

ARCHITECTURAL TECHNOLOGY

Program Outline

Major:	ARTE
Length:	3 Years
Delivery:	6 Semesters, plus 3 work terms
Credential:	Ontario College Advanced Diploma, Co-op
Effective:	2012-2013
Location:	Barrie
Start:	Fall (Barrie)

Description

This program is a three-year co-operative education program with 6 academic semesters and 3 co-op work terms. It prepares graduate technologists to work with architects, engineers, designers and project managers as an integral part of the team developing, presenting and executing of building designs. The program equips a student with comprehensive understanding of current competitive architectural / construction environments that challenge professionals in the field, including mastering the latest codes and standards, site management techniques and computer technologies.

Career Opportunities

Graduates find work in the private sector as estimators, purchasers, quantity surveyors or architectural / structural drafters or detailers, using the latest in CAD technology. They may also find employment as assistants in architectural design offices or in construction field offices. In the public sector, they may find employment in many government agencies, or as building inspectors / code enforcement officials.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- communicate with clients, contractors, other building professionals, and approval authorities;
- prepare, read, interpret, and revise drawings, and other graphical representations used in building projects;

- obtain, analyze, prepare, and revise specifications and other project documents used in design and construction;
- prepare estimates of time, costs, and quantity, and participate in the tendering process;
- solve technical problems related to building projects through the application of principles of building science and mathematics;
- collaborate with and coordinate information from structural, mechanical, and electrical building systems professionals;
- contribute to the design of architectural projects;
- contribute to the analysis, planning, and preparation of site planning documents;
- comply with the legal and ethical requirements of an architectural technologist in the practice of building design and construction;
- assess buildings and their interiors, and make recommendations for their repurposing and renovation;
- ensure personal safety and contribute to the safety of others in the workplace;
- participate in sustainable design and building practices;
- use and evaluate current and emerging technology to support building projects;
- assist in the planning, scheduling, and monitoring of building projects;
- apply business principles to design and building practices.

Practical Experience:

Co-operative Education is a mandatory component of all Co-op programs at Georgian College; it has been designed as a process by which students integrate their academic education with paid work experience related to their program of study. This integration affects much more than simply earning a salary, including the adjustment to the work environment and the development of professionalism. It also reinforces skills and theory learned during academic semesters, develops professional contacts, job knowledge and career path, improves human relations and communication skills and promotes personal maturity and financial independence.

Students are requested to register, attend and participate in their scheduled co-operative education classes. These classes are scheduled for all first year students and are expected to be completed in order to proceed successfully to their first co-op work experience. To ensure students are eligible to proceed onto any co-op work experience students should refer to Promotional Status and Eligibility for Co-op as outlined in the College Calendar. Co-op policies and procedures can be located on our website:
www.georgianc.on.ca/careers/for-students/

Georgian College follows the Co-operative Education guidelines set out by the Canadian Association for Co-operative Education (CAFCE) and Education at Work Ontario (EWO) by supporting the learning outcomes designed for the program specific graduate profile and curriculum as set out by the Ministry of Training, Colleges and Universities.

The Program Progression:

Fall Intake - Barrie

Sem 1	Sem 2	Work Term 1	Sem 3	Work Term 2	Sem 4

Fall 2012	Winter 2013	Summer 2013	Fall 2013	Winter 2014	Summer 2014

Work Term 3		Sem 5	Sem 6		

Fall 2014	Winter 2015	Summer 2015			

Admission Requirements:

Applicants must meet ONE of the following requirements to be eligible for admission to this program:

- OSS Curriculum: OSSD or equivalent with Grade 12 English (C) or (U) (ENG4C, ENG4U); plus any Grade 12 College Mathematics (MCT4C or MAP4C), or Grade 12 University Mathematics. Also recommended: Grade 12 College or Grade 11 or 12 University Physics (SPH4C, SPH4U, SPH3U) or Grade 12 College or Grade 11 or 12 University Chemistry (SCH4C, SCH4U, SCH3U); Grade 11 or 12 College or University Technological Design (TDJ3M, TDJ4M); Grade 11 or 12 College Manufacturing Engineering Technology (TMJ3C, TMJ4C)
- Academic and Career Entrance Certificate (ACE) program with: Communications; Business, Apprentice or Technical Mathematics
- Ontario High School Equivalency Certificate (GED)
- Mature applicant with standing in the required courses and/or mature student testing that meets the minimum standards for admission

Applicants who are 19 years of age or over by the first day of classes, and who lack the academic entrance qualifications, may be considered for entrance to an appropriate post-secondary diploma or certificate program as mature applicants. Each applicant will be considered on an individual basis and acceptance will be determined by counselling, Communication Placement Assessment (CPA), previous post-secondary education and evaluation of experience. Some programs also have specific prerequisite requirements that must be met prior to admission. Mature applicants must meet all program specific prerequisites. Those applying as mature students and having no documentation of Grade 12 education must supply, if required, proof of age, such as a copy of an official birth certificate or driver's licence. Refer to Section 2.5 and 2.6 of the Academic Calendar for further details.

Graduation Requirements:

- 29 Mandatory Courses
- 2 Communications Courses
- 5 General Education Courses
- 3 Co-op Work Terms

Graduation Eligibility:

To graduate from this program, the passing weighted average for promotion through each semester, from year to year and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester.

Mandatory Courses

ACCT3006	Construction Accounting
ARCH1000	Architectural Drafting
ARCH1001	Quantity Surveying 1
ARCH1002	Architectural Design Residential
ARCH1003	Quantity Surveying: Takeoffs and Measurements
ARCH2000	Architectural Design Commercial
ARCH2001	Architectural Materials
ARCH2002	Architectural Codes and Standards
ARCH2003	History of Architecture
BLDG2000	Ontario Building Code and Provincial Standards
CONS2000	Construction Practices:Methods
CONS2001	Construction Practices: Building Systems
CONS2002	Site Development and Drainage
CONS3000	Structural Analysis: Beams and Columns
CONS3001	Materials Testing
CONS3002	Introduction to Building Information Modeling
CONS3003	Structural Analysis: Design
CONS3004	Advanced Building Information Modeling
CONS3005	Services
ENVR1000	Environmental Science and Sustainability
MATH1018	Introduction to Technical Mathematics
MATH1019	Technical Mathematics
MENG2003	Statics
MENG2007	Strength of Materials
MGMT2002	Project Management
MGMT3006	Contract Law: Bid Tender Process
SURV1000	Surveying
TECR3002	Technical Project

TECR3003 Project Report Presentation

Communications Courses

To be selected at time of registration from the College list, as determined by testing.

General Education Courses

To be selected from College list

Co-op Work Terms

COOP1013 Technology Work Term 1

COOP2009 Technology Work Term 2

COOP3005 Technology Work Term 3

Course Descriptions:

ACCT3006 Construction Accounting 42.0 Hours

This course provides an introduction to accounting and its applications in the construction industry. Included are financial statement presentations and preparations of the required entries.

ARCH1000 Architectural Drafting 42.0 Hours

This course addresses design and drawing production in architectural offices. Its purpose is to convey the logic of these procedures and the process followed at each stage of development between project inception and completion, and explores the interrelationship between the owner of a project, the professionals, jurisdictional authorities and contractors. The course covers the preparation of construction drawings showing floor plans, elevations, sections and other architectural details.

ARCH1001 Quantity Surveying 1 42.0 Hours

This course provides an overview of the role of estimating in architecture and the construction industry and a review of the various types of estimates used within the industry. Information presented in this course provides students with the skills necessary to define a complete/good estimate recognizing the standards of the industry.

ARCH1002 Architectural Design Residential 42.0 Hours

Architectural and structural drafting, both of which are necessary for the production of construction drawings and the interpretation of architectural and structural drawings, are covered in this course. The student develops designs and learns to recognize and interpret a designer's intent. The student also develops knowledge of construction components, basic building code requirements, and local by-laws.

P- ARCH1000 Architectural Drafting

ARCH1003 Quantity Surveying: Takeoffs and Measurements 42.0 Hours

Presented in this course are the fundamentals of quantity surveying, employing methodology from the Canadian Institute of Quantity Surveyors, (CIQS) Method of Measurement and Industry Practice. Take off procedures will be demonstrated and applied using examples from wood framed structures, concrete foundations, and simple grading exercises.

P- ARCH1001 Quantity Surveying 1

ARCH2000 Architectural Design Commercial 42.0 Hours

In this course students will design a medium sized commercial building. Logical progressive steps, including the preparation of the many required free hand sketches, will result in a complete set of construction drawings that fulfils most of the requirements of the client.

P- ARCH1002 Architectural Design Residential

ARCH2001 Architectural Materials 42.0 Hours

This course will familiarize students with the properties of materials used in architectural construction and site development, including soils. Focus will include residential and non-residential construction, consideration of construction and trades sequencing as well as the critical documentation of materials relating to building design and construction.

ARCH2002 Architectural Codes and Standards 42.0 Hours

Presented in this course are the object, structure, contents and application of the Ontario Building Code, including the examination of the Building Code Act and ancillary recognition of the Building Code Commission and Building Materials Evaluation Commission; identifying the specific purpose of each part of the code, including identification of the part, section, sub-section, article, sentence, clause and sub-clause of the code comprise the major elements of this course.

ARCH2003 History of Architecture 42.0 Hours

This course provides students with an introduction to the field of architecture, the history of the profession in Canada and the development of the current practices in Ontario. This course also provides an overview of the role of architects, engineers, trades and the general field of design.

BLDG2000 Ontario Building Code and Provincial Standards 42.0 Hours

This course provides advanced knowledge of the object, structure, contents and application of Part 3 of the Ontario Building Code, (O.B.C.), specifically as it pertains to large buildings. Also included is exposure to the infrastructure standards and requirements of the Ontario Provincial standards and to the standards writing

organizations in Canada and internationally as they impact building design and construction.

CONS2000 Construction Practices:Methods 42.0 Hours

A study of materials and methods commonly used or seen in construction associated with architecture and infrastructure development are the basis for this course. Also included are common calculations and contract specifications for various types of projects.

CONS2001 Construction Practices: Building Systems 42.0 Hours

This course consists of advanced construction theory topics for architecture and design projects. Emphasis is placed on refinement of building design, materials and construction details. The course integrates architectural drawing standards, acceptable construction detailing principles, building code requirements and building systems.

P- CONS2000 Construction Practices:Methods

CONS2002 Site Development and Drainage 42.0 Hours

This course focuses on the design and installation of municipal services. The main topics are piping materials, sewer and water main appurtenances, and loads (both structural and hydraulic) on storm and sanitary drainage systems.

CONS3000 Structural Analysis: Beams and Columns 42.0 Hours

This course incorporates the study of beam analysis and design in various materials, further investigation of combined stresses and the introduction of column design and indeterminate beams.

P- MENG2003 Statics and P- MENG2007 Strength of Materials

CONS3001 Materials Testing 42.0 Hours

This course focuses on the testing of common construction materials used in the field of architecture. Results are compared to established standards. Routine lab tasks such as weighing materials, reading scales and handling equipment are used to follow industry standards and procedures so that specific information can be collected.

P- CONS2001 Construction Practices: Building Systems

CONS3002 Introduction to Building Information Modeling 42.0 Hours

This course will introduce the student to computerized estimating. Skills in the use of software, estimating techniques and industry practices will be applied to a small commercial project.

P- ARCH1003 Quantity Surveying: Takeoffs and Measurements and P- ARCH2000 Architectural Design Commercial

CONS3003 Structural Analysis: Design 42.0 Hours

This course focuses on the study of loads, design and materials. Overall design concepts are explored for such structures as retaining walls, bridges and different building types and their uses.

P- CONS3000 Structural Analysis: Beams and Columns

CONS3004 Advanced Building Information Modeling 42.0 Hours

In this course students will examine infrastructure projects and the computerized tools used to prepare competitive estimates in the bid tender process. Cost analysis, profit requirements and specific performance issues, such as bonding, are discussed.

P- CONS3002 Introduction to Building Information Modeling

CONS3005 Services 42.0 Hours

Emphasized in this course are the design and draw systems within a building based on the study of HVAC, plumbing and electrical requirements. This study is based on applicable code requirements in Ontario.

COOP1013 Technology Work Term 1 640.0 Hours

Co-operative Education will provide students with the skills to conduct a college directed and self directed job search in their chosen field of study. Students will obtain a co-op work experience with an employer for a period of 14 weeks. All students are responsible to submit a work term report indicating achievement of specific learning outcomes during their 1st co-op work term. Georgian College follows the Co-operative Education guidelines set out by the Canadian Association for Co-operative Education (CAFCE) and Education at Work Ontario (EWO) by supporting the learning outcomes designed for each program.

COOP2009 Technology Work Term 2 560.0 Hours

Co-operative Education will allow students to gain new/enhanced technical work experience. As students begin to recognize their chosen academic strengths and career direction, they will be better prepared to choose their academic courses and professional options. All students are responsible for submitting a work term report and employer evaluation form following this work term. It is expected that a student wishing to return to their Work Term 1 employer, be asked to seek new/more in depth responsibilities so that enhancement of program specific learning outcomes be achieved.

P- COOP1013 Technology Work Term 1 or P- FLD4201 Co-Op Work Term 1 (4 Mths)

COOP3005 Technology Work Term 3 560.0 Hours

Co-operative Education will allow students to gain further technical work experience. As students realize their chosen academic strengths and career direction, they will be better able to choose their academic courses and professional options. All students are required to submit a work term report and employer evaluation form following this work term. It is expected that a student wishing to return to a Work Term 1 or Work

Term 2 employer, be asked to seek new/more in depth responsibilities so that enhancement of program specific learning outcomes will be achieved.

P- COOP2009 Technology Work Term 2 or P- FLD4202 Co-Op Work Term 2 (4 Mths)

ENVR1000 Environmental Science and Sustainability 42.0 Hours

This course focuses on ecological principles, population dynamics and energy resources in order to assess their impact on the environment. The major types of pollution are examined and their effects on the various components of the ecosphere analyzed. Strategies for pollution control and the conservation of the Earth's resources are examined in the context of economic considerations and sustainable development.

MATH1018 Introduction to Technical Mathematics 42.0 Hours

This course provides a foundation in mathematics in engineering technology and related programs. Students will develop skill in mathematical thinking and problem solving, and appropriately apply technology in the solution of engineering related problems using algebra, geometry, right angle trigonometry, trigonometric functions of any angle, systems of linear equations, and exponential and logarithmic functions. Additional time to strengthen and reinforce mathematical competencies will be made available to those students who require it.

MATH1019 Technical Mathematics 42.0 Hours

This course extends the mathematics ideas taught in Introduction to Technical Mathematics through advanced mathematics problems needed for mechanical engineering programs. Mathematical reasoning and problem solving will be reinforced through problems in an engineering context. Mathematics concepts reinforced and extended are algebra, systems of linear equations, vectors and oblique triangles, graphs of trigonometric functions, and complex numbers.

P- MATH1018 Introduction to Technical Mathematics

MENG2003 Statics 42.0 Hours

This course is an introduction to the equilibrium of externally applied forces and internally developed reaction forces as applied to engineering structures and machines.

MENG2007 Strength of Materials 42.0 Hours

This course is designed to familiarize the student with some basic concepts of strength of materials, particularly direct stress and strain, bending and torsional stresses.

P- MENG2003 Statics or P- EML4113 Statics or P- MENG2011 Statics and Dynamics or P- EML4237 Statics And Dynamics

MGMT2002 Project Management 42.0 Hours

This course introduces the fundamental principles necessary for successful management of projects. Project planning, management and control techniques will be discussed and the application of computers in project management will be studied.

MGMT3006 Contract Law: Bid Tender Process 42.0 Hours

This course introduces specifications and contract building law, including analysis of Construction Law as it relates to the construction process. Legal issues that arise in the bidding process and contract administration are discussed. This is a comprehensive look at the construction industry and value of construction contracts from a practical non-legal framework.

SURV1000 Surveying 42.0 Hours

This is an introductory course to the principles of surveying as related to the construction industry. Emphasis is placed on obtaining field skills in linear measurement and the operation of levels, transits, theodolites and electronic surveying equipment. Basic traverse computation and other office calculations that use the collected field data are practiced.

TECR3002 Technical Project 42.0 Hours

Students, either individually or in small groups, will develop a design for a residential or small commercial building. The design will include, but not be limited to such topics as a site analysis, code review, and determination of appropriate materials/methods of construction, the building program and a formal design presentation.

P- MGMT2002 Project Management

TECR3003 Project Report Presentation 42.0 Hours

The student will demonstrate communication skills by completing and presenting, both written and orally, a major technical report of at least 3000 words in the narrative portion of the report. The course is largely self-directed. The content of the report will be developed around the building design work completed in TECR3002. The content of the report will contain all relevant information as if the student is presenting a proposal to a client, and will encompass technical integration of the building systems proposed for the project building. The content of the report may be based on original research and/or based on a current review of the literature in a specific technical field and/or based on data obtained or processes worked on during the student's co-op experiences.

P- TECR3002 Technical Project

Course Description Legend

P = Prerequisite; C = Concurrent prerequisite; CO= Corequisite

Information contained in College documents respecting programs is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolment, and the availability of courses.

