmental impact of various building techniques and materials

11.2 3 Apply criteria of sustainable building programs (e.g. LEED, Green Globes, etc)

12 Communicate with Stakeholders

12.1 2 Clarify the needs of the project stakeholders

12.2 2 Communicate technical information to diverse groups with varying interests and technical knowledge

12.3 3 Prepare project-related information in written formats

12.4 2 Prepare proposals, reports, emails, minutes and letters

12.5 3 Use technical writing skills

12.6 3 Use professional language and protocols

12.7 3 Present project-related information in oral formats

12.8 3 Explain technical drawings and models

12.9 3 Communicate to resolve problems

12.10 3 Speak publicly

12.11 3 Participate on teams

13 Act Ethically

13.1 3 Comply with applicable codes of ethics

13.2 3 Work within the legal and professional accountabilities in the workplace

13.3 3 Apply ethical reasoning to resolve social, contractual and environmental issues

13.4 3 Comply with confidentiality and privacy regulations

14 Use Technology Tools

14.1 2 Keep informed about emerging technologies that affect architectural and engineering work

14.2 2 Determine when technology tools can enhance productivity

14.3 3 Manage the storage and retrieval of digital documents

14.4 3 Use digital communications to access and share information

14.5 2 Contribute to the evaluation of software used in architectural construction projects

14.6 2 Select suitable software for a task

14.7 4 Use office application software (word processor, spreadsheet, database, etc)

14.8 3 Use BIM software

14.9 3 Use clash detection software

14.10 3 Use CAD software

14.11 3 Use NMS software

14.12 2 Use project management software

14.13 3 Use Electronic Document Management System

14.14 2 Use Geographical Information Systems

14.15 2 Use photo rendering and illustration software

14.16 2 Integrate data from multiple file formats / applications

15 Apply Safe Working Practices

15.1 3 Apply health and safety legislation

15.1.1 3 Demonstrate knowledge of legislation with respect to hazardous substances

15.2 2 Prepare site/project-specific Health and Safety Plans

15.3 3 Analyze a workplace area for unsafe or hazardous situations

15.4 3 Initiate action to handle unsafe or hazardous situations in a workplace area

15.5 3 Demonstrate safe work practices

15.6 3 Operate workplace equipment safely

16 Manage Projects

16.1 3 Adapt to change

16.2 3 Work within constraints of time, costs and quality elements of a project

16.3 3 Work within client constraints

16.4 3 Identify measures to control changes to the scope, schedule, cost and quality of the project

16.5 3 Define project activities and tasks

16.6 2 Develop a project schedule utilizing both a manual method and scheduling software to produce a Gantt chart or network diagram

16.7 1 Identify human resource requirements for a project

16.8 2 Assess progress of projects

16.9 2 Monitor project schedules

16.10 3 Organize project documentation (e.g. files, logs, records, correspondence, minutes, etc)

16.11 2 Monitor projects by comparing activities and results to data from a variety of sources, including reports, minutes, field data and field notes, site inspections, site and weather demands, schedule, projected cost estimates and actual costs

16.12 2 Resolve problems related to materials, scheduling, resources and budget

16.13 2 Analyze project elements, such as integration, scope, time, cost, quality, communications, personnel, risk and procurement in a project of defined scope

17 Manage a Business

17.1 1 Determine fees

17.2 1 Create a business plan

17.3 3 Apply basic accounting

17.4 3 Recognize limitations

17.5 2 Market and sell services

Appendix C – Graduate Skills and Abilities and Gap Analysis Chart

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

Building Design CAD Technology

Graduate Skills and Abilities (GSA) & Gap Analysis Chart
Facilitated by: Robert Cordingley
Date(s): April 23 & 25, 2013
(modified May 7, 2013)

DACUM Skill Rating Scale:

1	Can perform some parts of this skill satisfactorily but requires assistance and/or supervision to perform the entire skill.
2	Can perform this skill satisfactorily but requires periodic assistance and/or supervision.
3	Can perform this skill competently without assistance or supervision.
4	Can perform this skill competently without assistance, with more than acceptable quality, and with initiative/adaptability to unique situations.

	General Area of Competency (GAC)		Skill rating
	General Area of Competency (GAC)		Skill, Skill Rating or Competency added, deleted or changed by faculty
	Specific Skill within GAC		Gap between Faculty Expectations and Current Content in Courses

Accreditation/Occupational Standards				Faculty Expectations (GSA) (next 5 years)				Current Content in Courses (Gap)			
Participate in Programming and Planning 1				**Participate in Programming and Planning 1**				**Participate in Programming and Planning 1**			
Produce schedules of accommodation and space requirements 1.1				Produce schedules of accommodation and space requirements 1.1				Applied Technical Project			
1	2	3	4	1	2	3	4	1	2	3	4
Participate in project initiation 1.2				(Not clear what is intended) 1.2							
1	2	3	4	1	2	3	4	1	2	3	4
Generate a project charter 1.3				Generate a project charter 1.3				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Develop a project plan 1.4				(This is a management function) 1.4							
1	2	3	4	1	2	3	4	1	2	3	4

Participate in Pre-design 2				Participate in Pre-design 2				Participate in Pre-design 2			
Evaluate Buildings and Sites **2.1**				**Evaluate Buildings and Sites** **2.1**				**Evaluate Buildings and Sites** **2.1**			
Site measure existing buildings and sites 2.1.1				Site measure existing buildings and sites 2.1.1				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare measured drawings of existing buildings and sites 2.1.2				Prepare measured drawings of existing buildings and sites 2.1.2				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Collect and/or co-ordinate field data 2.1.3				Collect and/or co-ordinate field data (eg soil, asbestos, paint, construct) 2.1.3				Advanced CAD Building Science			
1	2	3	4	1	2	3	4	1	2	3	4

Participate in Design Development 3				Participate in Design Development 3				Participate in Design Development 3			
Apply Building Science Principles **3.1**				**Apply Building Science Principles** **3.1**				**Apply Building Science Principles** **3.1**			
Use systematic approaches to solve technical problems 3.1.1				Use systematic approaches to solve technical problems 3.1.1				Architectural Detailing Building Science Structural detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Apply mathematical and scientific principles to design and detail projects 3.1.2				Apply mathematical and scientific principles to detail projects 3.1.2				Architectural Detailing Building Science Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Create details to control air and water mitigation 3.1.3				Create details to control air and water mitigation 3.1.3				Technical Drafting (1st yr) Architectural Detailing Building Science			
1	2	3	4	1	2	3	4	1	2	3	4
Create details to control heat loss and energy efficiency 3.1.4				Create details to control heat loss and energy efficiency 3.1.4				Technical Drafting (1st yr) Architectural Detailing Building Science			
1	2	3	4	1	2	3	4	1	2	3	4

Create details which consider construction sequence 3.1.5				Create details which consider construction sequence 3.1.5				Technical Drafting (1st yr) Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Evaluate the performance properties and compatibility of equipment and materials 3.1.6				Compare the performance properties and compatibility of equipment and materials 3.1.6				Advanced CAD Architectural Detailing Building Science			
1	2	3	4	1	2	3	4	1	2	3	4
Evaluate testing, for quality assurance, of materials, methods, and equipment 3.1.7				Evaluate testing, for quality assurance, of materials, methods, and equipment (eg concrete tests, densities, air handling balance) 3.1.7							
1	2	3	4	1	2	3	4	1	2	3	4
Evaluate climatic factors and principles and their influence on building design and detailing 3.1.8				Evaluate climatic factors and principles and their influence on building design and detailing (truss design, MEP) 3.1.8							
1	2	3	4	1	2	3	4	1	2	3	4
Coordinate Building Systems **3.2**				**Coordinate Building Systems** **3.2**				**Coordinate Building Systems** **3.2**			
Coordinate the work of the architectural and engineering disciplines (e.g. structural, mechanical, electrical, environmental, municipal, process) 3.2.1				Coordinate the work of the architectural and engineering disciplines (e.g. structural, mechanical, electrical, environmental, municipal, process) 3.2.1							
1	2	3	4	1	2	3	4	1	2	3	4
Coordinate clearances, locations, and interferences between architectural and engineering systems. 3.2.2				Coordinate clearances, locations, and interferences between architectural and engineering systems. 3.2.2							
1	2	3	4	1	2	3	4	1	2	3	4
Coordinate requirements of service providers (e.g. telecommunications, power, security, etc) 3.2.3				Coordinate requirements of service providers (e.g. telecommunications, power, security, etc) 3.2.3							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare Basic Construction Cost Estimates **3.3**				**Prepare Basic Construction Cost Estimates** **3.3**				**Prepare Basic Construction Cost Estimates** **3.3**			
Evaluate construction cost estimates and schedules of probable costs 3.3.1				Evaluate construction cost estimates and schedules of probable costs 3.3.1				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4

Prepare basic construction cost estimates and schedules of probable costs 3.3.2				Prepare basic construction cost estimates and schedules of probable costs 3.3.2				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Measure and record quantities *3.3.2.1*				*Measure and record quantities* *3.3.2.1*				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Evaluate time studies to produce accurate unit prices of construction activities 3.3.3				Evaluate time studies to produce accurate unit prices of construction activities 3.3.3				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Analyze Structural Components and Systems **3.4**				**Analyze Structural Components and Systems** **3.4**				**Analyze Structural Components and Systems** **3.4**			
Apply allowable loading combinations including live and dead loads 3.4.1				Apply allowable loading combinations including live and dead loads for residential construction 3.4.1				Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Apply structural design elements to layout beams, columns, walls, and floor systems in structural steel, timber and reinforced concrete 3.4.2				Apply structural design elements to layout beams, columns, walls, and floor systems in structural steel, timber and reinforced concrete 3.4.2				Building Standards Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Analyze construction drawings for structural steel, reinforcing steel layouts and formwork designs 3.4.3				Analyze construction drawings for structural steel, reinforcing steel layouts and formwork designs 3.4.3				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Verify steel placement *3.4.3.1*				*Verify steel placement* *3.4.3.1*				Architectural Detailing Project Administration Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Layout foundations, walls, beams, slabs and columns 3.4.4				Layout foundations, walls, beams, slabs and columns 3.4.4				Technical Drafting (1st yr) Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Determine appropriate foundation type for the application 3.4.5				Determine appropriate foundation type for the application 3.4.5							
1	2	3	4	1	2	3	4	1	2	3	4

Participate in Interior Design **3.5**				**Participate in Interior Design** **3.5**				**Participate in Interior Design** **3.5**			
Prepare furniture and equipment layouts 3.5.1				Prepare furniture and equipment layouts 3.5.1							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare custom details (e.g. millwork, ceilings, doors, windows and frames, etc) 3.5.2				Prepare custom details (e.g. millwork, ceilings, doors, windows and frames, etc) 3.5.2							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare reflected ceiling plans 3.5.3				Prepare reflected ceiling plans 3.5.3				Advanced CAD Applied Technical Project Architectural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare schedules (e.g. door and hardware, finishes, etc) 3.5.4				Prepare schedules (e.g. door and hardware, finishes, etc) 3.5.4				Advanced CAD Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare floor finish plans 3.5.5				Prepare floor finish plans 3.5.5							
1	2	3	4	1	2	3	4	1	2	3	4
Comply with Codes, Bylaws and Regulations **3.6**				**Comply with Codes, Bylaws and Regulations** **3.6**				**Comply with Codes, Bylaws and Regulations** **3.6**			
Determine codes applicable to the function of a building 3.6.1				Determine codes applicable to the function of a building 3.6.1				Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Analyze gross building areas *3.6.1.1*				*Analyze gross building areas* *3.6.1.1*				Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Apply applicable codes 3.6.2				Apply applicable codes 3.6.2				Architectural Detailing Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4

Interpret the principles behind code regulations 3.6.3				Interpret the principles behind code regulations 3.6.3				Architectural Detailing Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Apply the principles behind code regulations 3.6.4				Apply the principles behind code regulations 3.6.4				Architectural Detailing Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Interpret municipal, provincial, and federal regulations that pertain to the environment 3.6.5				Interpret municipal, provincial, and federal regulations that pertain to the environment 3.6.5				Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Apply barrier-free design principles, as defined by building codes 3.6.6				Apply barrier-free design principles, as defined by building codes 3.6.6				Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Negotiate w ith authority having jurisdiction 3.6.7				Negotiate w ith authority having jurisdiction 3.6.7				Architectural Detailing Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Manage Building Information Models **3.7**				**Manage Building Information Models** **3.7**				**Manage Building Information Models** **3.7**			
Perform daylighting analysis 3.7.1				Perform daylighting analysis 3.7.1				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Analyze pow er use 3.7.2				Analyze pow er use 3.7.2				(MEP energy simulation)			
1	2	3	4	1	2	3	4	1	2	3	4
Apply model sequencing 3.7.3				(Not clear w hat is intended) 3.7.3							
1	2	3	4	1	2	3	4	1	2	3	4
Set up model for multiple team members to w ork on single file 3.7.4				Set up model for multiple team members to w ork on single file 3.7.4							
1	2	3	4	1	2	3	4	1	2	3	4

Adhere to BIM standards 3.7.5				Adhere to BIM standards 3.7.5							
1	2	3	4	1	2	3	4	1	2	3	4
Import models from consultants 3.7.6				Import models from consultants 3.7.6							
1	2	3	4	1	2	3	4	1	2	3	4
Perform clash detection 3.7.7				Perform clash detection 3.7.7							
1	2	3	4	1	2	3	4	1	2	3	4
Setup coordination betw een models 3.7.8				Setup coordination betw een models 3.7.8							
1	2	3	4	1	2	3	4	1	2	3	4
Manage model content 3.7.9				Manage model content 3.7.9				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Develop model content 3.7.10				Develop model content 3.7.10				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Model design options, phases and revisions 3.7.11				Model design options, phases and revisions 3.7.11							
1	2	3	4	1	2	3	4	1	2	3	4
Export text data 3.7.12				Export text data 3.7.12				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Integrate data betw een draw ings / models and database applications 3.7.13				Integrate data betw een draw ings / models and database applications 3.7.13							
1	2	3	4	1	2	3	4	1	2	3	4

Manage Computer Aided Design **3.8**				Manage Computer Aided Design **3.8**				Manage Computer Aided Design **3.8**			
Comply with CAD standards 3.8.1				Comply with CAD standards 3.8.1				Advanced CAD Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Comply with best practices 3.8.2				Comply with best practices 3.8.2				Advanced CAD Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare CAD files 3.8.3				Prepare CAD files 3.8.3				Advanced CAD Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Manage CAD files 3.8.4				Manage CAD files 3.8.4				Advanced CAD Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Archive CAD files 3.8.5				Archive CAD files 3.8.5				Computer Applications (1st yr)			
1	2	3	4	1	2	3	4	1	2	3	4
Distribute CAD files 3.8.6				Distribute CAD files 3.8.6				Computer Applications (1st yr) Advanced CAD Applied Technical Project Architectural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
3.9 - 3.14				**3.9 - 3.14**				**3.9 - 3.14**			
Produce digital animation/walk through of architectural scenes 3.9				Produce digital animation/walk through of architectural scenes 3.9				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Create views of digital models 3.10				Create views of digital models 3.10				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4

Produce photo-realistic renderings of architectural forms 3.11	Produce photo-realistic renderings of architectural forms 3.11	Advanced CAD
1 2 3 4	1 2 3 4	1 2 3 4
Apply structural, mechanical, electrical, and environmental theory and research when assisting in designing, detailing, implementing, and evaluating construction projects. 3.12	Apply structural theory and research when assisting in detailing, implementing, and evaluating construction projects. 3.12a	Structural Detailing
1 2 3 4	1 2 3 4	1 2 3 4
	Apply mechanical, electrical, and environmental theory and research when assisting in detailing, implementing, and evaluating construction projects. 3.12b	
1 2 3 4	1 2 3 4	1 2 3 4
Interpret reports, cost estimates and project documentation 3.13	Interpret reports, cost estimates and project documentation 3.13	Project Administration
1 2 3 4	1 2 3 4	1 2 3 4
Prepare reports, cost estimates and project documentation 3.14	Prepare reports, cost estimates and project documentation 3.14	Project Administration
1 2 3 4	1 2 3 4	1 2 3 4

Prepare Construction Documents **4**	**Prepare Construction Documents** **4**	**Prepare Construction Documents** **4**
Prepare Drawings **4.1**	**Prepare Drawings** **4.1**	**Prepare Drawings** **4.1**
Prepare construction drawings and technical annotation 4.1.1	Prepare construction drawings and technical annotation 4.1.1	Advanced CAD Applied Technical Project Architectural Detailing Structural Detailing
1 2 3 4	1 2 3 4	1 2 3 4
Prepare document set mock up 4.1.2	Prepare document set mock up 4.1.2	Advanced CAD Building Standards
1 2 3 4	1 2 3 4	1 2 3 4

Modify construction drawings 4.1.3				Modify construction drawings 4.1.3				Applied Technical Project Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare graphic information using drawing elements, symbols, and conventions 4.1.4				Prepare graphic information using drawing elements, symbols, and conventions 4.1.4				Technical Drafting (1st yr) Advanced CAD Applied Technical Project Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Produce hand-drawn sketches delineating plans, sections, elevations and plan details, section details and elevation details 4.1.5				Produce hand-drawn sketches delineating plans, sections, elevations and plan details, section details and elevation details 4.1.5				Technical Drafting (1st yr) Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Produce building component schedules 4.1.6				Produce building component schedules 4.1.6				Architectural Detailing Building Standards Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare demolition documents 4.1.7				Prepare demolition documents 4.1.7				Advanced CAD Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare Specifications **4.2**				**Prepare Specifications** **4.2**				**Prepare Specifications** **4.2**			
Prepare project specifications using formats such as National Master Specification (NMS) 4.2.1				Prepare project specifications using formats such as National Master Specification (NMS) 4.2.1				Building Standards Project Administration Use master format but not NMS			
1	2	3	4	1	2	3	4	1	2	3	4
Modify construction specifications 4.2.2				Modify construction specifications 4.2.2							
1	2	3	4	1	2	3	4	1	2	3	4
Coordinate specifications with drawings 4.2.3				Coordinate specifications with drawings 4.2.3				Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Conduct product research 4.2.4				Conduct product research 4.2.4				Applied Technical Project Architectural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4

Procure Construction Contracts 5				Procure Construction Contracts 5				Procure Construction Contracts 5			
Interpret different types of contracts 5.1				Interpret different types of contracts 5.1				Building Standards Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Apply basic legal principles affecting the review and administration of contracts 5.2				Apply basic legal principles affecting the review and administration of contracts 5.2				Building Standards Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare contract documents 5.3				Prepare contract documents 5.3				Building Standards Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare Bid Documents 5.4				Prepare Bid Documents 5.4				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare and issue addenda as required 5.5				Prepare and issue addenda as required 5.5							
1	2	3	4	1	2	3	4	1	2	3	4
Receive bids 5.6				Receive bids 5.6				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Analyze bids 5.7				Analyze bids 5.7				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare recommendations to award 5.8				(Management function) 5.8							
1	2	3	4	1	2	3	4	1	2	3	4
Obtain building permits 5.9				Obtain building permits 5.9							
1	2	3	4	1	2	3	4	1	2	3	4

Administer Construction Contracts 6				Administer Construction Contracts 6				Administer Construction Contracts 6			
Review shop drawings 6.1				Review shop drawings 6.1							
1	2	3	4	1	2	3	4	1	2	3	4
Interpret working drawings to assess construction activities and ensure compliance of work 6.2				Interpret working drawings to assess construction activities and ensure compliance of work 6.2							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare site review reports 6.3				Prepare site review reports 6.3							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare site instructions 6.4				Function of experience & management 6.4							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare Proposed Change Notices, Change Orders and Change Directives 6.5				Prepare Proposed Change Notices, Change Orders and Change Directives 6.5				Project Administration Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare certification for payment 6.6				Prepare certification for payment 6.6				Project Administration Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Schedule site visits 6.7				Schedule site visits 6.7				Project Administration Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Manage the results of quality-assurance testing 6.8				Act on the results of quality-assurance testing 6.8							
1	2	3	4	1	2	3	4	1	2	3	4
Develop deficiency lists 6.9				Develop deficiency lists 6.9							
1	2	3	4	1	2	3	4	1	2	3	4

Coordinate testing, commissioning and training 6.10				Coordinate testing, commissioning and training 6.10				Applies, in particular, to MEP			
1	2	3	4	1	2	3	4	1	2	3	4
Coordinate project mock-ups 6.11				Coordinate project mock-ups (samples) 6.11							
1	2	3	4	1	2	3	4	1	2	3	4

Close Out Projects 7				**Close Out Projects 7**				**Close Out Projects 7**			
Compare drawings to as-built conditions 7.1				Compare drawings to as-built conditions 7.1							
1	2	3	4	1	2	3	4	1	2	3	4
Take site measurements 7.1.1				Take site measurements 7.1.1				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Record as-built conditions 7.2				Record as-built conditions 7.2				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Conduct warranty review 7.3				Experience and management function 7.3							
1	2	3	4	1	2	3	4	1	2	3	4
Obtain and review operations and maintenance manuals 7.4				Obtain and review operations and maintenance manuals 7.4				This is related to MEP			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare certificates of substantial completion and letters of certification 7.5				Prepare certificates of substantial completion and letters of certification 7.5				Project Administration Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Obtain occupancy permits 7.6				Obtain occupancy permits 7.6							
1	2	3	4	1	2	3	4	1	2	3	4

Manage Assets and Facilities 8				Manage Assets and Facilities 8				Manage Assets and Facilities 8			
Plan for tenant improvements 8.1				This is a facility management speciality 8.1							
1	2	3	4	1	2	3	4	1	2	3	4
Manage inventories 8.2				This is a facility management speciality 8.2							
1	2	3	4	1	2	3	4	1	2	3	4
Develop emergency preparedness plans 8.3				This is a facility management speciality 8.3							
1	2	3	4	1	2	3	4	1	2	3	4
Develop environmental plans 8.4				This is a facility management speciality 8.4							
1	2	3	4	1	2	3	4	1	2	3	4
Develop master plans 8.5				This is a facility management speciality 8.5							
1	2	3	4	1	2	3	4	1	2	3	4
Manage leases 8.6				This is a facility management speciality 8.6							
1	2	3	4	1	2	3	4	1	2	3	4
Manage utilities 8.7				This is a facility management speciality 8.7							
1	2	3	4	1	2	3	4	1	2	3	4

Work Within Project Delivery Methods 9				Work Within Project Delivery Methods 9				Work Within Project Delivery Methods 9			
Identify delivery methods and their key features (integrated project delivery, design-bid-build, design-build, public private partnerships, construction management, project management) 9.1				Identify delivery methods and their key features (integrated project delivery, design-bid-build, design-build, public private partnerships, construction management, project management) 9.1				Project Administration Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4

Execute Basic Architectural Principles 10				Execute Basic Architectural Principles 10				Execute Basic Architectural Principles 10			
Apply the principles of acoustics, color, and lighting in the design 10.1				Apply the principles of acoustics, color, and lighting in the design 10.1				Some acoustics in Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Apply human form, scale and spatial perception 10.2				Apply human form, scale and spatial perception 10.2							
1	2	3	4	1	2	3	4	1	2	3	4
Apply project design objectives 10.3				Apply project design objectives 10.3							
1	2	3	4	1	2	3	4	1	2	3	4
Apply sustainable design strategies 10.4				Apply sustainable design strategies 10.4							
1	2	3	4	1	2	3	4	1	2	3	4
Conduct research and analysis that informs design process 10.5				Conduct research and analysis that informs design process 10.5							
1	2	3	4	1	2	3	4	1	2	3	4

Contribute to Sustainable Design and Building Practices 11				Contribute to Sustainable Design and Building Practices 11				Contribute to Sustainable Design and Building Practices 11			
Research the environmental impact of various building techniques and materials 11.1				Research the environmental impact of various building techniques and materials 11.1							
1	2	3	4	1	2	3	4	1	2	3	4
Apply criteria of sustainable building programs (e.g. LEED, Green Globes, etc) 11.2				Apply criteria of sustainable building programs (e.g. LEED, Green Globes, etc) 11.2							
1	2	3	4	1	2	3	4	1	2	3	4

Communicate with Stakeholders 12				Communicate with Stakeholders 12				Communicate with Stakeholders 12			
Clarify the needs of the project stakeholders 12.1				Clarify the needs of the project stakeholders 12.1				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Communicate technical information to diverse groups with varying interests and technical knowledge 12.2				Communicate technical information to diverse groups with varying interests and technical knowledge 12.2							
1	2	3	4	1	2	3	4	1	2	3	4
Prepare project-related information in written formats 12.3				Prepare project-related information in written formats 12.3				Applied Technical Project Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare proposals, reports, emails, minutes and letters 12.4				Prepare proposals, reports, emails, minutes and letters 12.4				Technical Communication Building Standards Building Science			
1	2	3	4	1	2	3	4	1	2	3	4
Use technical writing skills 12.5				Use technical writing skills 12.5				Technical Communication			
1	2	3	4	1	2	3	4	1	2	3	4
Use professional language and protocols 12.6				Use professional language and protocols 12.6				Technical Communication			
1	2	3	4	1	2	3	4	1	2	3	4
Present project-related information in oral formats 12.7				Present project-related information in oral formats 12.7				All year 2 courses			
1	2	3	4	1	2	3	4	1	2	3	4
Explain technical drawings and models 12.8				Explain technical drawings and models 12.8				All year 2 courses			
1	2	3	4	1	2	3	4	1	2	3	4
Communicate to resolve problems 12.9				Communicate to resolve problems 12.9				All year 2 courses			
1	2	3	4	1	2	3	4	1	2	3	4

Speak publicly 12.10	Speak publicly (group or team) 12.10	Technical Communication Advanced CAD Applied Technical Project Architectural Detailing Building Standards
1 2 **3** 4	1 2 **3** 4	1 2 **3** 4
Participate on teams 12.11	Participate on teams 12.11	Technical Communication Advanced CAD Applied Technical Project Architectural Detailing Building Standards
1 2 **3** 4	1 2 **3** 4	1 2 **3** 4

Act Ethically **13**	**Demonstrate Professionalism** **13**	**Demonstrate Professionalism** **13**
Act Ethically **13.1**	**Act Ethically** **13.1**	**Act Ethically** **13.1**
Comply with applicable codes of ethics 13.1	Comply with applicable codes of ethics 13.1.1	
1 2 **3** 4	1 2 **3** 4	1 2 3 4
Work within the legal and professional accountabilities in the workplace 13.2	Work within the legal and professional accountabilities in the workplace 13.1.2	
1 2 **3** 4	1 2 **3** 4	1 2 3 4
Apply ethical reasoning to resolve social, contractual and environmental issues 13.3	Apply ethical reasoning to resolve social, contractual and environmental issues 13.1.3	
1 2 **3** 4	1 **2** 3 4	1 2 3 4
Comply with confidentiality and privacy regulations 13.4	Comply with confidentiality and privacy regulations 13.1.4	
1 2 **3** 4	1 2 **3** 4	1 2 3 4
	Demonsrate integrity 13.2	Across all courses
1 2 3 4	1 2 **3** 4	1 2 **3** 4
	Demonstrate accountability 13.3	Across all courses
1 2 3 4	1 2 **3** 4	1 2 **3** 4

				Demonstrate resourcefulness 13.4				Across all courses			
1	2	3	4	1	2	3	4	1	2	3	4
				Demonstrate lifelong learning 13.5				Across all courses			
1	2	3	4	1	2	3	4	1	2	3	4

Use Technology Tools 14				**Use Technology Tools 14**				**Use Technology Tools 14**			
Keep informed about emerging technologies that affect architectural and engineering w ork 14.1				Keep informed about emerging technologies that affect architectural and engineering w ork 14.1				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Determine w hen technology tools can enhance productivity 14.2				Determine w hen technology tools can enhance productivity 14.2				Computer Applications Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Manage the storage and retrieval of digital documents 14.3				Manage the storage and retrieval of digital documents 14.3				Computer Applications Technical Drafting			
1	2	3	4	1	2	3	4	1	2	3	4
Use digital communications to access and share information 14.4				Use digital communications to access and share information 14.4				Computer Applications			
1	2	3	4	1	2	3	4	1	2	3	4
Contribute to the evaluation of softw are used in architectural construction projects 14.5				Contribute to the evaluation of softw are used in architectural construction projects 14.5				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Select suitable softw are for a task 14.6				Select suitable softw are for a task 14.6				Computer Applications Technical Drafting Advanced CAD Building Standards			
1	2	3	4	1	2	3	4	1	2	3	4
Use office application softw are (w ord processor, spreadsheet, database, etc) 14.7				Use office application softw are (w ord processor, spreadsheet, etc) (Database not used) 14.7				Computer Applications			
1	2	3	4	1	2	3	4	1	2	3	4

Use BIM softw are 14.8				Use BIM softw are 14.8				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Use clash detection softw are 14.9				Use clash detection softw are 14.9							
1	2	3	4	1	2	3	4	1	2	3	4
Use CAD softw are 14.10				Use CAD softw are 14.10				Computer Applications Technical Drafting Advanced CAD Applied Technical Project Architectural Detailing Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Use NMS softw are 14.11				Use NMS softw are 14.11							
1	2	3	4	1	2	3	4	1	2	3	4
Use project management softw are 14.12				Use project management softw are 14.12				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Use Electronic Document Management System 14.13				Use Electronic Document Management System 14.13							
1	2	3	4	1	2	3	4	1	2	3	4
Use Geographical Information Systems 14.14				Use Geographical Information Systems 14.14							
1	2	3	4	1	2	3	4	1	2	3	4
Use photo rendering and illustration softw are 14.15				Use photo rendering and illustration softw are 14.15				Advanced CAD			
1	2	3	4	1	2	3	4	1	2	3	4
Integrate data from multiple file formats / applications 14.16				Integrate data from multiple file formats / applications 14.16							
1	2	3	4	1	2	3	4	1	2	3	4

Apply Safe Working Practices 15				Apply Safe Working Practices 15				Apply Safe Working Practices 15			
Apply health and safety legislation 15.1				Apply health and safety legislation 15.1				General Safety Training Co-op Work Placement WHMIS Workshop			
1	2	3	4	1	2	3	4	1	2	3	4
Demonstrate know ledge of legislation w ith respect to hazardous substances 15.1.1				Demonstrate know ledge of legislation w ith respect to hazardous substances 15.1.1				WHMIS Workshop			
1	2	3	4	1	2	3	4	1	2	3	4
Prepare site/project-specific Health and Safety Plans 15.2				Prepare site/project-specific Health and Safety Plans (Not the responsibility of technologist) 15.2							
1	2	3	4	1	2	3	4	1	2	3	4
Analyze a w orkplace area for unsafe or hazardous situations 15.3				Analyze a w orkplace area for unsafe or hazardous situations 15.3				General Safety Training Co-op Work Placement			
1	2	3	4	1	2	3	4	1	2	3	4
Initiate action to handle unsafe or hazardous situations in a w orkplace area 15.4				Initiate action to handle unsafe or hazardous situations in a w orkplace area 15.4				General Safety Training Co-op Work Placement			
1	2	3	4	1	2	3	4	1	2	3	4
Demonstrate safe w ork practices 15.5				Use Personal Protective Equipment 15.5				General Safety Training Co-op Work Placement			
1	2	3	4	1	2	3	4	1	2	3	4
Operate w orkplace equipment safely 15.6				Operate w orkplace equipment safely 15.6				General Safety Training Co-op Work Placement			
1	2	3	4	1	2	3	4	1	2	3	4

Manage Projects 16				Manage Projects 16				Manage Projects 16			
Adapt to change 16.1				Adapt to change 16.1				Architectural Detailing Building Science Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4

Work within constraints of time, costs and quality elements of a project 16.2				Work within constraints of time, costs and quality elements of a project 16.2				Technical Drafting Applied Technical Project Architectural Detailing Project Administration Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Work within client constraints 16.3				Work within client constraints 16.3				Technical Drafting Applied Technical Project Architectural Detailing Project Administration Structural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4
Identify measures to control changes to the scope, schedule, cost and quality of the project 16.4				Identify measures to control changes to the scope, schedule, cost and quality of the project 16.4				Building Standards Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Define project activities and tasks 16.5				Define project activities and tasks 16.5				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Develop a project schedule utilizing both a manual method and scheduling software to produce a Gantt chart or network diagram 16.6				Develop a project schedule utilizing both a manual method and scheduling software to produce a Gantt chart or network diagram 16.6				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Identify human resource requirements for a project 16.7				Identify human resource requirements for a project 16.7				Architectural Detailing Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Assess progress of projects 16.8				Assess progress of projects 16.8				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Monitor project schedules 16.9				Monitor project schedules 16.9				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Organize project documentation (e.g. files, logs, records, correspondence, minutes, etc) 16.10				Organize project documentation (e.g. files, logs, records, correspondence, minutes, etc) 16.10				Architectural Detailing			
1	2	3	4	1	2	3	4	1	2	3	4

Monitor projects by comparing activities and results to data from a variety of sources, including reports, minutes, field data and field notes, site inspections, site and w eather demands, schedule, projected cost estimates and actual costs 16.11				Monitor projects by comparing activities and results to data from a variety of sources, including reports, minutes, field data and field notes, site inspections, site and w eather demands, schedule, projected cost estimates and actual costs 16.11				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Resolve problems related to materials, scheduling, resources and budget 16.12				Resolve problems related to materials, scheduling, resources and budget 16.12							
1	2	3	4	1	2	3	4	1	2	3	4
Analyze project elements, such as integration, scope, time, cost, quality, communications, personnel, risk and procurement in a project of defined scope 16.13				Analyze project elements, such as integration, scope, time, cost, quality, communications, personnel, risk and procurement in a project of defined scope 16.13				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4

Manage a Business 17				**Manage a Business 17**				**Manage a Business 17**			
Determine fees 17.1				Determine fees 17.1							
1	2	3	4	1	2	3	4	1	2	3	4
Create a business plan 17.2				Create a business plan 17.2							
1	2	3	4	1	2	3	4	1	2	3	4
Apply basic accounting 17.3				Apply basic accounting 17.3				Project Administration			
1	2	3	4	1	2	3	4	1	2	3	4
Recognize limitations 17.4				Recognize limitations 17.4							
1	2	3	4	1	2	3	4	1	2	3	4
Market and sell services 17.5				Market and sell services 17.5							
1	2	3	4	1	2	3	4	1	2	3	4

Appendix D – Graduate Profile

Appendix D: Building Design CAD Technology Graduate Profile

The Graduate:

A. Participates in pre-construction functions including data gathering, sketching and estimating to create construction drawings using industry software such as CAD and BIM.

B. Applies codes, bylaws and regulations to ensure health and safety, fire protection, barrier free access and structural sufficiency.

C. Researches and applies sustainable building practices to comply with building programs such as LEED.

D. Uses, adapts and maximizes technologies to create and manage building information.

E. Integrates architectural, structural, mechanical and electrical disciplines within the building project to promote construction efficiency.

F. Prepares project manuals, using industry specific software, to delineate quality of material and workmanship.

G. Administers construction contracts to ensure compliance with project contract documents.

H. Administers project resources by establishing, scheduling and monitoring project activities and tasks within constraints of time, costs and quality.

I. Demonstrates verbal, graphic, written, and interpersonal communication skills to work effectively in teams.

J. Demonstrates professionalism, integrity, ethics, accountability, resourcefulness and lifelong learning.

Appendix E – Program Renewal Goals and Actions

Appendix E: Program Renewal Goals and Actions from Visioning Workshop

Note: Numbers behind some actions indicate priority assigned by participants through a voting process. Maximum is 6 votes.

1. Formulate Professional Development Plan for Faculty
    1.1. Provide faculty training for emerging technologies
    1.2. Explore academic exchange opportunities

2. Establish Resources
    2.1. Establish an architectural studio_4
    2.2. Establish a minimum table / workspace size / configuration for students_3
    2.3. Establish a technical library_1
    2.4. Add a 3-D plotter

3. Explore Using External Human Resources
    3.1. Explore use of industry specific professionals
    3.2. Increase inter-department relationships (e.g. carpentry for millwork)

4. Increase Program Duration
    4.1. Create a 3 year program_4
    4.2. Create multiple exit points_2
    4.3. Explore reduction from 1 year common to 1 semester common_1
    4.4. Move ATP (Applied Technical Project) to new 3rd year

5. Develop / Enhance Curriculum
    5.1. Add specification writing course_5
    5.2. Add interior environments (e.g. millwork, layouts, color)_5
    5.3. Bring back mechanical & electrical into the program_5
    5.4. Increase depth of BIM_4

5.5. Increase understanding of structural / architectural building systems_3

5.6. Include LEED / sustainable component_2

5.7. Expand project management to include estimating_2

5.8. Create cross discipline model(s) using BIM

5.9. Add introduction to design (the whys, not the hows)

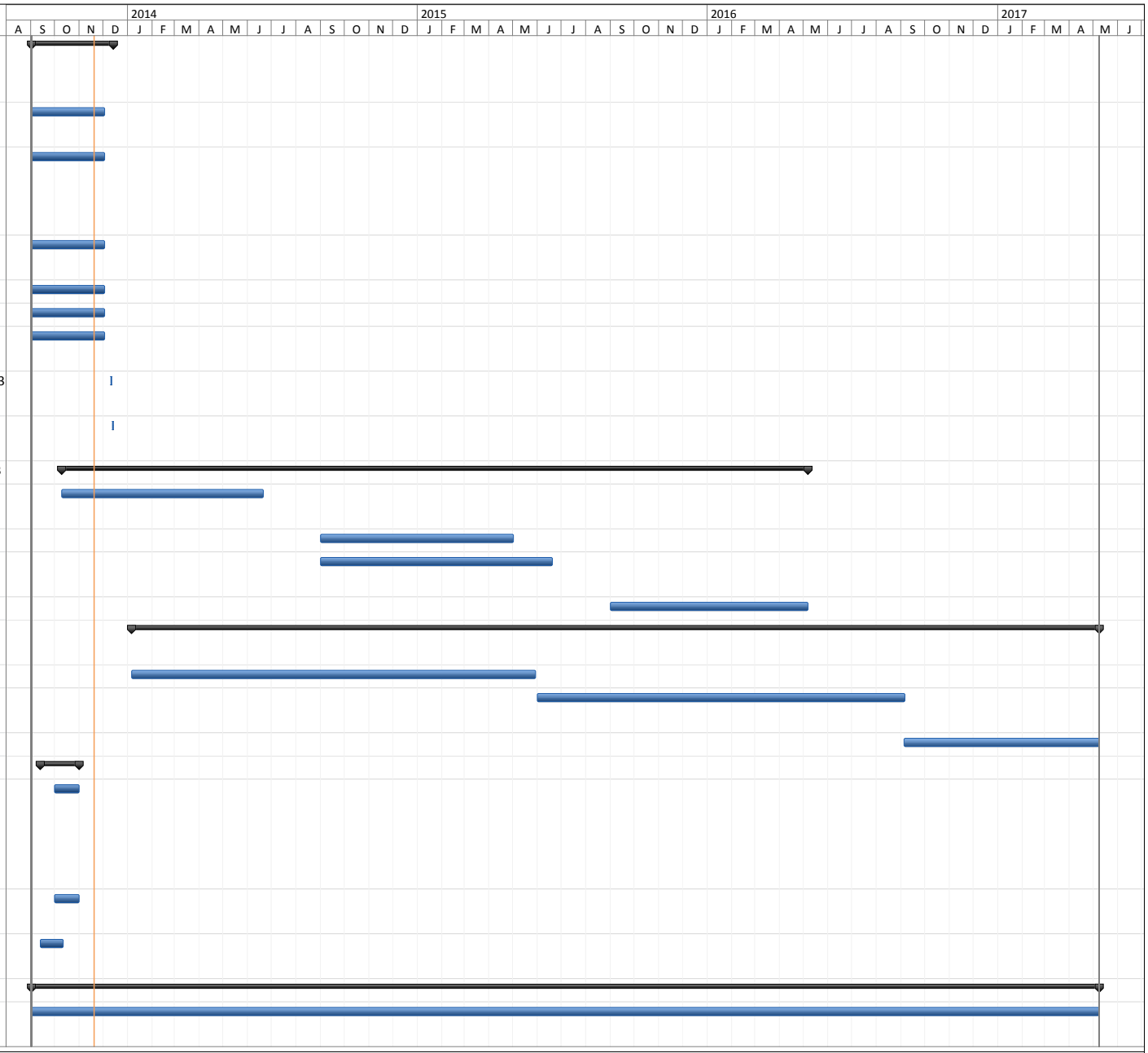
5.10. Include missing requirements from employers

6. Re-Brand Program

6.1. Change program name_1

Appendix F – 5 Year Program Renewal Plan in Gantt Format

ID	Task Name	Duration	Start
1	**Revise program to meet industry needs identified through occupational analysis and gap analysis**	**75 days**	**Mon 9/2/13**
2	Determine the best approach to increase program duration	66 days	Mon 9/2/13
3	Determine, within increased program duration, number of terms, number of courses/term, use of half courses, hours/course, exit points, etc.	66 days	Mon 9/2/13
4	Determine courses based on gap analysis and revision to program structure	66 days	Mon 9/2/13
5	Determine course sequence	66 days	Mon 9/2/13
6	Determine course names & descriptions	66 days	Mon 9/2/13
7	Develop a new program name for re-branding the program	66 days	Mon 9/2/13
8	Present proposed program revisions to Industry Advisory Committee	1 day	Wed 12/11/13
9	Submit proposed program revisions to Senior Academic Committee	1 day	Fri 12/13/13
10	**Develop details of new and revised courses**	**672 days**	**Thu 10/10/13**
11	Develop course outlines and course materials for Year 1 courses	182 days	Thu 10/10/13
12	Implement Year 1 courses	175 days	Mon 9/1/14
13	Develop course outlines and course materials for Year 2 courses	210 days	Mon 9/1/14
14	Implement Year 2 courses	179 days	Tue 9/1/15
15	**Integrate curriculum / disciplines through Building Information Modeling (BIM)**	**871 days**	**Mon 1/6/14**
16	Arrange BIM training for faculty	365 days	Mon 1/6/14
17	Develop instructional materials for cross discipline models	331 days	Mon 6/1/15
18	Implement cross discipline models	176 days	Mon 9/5/16
19	**Propose resources**	**35 days**	**Fri 9/13/13**
20	Submit proposal for dedicated architectural studio, including work station configurations, in new building currently under development for late 2016 or 2017	23 days	Tue 10/1/13
21	Propose a dedicated room or suite in existing buildings	23 days	Tue 10/1/13
22	Add 3-D plotter to list of equipment needs	21 days	Fri 9/13/13
23	**Explore using external human resources**	**961 days**	**Mon 9/2/13**
24	Encourage and support use of industry speakers on an ongoing basis	961 days	Mon 9/2/13



Project: Building Design CAD_Ren
Date: Wed 11/20/13

Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress