

# CAREER INFORMATION



Canadian Institute of  
Quantity Surveyors

Institut canadien des  
économistes en construction

Your Guide to Becoming a Qualified Professional Quantity  
Surveyor (PQS)/and Construction Estimator Certified (CEC)



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*Career Information For Admission into the CIQS*

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## **Preface**

The aim of this Career Information Booklet is to provide to the prospective member general information on the Canadian Institute of Quantity Surveyors (CIQS), an understanding of the various pathways to membership into the CIQS, the regulations governing membership as well as the technical skills and expectations of the Professional Quantity Surveyor (PQS)/Économistes en Construction Agréé (ECA) and the Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC).

Full details and information may be obtained from the CIQS.

### **Canadian Institute of Quantity Surveyors (CIQS)**

90 Nolan Court, Unit 19

Markham, Ontario

L3R 4L9

Telephone: (905) 477-0008

Toll Free 1-866-345-1168

Facsimile: (905) 477-6774

Email: [info@ciqs.org](mailto:info@ciqs.org)

Website: [www.ciqs.org](http://www.ciqs.org)

## **Regional Chapters**

### **CIQS – British Columbia**

(representing members in British Columbia and the Yukon)

### **CIQS – Prairies and Northwest Territories**

(representing members in Alberta, Saskatchewan, Manitoba, North West Territories & Part of Nunavut)

### **CIQS – Ontario**

(representing members in Ontario and Part of Nunavut)

### **CIQS – Quebec**

(representing members in Quebec)

### **CIQS – Maritimes**

(representing members in Nova Scotia , New Brunswick and Prince Edward Island)

### **CIQS – Newfoundland and Labrador**

(representing members in Newfoundland and Labrador)



## **Quantity Surveying**

During the 18<sup>th</sup> century in the United Kingdom, construction projects were usually measured and valued after they were designed and built. The “measurers” would quantify and value the work after the building was erected and negotiate with the client and architect on behalf of the tradesmen. At the time there was no main contractor system in place.

In the early 19<sup>th</sup> century, the main contractor system was implemented, leading to price competition before construction. The measurers soon realized that a new function was required of them and they developed the skill of pre-measuring quantities from drawings and assembling them in “bills of quantities” before construction began.

The quantity surveying profession today has evolved from the 18<sup>th</sup> century measurer to one that deals with the construction and financial management of construction projects. Today’s quantity surveyors have the skills and knowledge relating to cost estimating and forecasting, cost management, construction techniques and management, procurement processes and contractual matters.

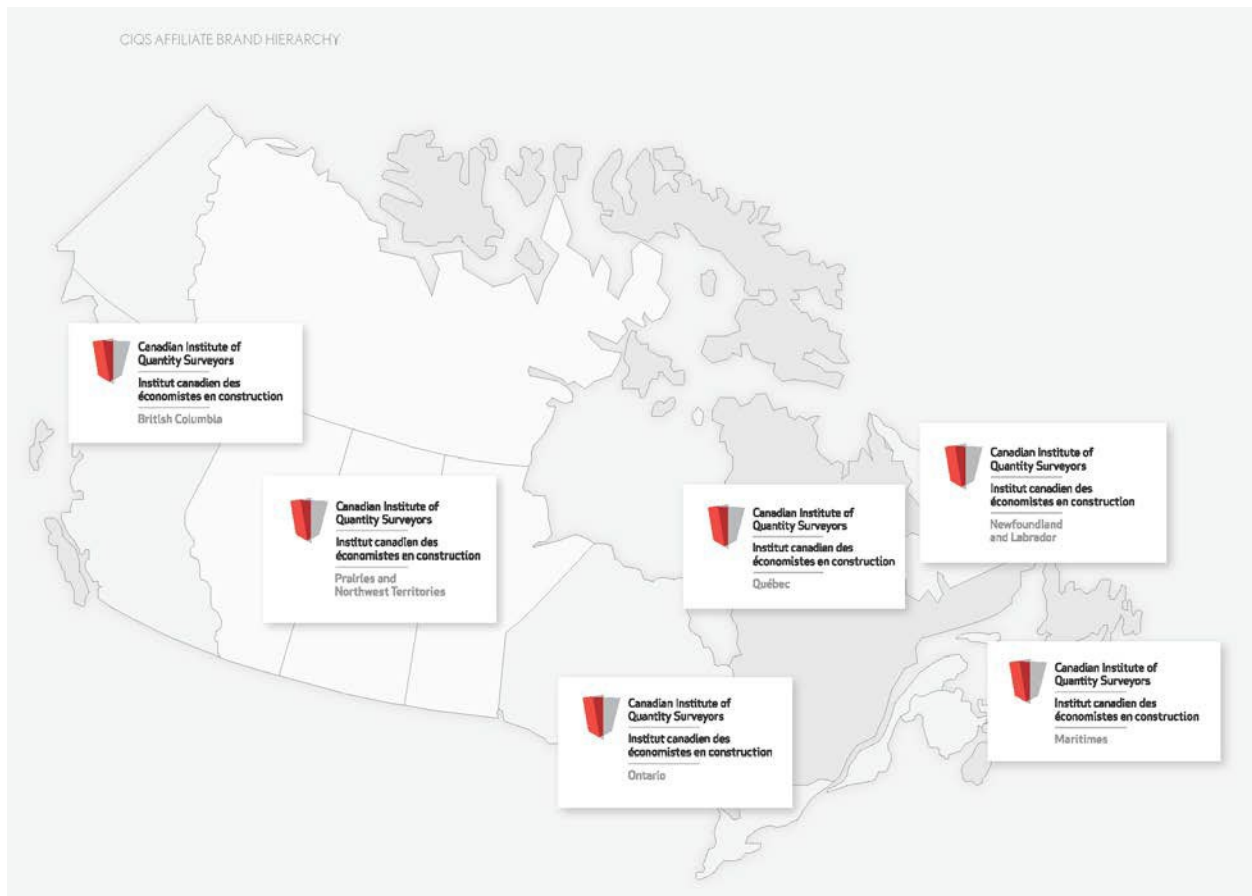
With the uncertainty of today’s market conditions, the movement towards “green” buildings and the use of non-traditional procurement methods, there is no doubt that the role of the quantity surveyor will continue to evolve.



## **The Canadian Institute of Quantity Surveyors (CIQS)**

Founded in 1959, the Canadian Institute of Quantity Surveyors (CIQS) is the national professional body representing the quantity surveying and construction estimating profession in Canada. Certified members are awarded the designations of Professional Quantity Surveyor (PQS)/Économistes en Construction Agréé (ECA) and Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC).

The CIQS is the governing body with six regional chapters in Prairies & Northwest Territories (representing members in the Prairies, Northwest Territories & part of Nunavut), British Columbia (representing members in British Columbia & Yukon), Newfoundland and Labrador, Maritimes (representing members in Nova Scotia, New Brunswick & PEI), Ontario (representing members in Ontario & part of Nunavut) and Quebec (representing members in Quebec)..



## **Canadian Institute of Quantity Surveyors (CIQS) – Chapter Map**



## **History of the Institute**

The concept of the owner's quantity surveyor preparing bills of quantities for construction projects in which all the materials, equipment, subcontracts, services and labour, etc. are quantified and against which the competing construction companies would submit priced tenders has never been fully accepted as the normal practice in North America. In North America construction companies use construction estimators to bid on construction projects, using their own knowledge and ability to measure the component parts of the work, and to price, plan and manage the project. Many of these construction estimators are quantity surveyors that immigrated to Canada from as early as the turn of the 20<sup>th</sup> century. Since there was no governing body for quantity surveyors at the time, these early quantity surveyors adapted to industry practice as it stood at the time or turned to otherwork.

In the years following the Second World War, quantity surveyors began to enter Canada in significant numbers. These quantity surveyors saw the need for an organization to further the aims of their profession. In February 1959, a number of these quantity surveyors were invited to a founder members' meeting in Toronto. From this meeting the Canadian Institute of Quantity Surveyors was founded and its objectives, rules and regulations were developed. The Institute was registered under the Dominion of Canada Companies Act in November 1959.

Although the bill of quantities is still not widely used, the quantity surveying profession has had notable influence on the process within the past 28 years. Government, industry, business and financial sectors have now recognized quantity surveyors and estimators as an informed voice on cost management, cost control and constructability issues.

Today, with widening acceptance of techniques such as value management, statistical analysis, life cycle costing and so on, the opportunities for quantity surveyors and estimators to influence design and construction are broadening.

On January 13, 1988 the Institute obtained the official mark "Professional Quantity Surveyor" and subsequently has also registered the initials PQS and the French equivalents of Économiste en Construction Agréé and the initials ECA. As of May 1988 the Council of the Institute conferred upon its PQS members the right to a professional seal.

Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC) is a category developed by the Institute in 1995 to continue to promote the profession of construction estimating.

Membership in the Institute continues to grow. The founding members' vision of a profession recognized through tertiary education and through general acceptance of its practices is closer to reality than ever before.



## **Aims & Objectives of the Institute**

The Principal Objectives of the Institute are:

- To provide, through its members, professional advice to building owners, developers, public authorities, design consultants and contractors on all matters relating to quantity surveying in construction costs, procurement, management and administration of projects;
- To collaborate with other professions and organizations in the interests of the construction industry;
- To promote and advance the professional status and gainful employment of Quantity Surveyors and Construction Estimators.
- To establish and maintain a high standard of professional competence and integrity by limiting membership to persons who have passed the examinations prescribed by, or acceptable to, the Institute and who have satisfied the requirements of training, practical knowledge, experience and integrity prescribed by the Institute;
- To promote fellowship and to provide a medium for the interchange of current construction knowledge and other topics of interest to members; and
- To take appropriate action when possible infringements of the aims and objectives of the Institute arise from other sources anywhere in Canada.

## **National & International Partnerships**

The Canadian Institute of Quantity Surveyors (CIQS) is a member of the Pacific Association of Quantity Surveyors ([www.paqs.net](http://www.paqs.net)).

The CIQS has signed memoranda of understanding to share information and partner on initiatives with common interest. Please refer to [www.ciqs.org](http://www.ciqs.org) for an up-to-date listing.

Currently the CIQS has memoranda of understanding with:

- The Canadian Construction Association ([www.cca-acc.com](http://www.cca-acc.com)), and
- The Royal Institution of Chartered Surveyors Americas ([www.ricsamericas.org](http://www.ricsamericas.org)),

Internationally, reciprocity agreements have been signed with:

- The Australian Institute of Quantity Surveyors ([www.aiqs.com.au](http://www.aiqs.com.au))
- The Hong Kong Institute of Surveyors ([www.hkis.org.hk](http://www.hkis.org.hk))
- The Building Surveyors Institute of Japan ([www.bsij.or.jp](http://www.bsij.or.jp))
- Royal Institution of Surveyors Malaysia ([www.rism.org.my](http://www.rism.org.my))
- The New Zealand Institute of Quantity Surveyors ([www.nziqs.co.nz](http://www.nziqs.co.nz))
- The Singapore Institute of Surveyors and valuers ([www.sisv.org.sg](http://www.sisv.org.sg))
- The Association of South African Quantity surveyors ([www.asaqs.co.za](http://www.asaqs.co.za))
- Nigerian Institute of Quantity Surveyors ([www.niqs.org.ng](http://www.niqs.org.ng))
- Jamaican Institute of Quantity Surveyors ([www.jiqs.com](http://www.jiqs.com))

Through these signed memoranda and reciprocity agreements, qualified members of the CIQS are recognized (with some restrictions) by the other Institutions and vice versa.

The CIQS also signed the PAQS Accreditation Scheme in August 2009. All universities and colleges accredited by PAQS are recognized as equivalent academic qualification by all member national associations that sign the PAQS Accreditation Scheme.



## **Professional Conduct, Ethics & Discipline**

In order to protect the integrity of the Institute and its members, strict guidelines, outlined in the Institute's Rules & Regulations and its Code of Ethics, are enforced. CIQS will consider complaints, given under oath, to suspend or cancel the membership of any member whom it finds guilty of misconduct or incompetence, and to record all such complaints. The CIQS Rules & Regulations set out principles of ethics and professional conduct, including the duties of a member to the public, to his/her employer, to other members of CIQS, and to him or herself.

## **Quarterly Journal**

The Construction Economist is the official journal of the Canadian Institute of Quantity Surveyors. It is provided free of charge to each member as part of his/her membership. The Construction Economist provides up-to-date information on the Institute, technical articles as well as information on past and upcoming Institute's events. It is published quarterly and past issues are available on the Institute's website.

## **Professional Designations**

Qualified individuals are those who successfully complete the appropriate Test of Professional Experience (TPE). These individuals are awarded the professional designations of:

- Professional Quantity Surveyor (PQS) / Économiste en Construction Agréé (ECA), or
- Construction Estimator Certified (CEC) / Estimateur en Construction Certifié (ECC).

Qualified members may use the designatory letters of "PQS" and the title "Professional Quantity Surveyor" or the French equivalent of "ECA" and the title "Économiste en Construction Agréé" or "CEC" and the title "Construction Estimator Certified" or the French equivalent of "ECC" and the title "Estimateur en Construction Certifié". For details on the TPE, please refer to page 12.





## **The Duties of a PQS/ECA**

The duties of a Professional Quantity Surveyor (PQS)/Économistes en Construction Agréé (ECA) include, but are not limited to the following:

- preparing and pricing quantity take-offs including analytic estimating for various types and forms of construction;
- preparing bills of quantities;
- identifying, prequalifying, evaluating, analyzing and selecting contractors and other supplied services and products;
- reviewing relevant project documentation, tender and contract documents;
- preparing tender/proposal evaluation criteria;
- preparing, pricing and submitting tenders/proposals;
- reviewing, evaluating, analyzing, negotiating and recommending for award tender/proposal submissions;
- developing, preparing, pricing and negotiating changes/claims;
- managing, administering and coordinating construction projects/contracts;
- assisting and supporting negotiation with construction project stakeholders;
- assessing applications for payment and verifying and supporting the process of payment certification;
- reviewing construction progress schedules;
- preparing, forecasting and reporting construction costs;
- preparing cash flows;
- preparing and maintaining unit price reference databases;
- preparing economic feasibility studies from information provided by construction stakeholders;
- preparing life cycle cost analysis and development proformas for construction stakeholders;
- identifying, evaluating, analyzing and managing risk;
- preparing and reviewing reserve fund study cost analysis;
- preparing and reviewing replacement and loss cost analysis;
- providing advice on construction cost control and planning to construction stakeholders;
- preparing tender packages consisting of bills of quantities, specifications, scopes of work and relevant project documentation;
- preparing and monitoring construction progress schedules;
- establishing and implementing the cost control process;
- providing project monitoring services and loan monitoring services;
- providing independent certification services and payment certification services;
- providing earned value analysis;
- evaluating changes and finalizing contract amount at close-out;
- collaborating in value management strategies;
- supporting the process of the resolution of contract disputes; and
- providing expert assessments, reports and testimony;

## **The Duties of a CEC/ECC**

The duties of a Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC) include, but are not limited to the following:

- a. preparing and pricing quantity take-offs including analytic estimating for various types and forms of construction;
- b. preparing bills of quantities;
- c. identifying, prequalifying, evaluating, analyzing and selecting contractors and other supplied services and products;
- d. reviewing relevant project documentation, tender and contract documents;
- e. preparing tender/proposal evaluation criteria;
- f. preparing, pricing and submitting tenders/proposals;
- g. reviewing, evaluating, analyzing, negotiating and recommending for award tender/proposal submissions;
- h. developing, preparing, pricing and negotiating changes/claims;
- i. managing, administering and coordinating construction projects/contracts;
- j. assisting and supporting negotiation with construction project stakeholders;
- k. assessing applications for payment and verifying and supporting the process of payment certification;
- l. reviewing construction progress schedules;



- m. preparing, forecasting and reporting construction costs;
- n. preparing cash flows; and
- o. preparing and maintaining unit price reference databases;



## **Membership**

Applying for membership in the Institute is quite simple: complete the application form online, attach all relevant documentation and application fee, and submit directly to the CIQS. Each application is reviewed and the applicant informed of the number of academic credits granted, the amount of industry experience accepted (if any), the subjects and industry experience outstanding as well as the category of membership granted and the required membership fee. The initial category of membership awarded is dependent on academic qualifications and approved industry experience. To achieve the professional membership levels (PQS/ECA & CEC/ECC) of the Institute, each member must complete the appropriate Test of Professional Experience (TPE) of the CIQS. For details on the TPE please refer to page 13.

The Institute recognizes many colleges and universities both nationally and internationally as fully accredited. Graduates from these institutions are granted full exemption from the academic requirements of the Institute. Colleges and universities that do not meet the full requirements of the CIQS syllabus are classified as “approved” and graduates from these institutions are required to pass the outstanding subjects required for the PQS/ECA or CEC/ECC designations.

Provisions are made for those who have equivalent professional and trade certifications as well as for those who have been working in the industry for an extended period of time.

See Membership Classifications on Page 11 and the Membership Pathways section beginning on Page 22 for an overview of the various membership classifications and the various pathways to becoming a PQS/ECA or CEC/ECC.

### **Application for membership - Within Canada**

Applications for membership can be made online at [www.ciqs.org](http://www.ciqs.org) and must be accompanied by the prescribed application fee. The applicant must also include documentary evidence of education status and full descriptions of courses completed for which exemptions are being sought.

### **Application for membership - Outside of Canada**

Persons residing outside of Canada may apply directly to the CIQS as a member at large.



## **Membership Classifications**

The CIQS encourages all non-qualified individuals to complete the outstanding section(s) of the Test of Professional Experience (TPE) in order to achieve the professional membership levels of Professional Quantity Surveyor (PQS)/Économistes en Construction Agréé (ECA) and Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC). The various categories of membership are:

### **Professional Quantity Surveyor (PQS)/Économistes en Construction Agréé (ECA):**

Members belonging to this category include:

- (a) an individual who has successfully completed the TPE for the PQS/ECA designation as defined by the Institute, or
- (b) an individual who is qualified as a FRICS or MRICS with the Royal Institution of Chartered Surveyors (RICS) whose primary professional discipline is quantity surveying as noted in the Education Policy Guidance Note #B9.

Qualified members in this category may use the designatory letters “PQS” and the title “Professional Quantity Surveyor” or the French equivalent of “ECA” and the title “Économiste en Construction Agréé”.

### **Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC):**

Members belonging to this category include:

- (a) an individual who has successfully completed the TPE for the CEC/ECC designation as defined by the Institute, or
- (b) an individual who has the required mechanical or electrical, or
- (c) an individual who has been admitted to sit the Direct Final Examination for PQS/ECA, or
- (d) an individual who has been admitted to sit the Mature Candidate Examination for PQS/ECA, or
- (e) an individual who has equivalent professional qualification but has not completed the TPE requirements for PQS/ECA, or
- (f) An individual who is a Canadian Construction Association (CCA) Gold Seal Certified Estimator (GSC).

Qualified members in this category may use the designatory letters “CEC” and the title “Construction Estimator Certified” or the French equivalent of “ECC” and the title “Estimateur en Construction Certifié”.



### **Associate Category:**

Individuals belonging to this category include:

- (a) An individual who has not completed the TPE for either the Professional Quantity Surveyor (PQS)/Économistes en Construction Agréé (ECA) or Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC), or
- (b) An individual who has attained the equivalent of PQS/ECA through recognized overseas professional associations, but has not completed the relevant TPE, or
- (c) An individual who has been admitted to sit the direct final examinations for CEC/ECC, or
- (d) An individual who is studying towards passing the Institute's examinations and who is not a full-time student, or
- (e) An individual that is gainfully or self-employed in or associated with the construction industry whose membership in the Institute would be of value to the Institute.

### **Student - Full time:**

An individual registered as a full time student in a full time approved program of studies

### **Others:**

Other membership categories that may be implemented at the discretion of the CIQS: Fellow, Retired and Honorary Life Members.



## **The Test of Professional Experience**

The Professional Quantity Surveyor (PQS)/Économiste en Construction Agréé (ECA) is the highest level of membership in the CIQS followed by the Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC). This means that the quality of work and ethics of these members reflect the high standards of the Institute. To ensure that they have gained the required minimum level of practical experience in addition to the academic requirements, the CIQS has implemented the Test of Professional Experience (TPE). All members must successfully complete the requisite TPE before the CIQS grants the designations of Professional Quantity Surveyor (PQS) or Économiste en Construction Agréé (ECA) and Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC).

The TPE program comprises of Four (4) parts:

Part (a) The required academic, professional or trade qualifications requisite for the designation applied for,

Part (b) A structured training period of at least 2 years of approved industry working experience and the submission of diaries to record approved industry work experience based on Section 6.2 – Areas of Approved Experience on Page 17, and

Part (c) Practice problem which comprises two sections:

(a) a study of the CIQS By-Laws, CIQS Rules & Regulations and the CIQS Code of Ethics, and

(b) a project.

Part (d) A professional Interview

## **TPE Part (a) - Education, Equivalent Professional Qualification & Trade Certification**

The academic requirements for the PQS/ECA and CEC/ECC membership levels in the CIQS are based on the CIQS syllabi. There are currently three (3) divisions – architectural, mechanical and electrical. The Institute is considering the addition of a civil division. Currently, the Architectural Division has 25 subjects, the Mechanical Division has 26 subjects and the Electrical Division has 27 subjects. The subjects are further divided into three (3) levels - Level 100, 200 and 300 and are coded for easy identifications. The first character indicates the division of the subjects: “C” represents a subject that is common to all three (3) divisions; “A” means that the subject is Architectural only; “M” means that the subject is Mechanical only and “E” means that the subject is Electrical only. See Pages 32 to 40 for details on each subject.

National and international college and university programs that meet the full requirements of the CIQS are classified as “fully accredited” and graduates from these programs are granted full exemption from the CIQS subjects. Programs that do not meet the full requirements are classified as “approved” and graduates from these programs are required to pass the outstanding subjects required for the CEC/ECC and the PQS/ECA designations. As noted previously, all members must also complete the required approved industry experience and the TPE requirements before the PQS/ECA or the CEC/ECC designation is awarded.

Click “Accredited Programs” under the “Education” tab at [www.ciqs.org](http://www.ciqs.org) for a complete list of accredited programs. Any program that is not on the list of “fully accredited” or “approved” programs will be assessed upon application to the Institute. These include national and overseas educational programs, professional and trade certifications.



**TPE Part (a) – Architectural Academic Requirements**

Level	Subject #	Table 1 - Architectural Division	Subjects Required For:	
			PQS	CEC
100	C101	Construction Science	√	
	A102	Construction Technology I	√	√
	A103	Measurement of Construction Work I	√	√
	A104	Surveying - Principles & Applications	√	√
	C105	Introduction to Computers	√	
	C106	Economics I	√	√
	C107	Introduction to Canadian Business Law	√	
	C108	Basic Business Communications	√	√
200	A201	Construction Technology II	√	√
	A202	Measurement of Construction Work II	√	√
	C203	Construction Cost Accounting	√	
	C204	Construction Contracts	√	√
	C205	Construction Management	√	
	C206	Economics II	√	
	A207	Construction Technology III	√	√
	A208	National Building Code	√	√
300	A301	Measurement of Construction Work III	√	√
	A302	Measurement of Construction Work - Practical Exam	√	√
	A303	Pricing & Bidding Procedures	√	√
	C304	Contract Administration	√	
	C305	Construction Cost Control	√	
	A306	Measurement & Pricing of Civil Works	√	√
	C307	Construction Scheduling	√	
	C308	Cost Planning	√	
	C309	Development Economics	√	
		<b>Total</b>	<b>25</b>	<b>14</b>



### **TPE Part (a) – Mechanical Academic Requirements**

Level	Subject #	Table 2 - Mechanical Division	Subjects Required For:	
			PQS	CEC
100	C101	Construction Science	√	
	M102	Mechanical Technology I	√	√
	M103	Measurement of Mechanical Work I	√	√
	M104	Plumbing & Fire Protection Design	√	√
	C105	Introduction to Computers	√	
	C106	Economics I	√	√
	C107	Introduction to Canadian Business Law	√	
	C108	Basic Business Communications	√	√
	M109	Heating, Ventilation & Air Conditioning Design	√	√
200	M201	Mechanical Technology II	√	√
	M202	Measurement of Mechanical Work II	√	√
	C203	Construction Cost Accounting	√	
	C204	Construction Contracts	√	√
	C205	Construction Management	√	
	C206	Economics II	√	
	M207	Mechanical Technology III	√	√
	M208	Refrigeration, Automatic Controls, Insulation	√	√
300	M301	Measurement of Mechanical Work III	√	√
	M302	Measurement of Mechanical Work - Practical Exam	√	√
	M303	Pricing and Bidding Procedures	√	√
	C304	Contract Administration	√	
	C305	Construction Cost Control	√	
	M306	Industrial Piping	√	√
	C307	Construction Scheduling	√	
	C308	Cost Planning	√	
	C309	Development Economics	√	
		<b>Total</b>	<b>26</b>	<b>15</b>





### **TPE Part (a) – Electrical Academic Requirements**

Level	Subject #	Table 3 - Electrical Division	Subjects Required For:	
			PQS	CEC
100	C101	Construction Science	√	
	E102	Electrical Technology I	√	√
	E103	Measurement of Electrical Work I	√	√
	E104	Illumination Design	√	√
	C105	Introduction to Computers	√	
	C106	Economics I	√	√
	C107	Introduction to Canadian Business Law	√	
	C108	Basic Business Communications	√	√
	E109	Electrical Code I	√	√
200	E201	Electrical Technology II	√	√
	E202	Measurement of Electrical Work II	√	√
	C203	Construction Cost Accounting	√	
	C204	Construction Contracts	√	√
	C205	Construction Management	√	
	C206	Economics II	√	
	E207	Electrical Technology III	√	√
	E208	Mechanical Installations	√	√
	E209	Electrical Code II	√	√
300	E301	Measurement of Electrical Work III	√	√
	E302	Measurement of Electrical Work - Practical Exam	√	√
	E303	Pricing and Bidding Procedures	√	√
	C304	Contract Administration	√	
	C305	Construction Cost Control	√	
	E306	Communication Design and Technology	√	√
	C307	Construction Scheduling	√	
	C308	Cost Planning	√	
	C309	Development Economics	√	
		<b>Total</b>	<b>27</b>	<b>16</b>



## **TPE Part (a) - Examinations and Obtaining Credits**

For applicants who have subjects outstanding or for students who are contemplating making quantity surveying their profession, there are several choices available to gain the required academic credits:

### **Option 1 - Write the CIQS examination for the subject**

- The Institute offers examinations on most of the subjects annually with two (2) sessions in February and October. Please refer to the Institute examination calendar for the availability of specific examinations since some examinations are set on an as-needed basis.
- Applicants are encouraged to map out their route for CEC/ECC or PQS/ECA levels to allow themselves adequate time for study. Examination schedules and registration forms are available at [www.ciqs.org](http://www.ciqs.org) under Education/Examinations. Remember, it takes time to accumulate the required textbooks.
- Applicants need to obtain a copy of the syllabus for the subject(s) they are required to complete. The syllabus, available under the “Education” tab at [www.ciqs.org](http://www.ciqs.org), contains course descriptions and required textbooks for each subject. The syllabus also includes a required reading list for each subject. You may purchase the books (publishers listed in the syllabus) or borrow from a library.
- Applicants will receive acknowledgement of their examination registration along with a candidate number from the CIQS.

### **Option 2 - Enroll in an accredited equivalent continuing education course**

- Click on “Education” under the “Education” tab at [www.ciqs.org](http://www.ciqs.org) for a complete listing of continuing education courses that have been accredited by the Institute.
- Register directly with the educational institution (Algonquin College, George Brown College, SAIT, etc.).
- When you have successfully completed the continuing education course, send a copy of your transcript of marks to [membership@ciqs.org](mailto:membership@ciqs.org) to obtain a credit in that subject.

### **Option 3 – Enroll in an accredited full time or continuing education program**

- Click “Accredited Programs” under the “Education” tab at [www.ciqs.org](http://www.ciqs.org) for a complete list of accredited programs.
- When you have successfully completed the program, you must send a copy of your transcript of marks to [membership@ciqs.org](mailto:membership@ciqs.org) to obtain credits.

## **Publications**

The Institute publishes a number of texts, explanatory booklets and technical publications, including:

- Method of Measurement of Construction Works
- Elemental Cost Analysis, Format, Method of Measurement, Pricing including Measurement of Buildings by Area & Volume
- Construction Budgeting
- Canadian Building Law
- Construction Planning and Scheduling: An Introduction
- Construction Project Development: Economics, Financing and Loan Monitoring Practices
- Smart Economics in the Development of Real Estate

All publications are available from CIQS. Contact the Institute at (905) 477-0008 or toll free at 1-800-345-1168 or visit [www.ciqs.org](http://www.ciqs.org) for a complete list and order form.



## **TPE Part (b) – Structured Training Period**

Individuals must complete a minimum of 2 years of approved industry work experience based on the membership pathway for which they qualify. In addition, all individuals must record and submit work diaries for the minimum number of working hours of approved industry experience for the qualified membership category they hope to obtain.

The work diaries are subjected to the following rules:

- Individuals must apply to the Institute for permission to start their diaries.
- An individual cannot start his/her daily diaries until all the conditions of his/her membership pathway are met.
- The start date for diaries is that as stated in the letter of approval from the Institute.
- Credit for work done in the past is not automatic. Individuals seeking credit for past industry experience must apply to the Institute for approval. The Institute will assess whether such past industry experience is valid and will determine the amount of credit, if any, to be awarded.
- Daily diaries must be submitted on a quarterly basis until the required minimum number working hours of approved industry experience is achieved. This means that a member may be required to submit diaries beyond the hours stated if the required amount of approved working experience is not met.
- The CIQS has determined areas of approved experience that each individual must complete before they are deemed qualified.
- The areas of approved experience are divided into two sections – Section 6.2.1 (Core) and Section 6.2.2 (Optional). See below.
- Individuals are required to complete daily diaries for a set minimum of working hours on the Areas of Approved Experience based on the qualified membership level they are applying for.
- Candidates are required to attend an interview to discuss their professional experience.

## **TPE Part (b) – Section 6.2: Areas of Approved Experience**

### **Section 6.2.1 Core Requirements**

- 6.2.1.1 - Budgeting including Preparing and Using Historical Cost Data
- 6.2.1.2 - Quantity Take-off
- 6.2.1.3 - Contract Documents Review & Preparation of Bid Packages
- 6.2.1.4 - Site Visits, Evaluating Site Conditions including Location
- 6.2.1.5 - Estimating and/or Negotiating Change Orders
- 6.2.1.6 - Pricing Analysis including Preparation of Progress Cash Flow Charts
- 6.2.1.7 - Preparing, Monitoring and Finalizing Progress Claims

### **Section 6.2.2 Optional Requirements**

- 6.2.2.1 - Feasibility Studies
- 6.2.2.2 - Reserve Fund Studies/Costs
- 6.2.2.3 - Life Cycle Costing Studies
- 6.2.2.4 - Receiving & Analysis of Tenders, Recommendations & Awarding Trades/Sub-Trades
- 6.2.2.5 - Pricing Building Elements including Materials, Labour and Equipment
- 6.2.2.6 - Cost Control
- 6.2.2.7 - Preparing Bills of Quantities/Schedule of Quantities and Material Schedules
- 6.2.2.8 - Monitoring Construction Costs against Budget
- 6.2.2.9 - Preparing Construction Claims



- 6.2.2.10 - Administering Contracts including Making Progress Payments
- 6.2.2.11 - Preparing and Monitoring Construction Schedule
- 6.2.2.12 - Finalize Actual Construction Cost Data
- 6.2.2.13 - Database
- 6.2.2.14 - Review of Reports
- 6.2.2.15 - Review of Revenue
- 6.2.2.16 - Independent Certification
- 6.2.2.17 - CPD Credits

### **TPE Part (b) – Range of Experience/Diary Requirements**

The diary requirements fall into three (3) categories:

- Class D1 for the CEC/ECC designation,
- Class D2 for upgrading from the CEC/ECC to the PQS/ECA designation, and
- Class D3 for the PQS/ECA designation.

The diary requirements are:

#### **Class D1 Diary Requirements**

Based on Areas of Approved Experience (Section 6.2 on Page 18), the range of experience and duration of diaries in this category is a minimum of 900 working hours comprising:

- a) Section 6.2.1 Core Requirements: At least 720 working hours covering not less than any three (3) sub-sections with a minimum of 40 working hours per sub-section,  
***Plus***
- b) Section 6.2.2 Optional Requirements: At least 180 working hours covering at least any three (3) sub-sections with a minimum of 24 working hours per sub-section. Please note the condition of Sub-Section 6.2.2.17 CPD Credits – only a maximum of 8 hours per annum is allowed.

#### **Class D2 Diary Requirements**

Based on Areas of Approved Experience (Section 6.2 on Page 18), the range of experience and duration of diaries in this category is a minimum of 900 working hours comprising:

- a) Section 6.2.1 Core Requirements: At least 720 working hours covering not less than five (5) sub-sections with a minimum of 40 working hours per sub-section,  
***Plus***
- b) Section 6.2.2 Optional Requirements: At least 180 working hours covering not less than five (5) sub-sections with a minimum of 24 working hours per sub-section. Please note the condition of Sub-Section 6.2.2.17 CPD Credits – only a maximum of 8 hours per annum is allowed.

#### **Class D3 Diary Requirements**

Based on Areas of Approved Experience (Section 6.2 on Page 18), the range of experience and duration of diaries that must be covered in this category is a minimum of 1,800 working hours comprising:

- a) Section 6.2.1 Core Requirements: At least 1,440 working hours covering not less than five (5) sub-sections with a minimum of 80 working hours per sub-section,  
***Plus***
- b) Section 6.2.2 Optional Requirements: At least 360 working hours covering not less than five



(5) sub-sections with a minimum of 40 working hours per Sub-Section. Please note the condition of Sub-Section 6.2.2.17 CPD Credits – only a maximum of 8 hours per annum is allowed for a total of 16 hours.

<b>TPE APPROVED WORKING EXPERIENCE DAILY DIARY REQUIREMENTS</b>									
<b>Section 6.2 - Areas of Required Experience</b>	<b>Class D1 Diary Requirements</b>			<b>Class D2 Diary Requirements</b>			<b>Class D3 Diary Requirements</b>		
	<b>Minimum Sub- Sections Required</b>	<b>Minimum Working Hours Per Sub- Section</b>	<b>Total</b>	<b>Minimum Sub- Sections Required</b>	<b>Minimum Working Hours Per Sub- Section</b>	<b>Total</b>	<b>Minimum Sub- Sections Required</b>	<b>Minimum Working Hours Per Sub- Section</b>	<b>Total</b>
<b>Sub-Section 6.2.1 - Mandatory Requirements</b>									
6.2.1.1	Minimum of any 3 Sub- Sections	40	720	Minimum of any 5 Sub- Sections	40	720	Minimum of any 5 Sub- Sections	80	1,440
6.2.1.2									
6.2.1.3									
6.2.1.4									
6.2.1.5									
6.2.1.6									
6.2.1.7									
<b>Sub-Section 6.2.2 - Additional Optional Requirements</b>									
6.2.2.1	At Least 3 Sub- Sections	24	180	At Least 5 sub-sections	24	180	At Least 5 sub-sections	40	360
6.2.2.2									
6.2.2.3									
6.2.2.4									
6.2.2.5									
6.2.2.6									
6.2.2.7									
6.2.2.8									
6.2.2.9									
6.2.2.10									
6.2.2.11									
6.2.2.12									
6.2.2.13									
6.2.2.14									
6.2.2.15									
6.2.2.16									
6.2.2.17									
6.2.2.17		* Max of 8 hrs. per year			* Max of 8 hrs. per year			* Max of 16 hrs.	
<b>Total</b>			<b>900</b>			<b>900</b>			<b>1,800</b>



### **TPE Part (c) – Practice Problem**

The general rules governing the TPE Part (c) – Practice Problem are:

- (1) Candidates are only eligible to attempt the Practice Problem when they have successfully completed Parts (a) and (b) of the TPE,
- (2) Candidates attempting the CEC/ECC designation are exempt from TPE Part (c)
- (3) The practice problem comprises two sections:
  - (a) a study of the CIQS By-Laws, CIQS Rules & Regulations and CIQS Code of Ethics,  
and
  - (b) a project,
- (4) At least 50% of the Practice Problem shall deal with by-laws, rules and regulations, and professional ethics,
- (5) Candidates will answer the problem in their working environment and will be allowed to use all reference material and other resources normally available to them,
- (6) After completion of the practice problem, candidates may, at the discretion of CIQS, the administrating body, be required to attend an interview,
- (7) The practice problem will be offered on an as-needed basis,
- (8) The passing grade is 60% in each section..

### **TPE Part (d) – Professional Interview**

The general rules governing the TPE Part (d) – Professional Interview are:

- (1) Candidates attempting the CEC/ECC designation are exempted from TPE Part (d),
- (2) Candidates are only eligible to attempt the Professional Interview when they have successfully completed Parts (a), (b), and (c) of the TPE,
- (3) The Professional interview will be of approximately 60 minutes duration
- (4) The objective of the Professional Interview is to assess the candidate's knowledge of quantity surveying and his/her suitability as a Professional Quantity Surveyor (PQS) Member of the Institute



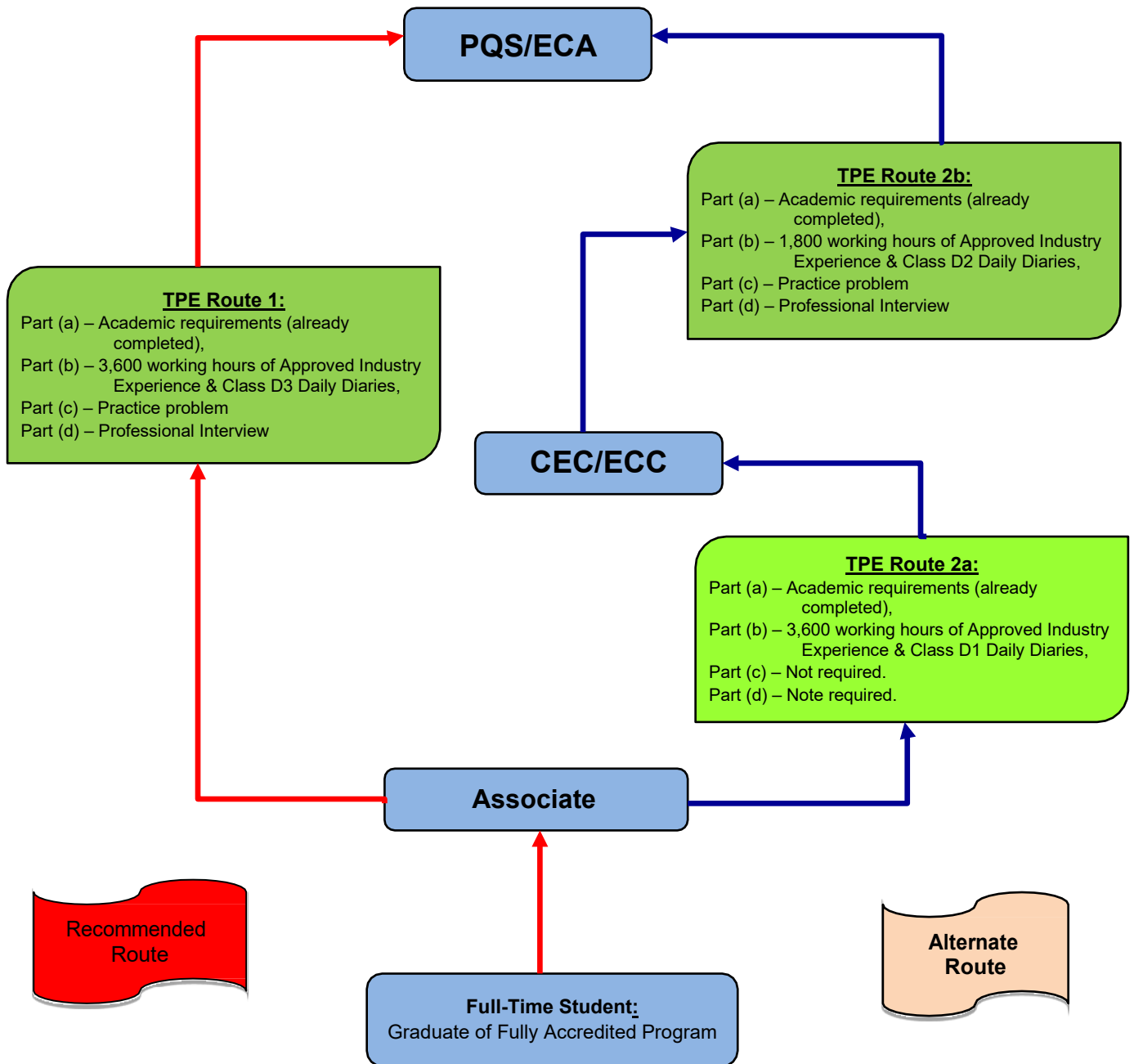
## **Membership Pathways**

As noted, an individual seeking the qualified status of Professional Quantity Surveyor (PQS)/Économiste en Construction Agréé (ECA) or Construction Estimator Certified (CEC)/Estimateur en Construction Certifié (ECC) must complete the requisite TPE requirements. However, these requirements will vary according to the applicant's academic qualifications and approved industry working experience. Typically the Institute assesses each application individually to determine the most appropriate pathway. Listed below are some of the typical TPE membership pathways (routes):

- (a) Graduates of fully accredited programs – see TPE Routes 1, 2a & 2b on Page 22.
- (b) Graduates of approved accredited programs – see TPE Routes 3, 4a & 4b on Page 23.
- (c) Applicants with engineering, trades or other qualifications – see TPE Route 5 & 6 on Page 24.
- (d) For those that qualify as direct finalist – see TPE Routes 7 & 8 on Page 25.
- (e) For those that qualify as mature candidate – see TPE Route 9 on Page 26.
- (f) For those who qualify through equivalent professional qualification – see TPE Route 10 on Page 27.
- (g) For those who qualify through the RICS professional qualification – see TPE Route 11 on Page 28,
- (h) For CCA Gold Seal Certified estimators – see TPE Route 8 on Page 25.
- (i) For those who qualify through the Professional Experience pathway – See TPE Route 12 on page 29.



### Pathway – TPE Routes 1, 2a & 2b for Students in Fully Accredited Programs

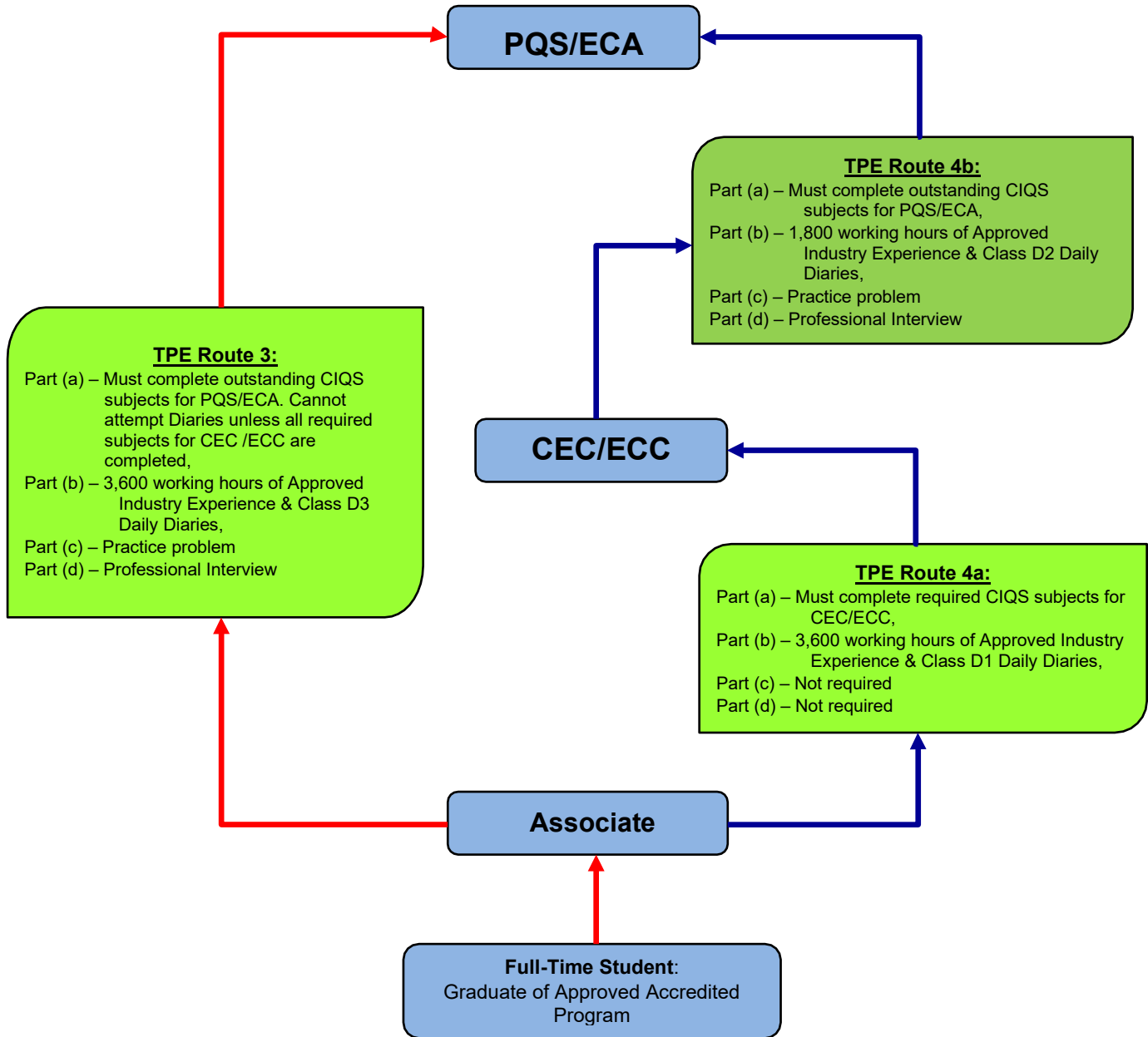


- Students are encouraged to join the Institute while attending an educational institution - Membership and the quarterly journal (Construction Economist) are free for all students.
- Upon graduation student members are transferred to the associate category.
- The recommended pathway for graduates of fully accredited programs is shown in the red arrow.





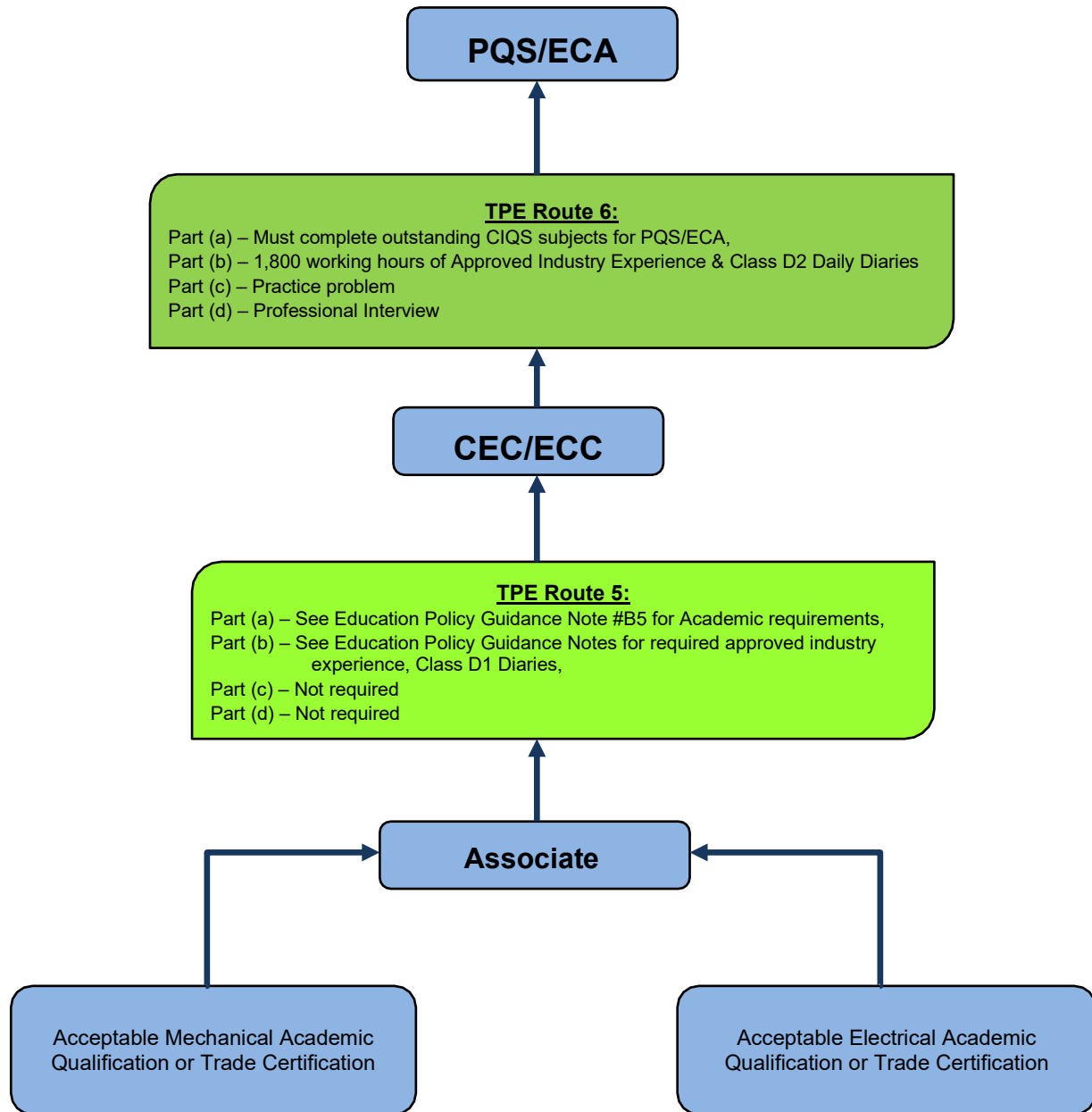
### Pathway – TPE Routes 3, 4a & 4b for Students in Approved Accredited Programs



- Students are encouraged to join the Institute while attending an educational institution. Membership and the quarterly journal (Construction Economist) are free for all students.
- Upon graduation student members are transferred to the associate category.
- Note in TPE Route 3, candidates cannot attempt their Class D3 Diaries until they have completed the required subjects for CEC/ECC.



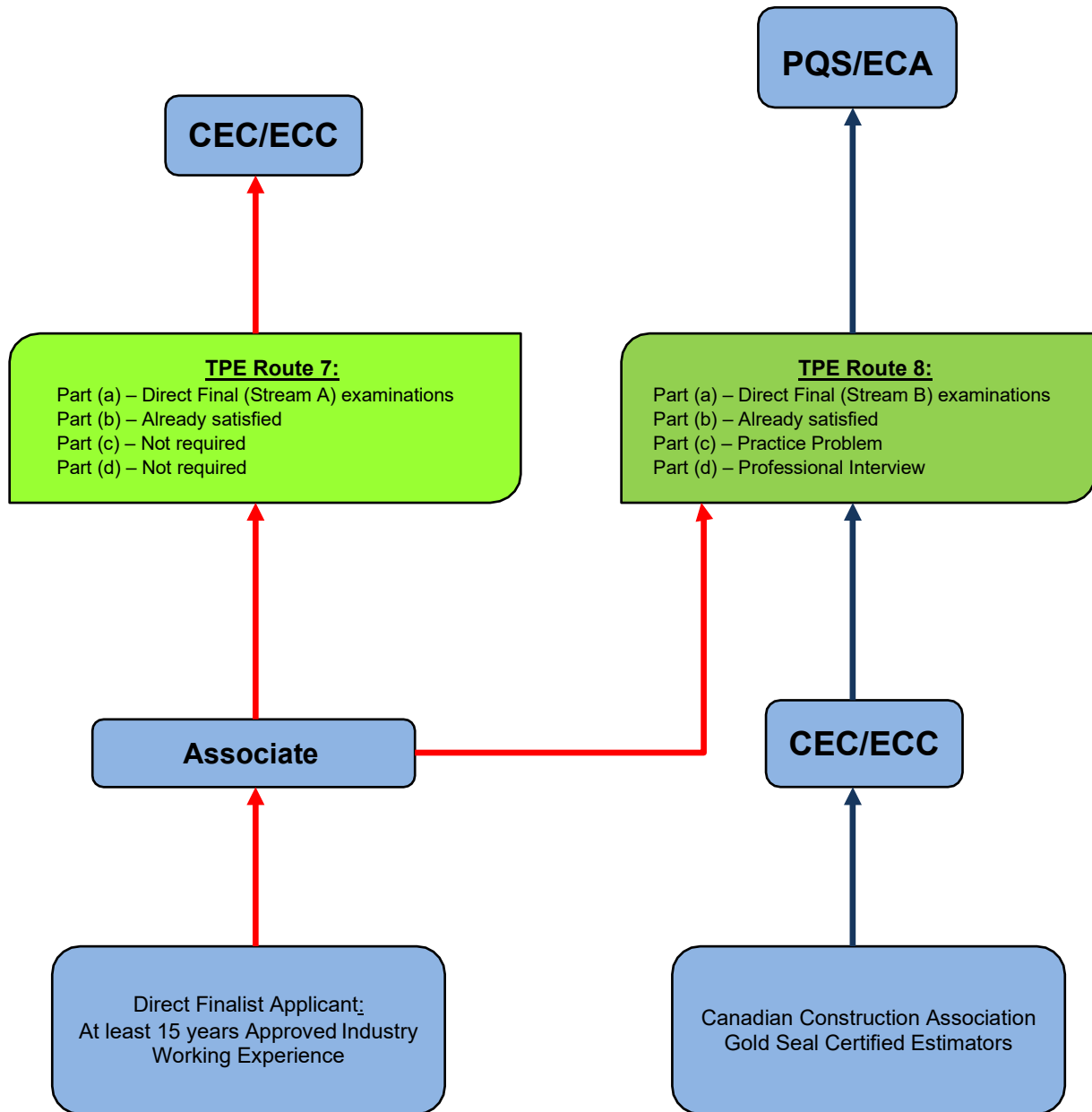
### Pathway – TPE Routes 5 & 6 for Engineering, Trades, Others



Applicants with acceptable academic or trade certification are assessed for academic conformity with the CIQS syllabi and the required approved industry experience as noted in the Education Policy Guidance Note #B5.



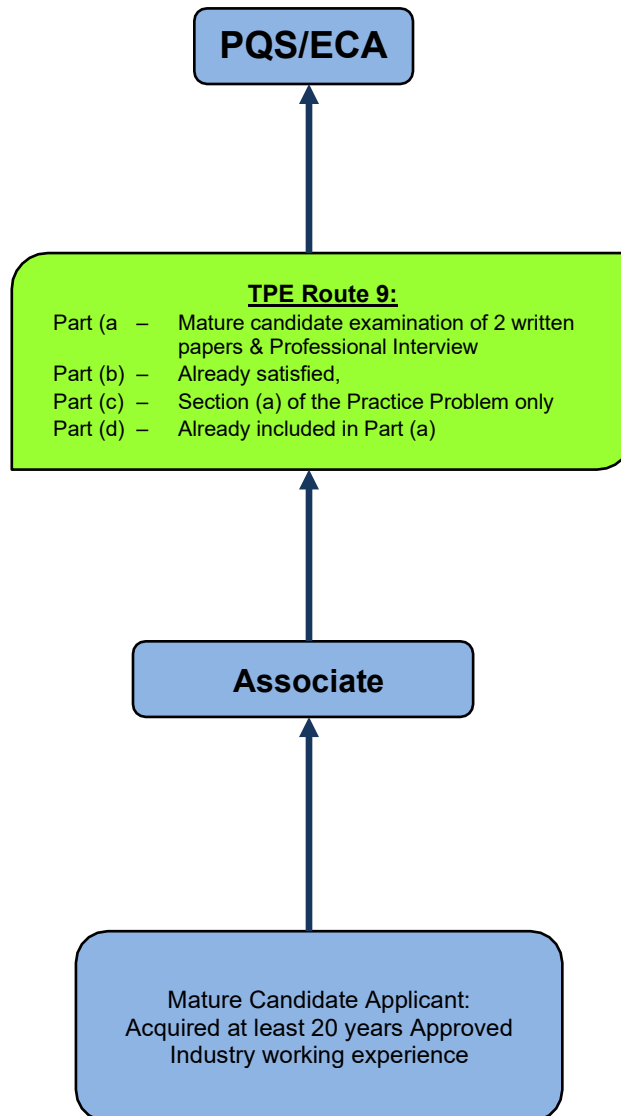
### Pathway – TPE Routes 7 & 8 for Direct Finalist



- The Direct Finalist applicant must have acquired at least 15 years of approved industry experience. These applicants are accepted as Associates.
- The CEC/ECC Direct Final Examination Stream A comprises of subjects #302 (A, M or E), #303 (A, M or E) & #C304.
- The PQS/ECA Direct Final Examination Stream B comprises of subjects #302 (A, M or E), #303 (A, M or E), #C304, #C308 & #C309.



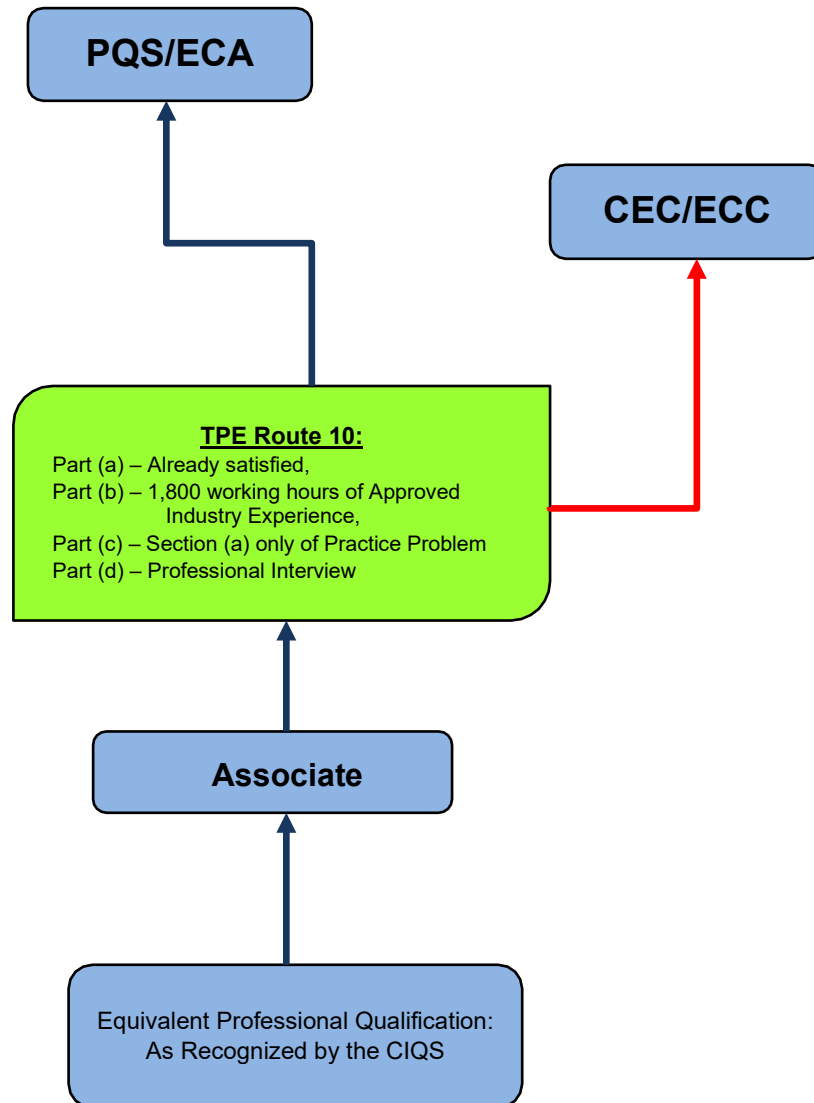
### Pathway – TPE Route 9 for Mature Candidate



- This pathway to PQS/ECA is not available to out-of-country applicants.
- Applicants for the Mature Candidate Pathway must have acquired at least 20 years of approved working experience.
- The Mature Candidate Examination comprises two written papers and an oral examination. The subjects of the papers are chosen by the CIQS from a list of subjects submitted by the associate member. The papers are subjected to special conditions and must not be less than 1000 words. The papers are reviewed by the CIQS prior to the oral examination.
- The oral examination lasts approximately 45 minutes. The purpose of the oral examination is to objectively assess the suitability of the candidate for membership in the Institute and his/her knowledge of the subjects of the written papers.
- Only one attempt through the Mature Candidate pathway is allowed.



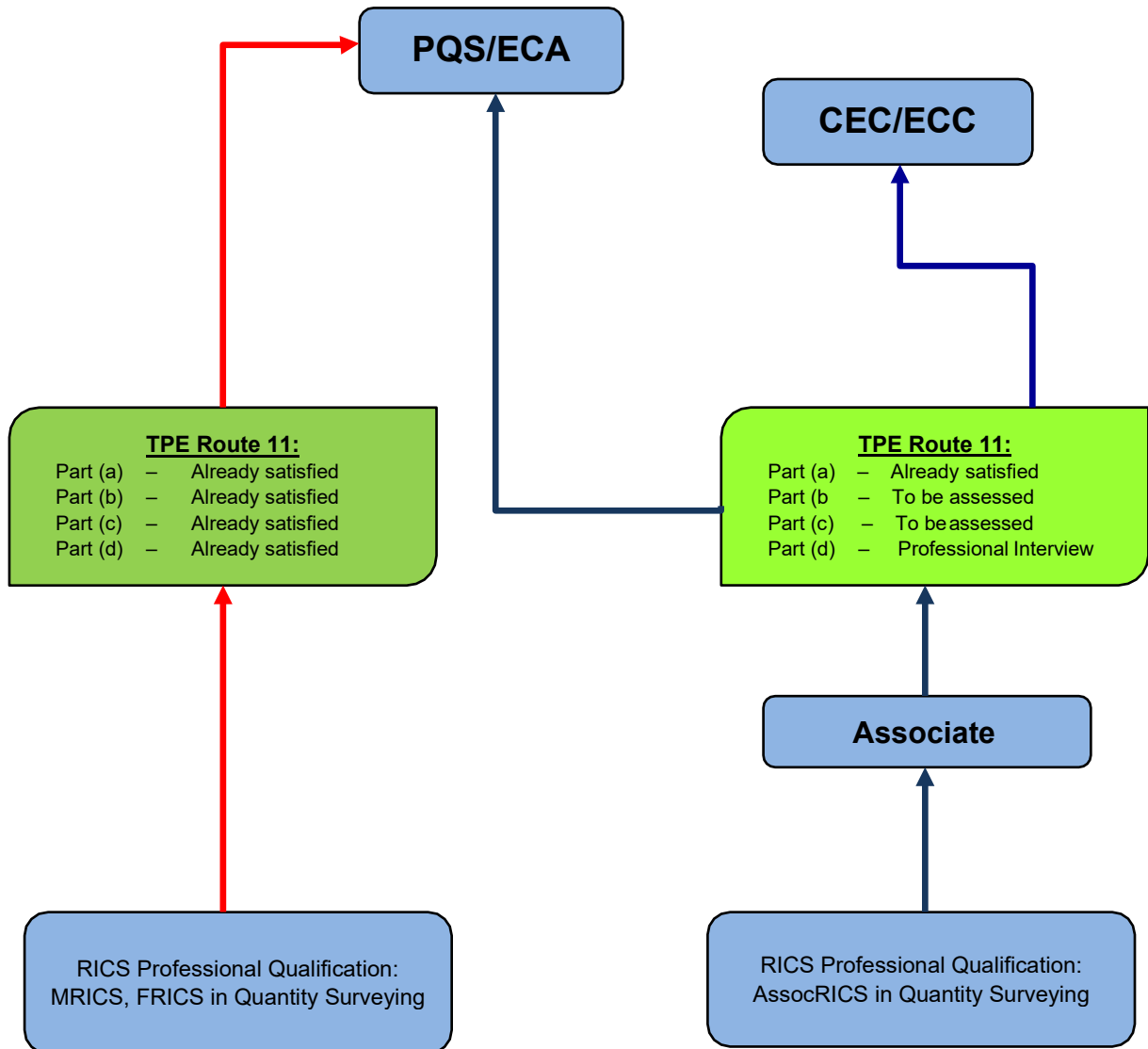
## Pathway – TPE Route 10 for Equivalent Professional Qualification



- Applicants with equivalent professional qualification as recognized by the CIQS are accepted as associates. Equivalent professional qualification included applicants who are certified by other institutions that have signed reciprocity agreements with the CIQS. However, each reciprocity agreement will have specific restrictions and these are taken into consideration when the application is being assessed.
- Associates with the required approved industry experience are allowed to sit Part (c) of the TPE practice problem. All others are required to obtain 1,800 working hours of approved industry experience before they can attempt Part (c) of the TPE Practice Problem.
- Individuals in this TPE Route may choose to become a CEC/ECC when that requirement is met.



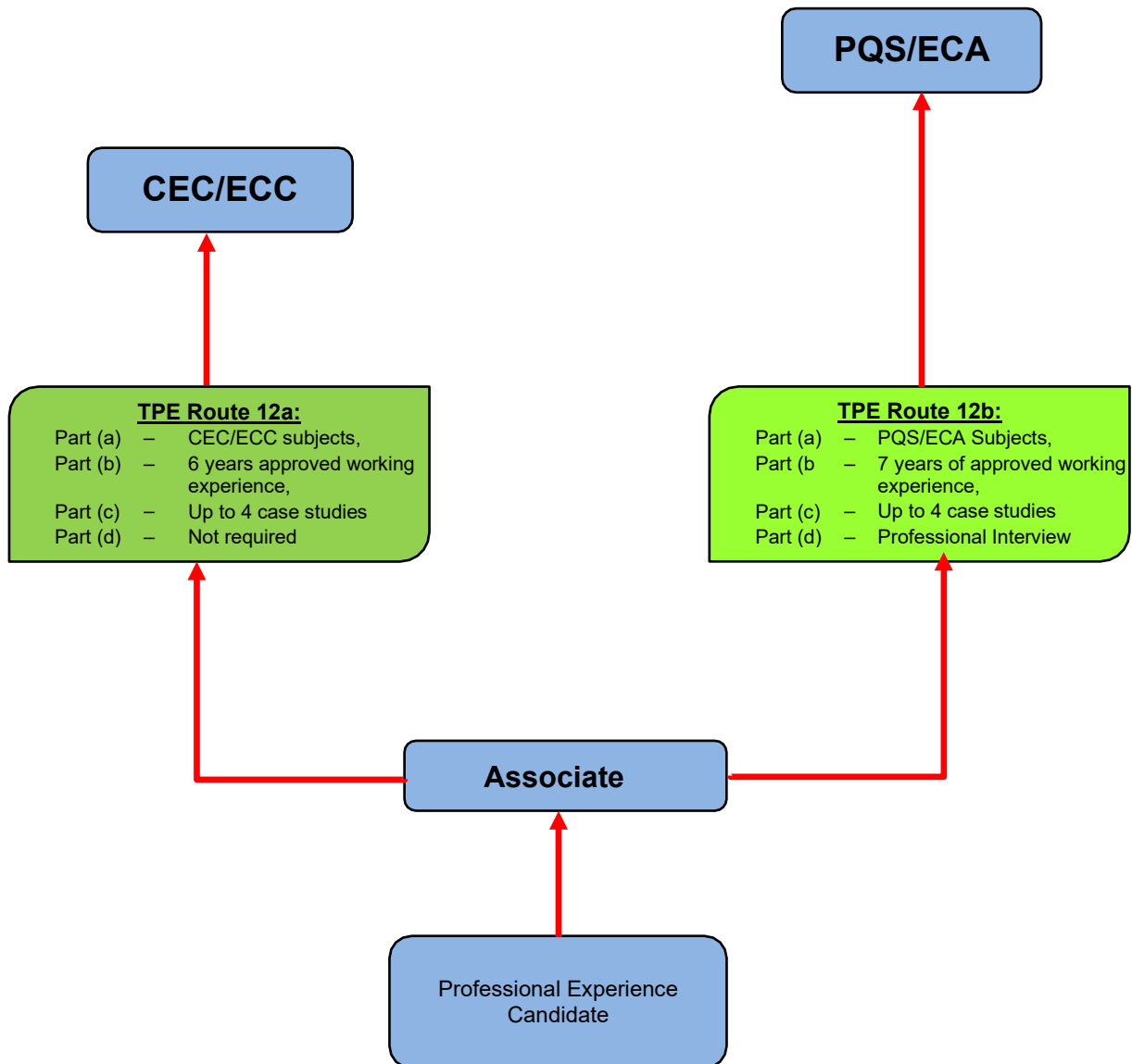
### Pathway – TPE Route 11 for RICS Professional Qualification



- Only those RICS members whose primary discipline is quantity surveying qualify for this TPE route for entry into the CIQS.
- AssocRICS qualified applicants will be assessed individually to determine conformity with the CIQS TPE requirements. Some applicants may qualify for CEC/ECC.
- MRICS qualified applicants will be accepted directly as PQS/ECA.
- Individuals in this TPE Route may choose to become a CEC/ECC when that requirement is met.



## Pathway – TPE Route 12 Professional Experience



- Applicants must meet the CIQS academic and approved working experience requirements for the designation they are applying for.
- Applicants must be sponsored by their employers and at least two (2) PQS sponsors.
- If the applicant is self-employed then the applicant must be sponsored by at least three (3) PQS sponsors.
- Applicants must submit at least four (4) case studies to verify that they have met the required Areas of Approved Working Experience.



## **The Next Step – To Be or Not To Be?**

### **For Yourself:**

The preceding pages give a brief overview of the CIQS, its history, its membership categories, the roles and responsibilities of its members and stakeholders and the various pathways to becoming a member. Similar to other professions, the quantity surveying profession in Canada was started by a few members who recognized that the only way the profession would survive and grow is through unity by means of a common association – in our case, the CIQS. The career choices in the quantity surveying profession we enjoy today are a direct result of the efforts of the CIQS in promoting the profession over the years.

Undoubtedly your first question will be, “What’s in it for me?” For a recent graduate, finding that first job can be very difficult. For those wishing to change jobs, you will have to send out numerous resumes and will literally have to “pound the pavement”. Joining a professional association like the CIQS can make this task much easier, giving you the opportunity to network with your peers as well as potential employers. Most job vacancies are not advertised in the daily media but are actually filled from recommendations from within the company; such recommendations come from your peers. Joining and participating in the Institute will be your advertisement to your peers and to potential employers.

There are many other benefits; some can be direct and obvious:

- A valuable and recognized professional designation (PQS/ECA or CEC/ECC),
- Construction Economist Journal (Conecon),
- Frequent newsletters,
- Annual General Meeting (PQS/ECA and CEC/ECC only),
- Local chapter meetings and social events,
- Discounted purchase of publications,
- Member rate access to seminars,
- Inclusion of personal résumés in our members only job bank,
- Access to employer advertised openings,
- Affinity program for car and home insurance discounts,
- ,
- Career and educational mentoring and guidance.

Other benefits can be evident but intangible:

- Peer recognition as an educated, skilled and ethical professional,
- Personal networking and problem solving among members who well understand your industry and working environment,
- A written Code of Ethics for all members with its associated disciplinary procedure,
- Advantages from the Institute’s ongoing industry promotional activities,
- Compliance with consulting and individual membership requirements now being requested by several client agencies including federal and provincial departments,
- Opportunities for personal development through involvement in promotional activities,
- A qualification that is transferable throughout Canada and to other countries,
- A qualification recognized by other Canadian industry organizations (e.g. Canadian Construction Association Gold Seal Estimator),
- A qualification recognized by many overseas institutions including the members of the Pacific Association of Quantity Surveyors (PAQS),





- Potential recognition in other future professional associations, both local and overseas, that may be recognized through reciprocity agreements,
- An ongoing, and challenging, continuing professional development program.

### **For the Institute**

Benefits are not all one sided - we need you, just as much as you need us. Our prime goal is the promotion of our profession to the construction industry and its allied professions. Your involvement in our business as a member of the Institute will strengthen and help widen our influence, impact, and recognition. As a member you will have ample opportunity to guide and influence the Institute's growth, direction and policies. Without you we all lose. We need each other to develop the synergy so evident when like minds work together towards a common goal. Together we are more than the sum of our individual parts.

### **For Our Profession**

As a member, you will greatly increase our collective impact on the widening recognition of our profession throughout Canada, at all levels and in all spheres of our personal employment. We can each become an ever-more-important and valued member of any construction team through the increasing use of our expertise gained in a profession that has yet to achieve its fullest potential. The future awaits.





## **Architectural Syllabus**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 100**

#### **C101 Construction Science**

In this course, the student learns to apply some of the basic laws of physics as they relate to construction and to problems in buildings and other structures, particularly the effects of loads, stress, bending, moisture and temperature changes, acoustics and electrical theory.

#### **A102 Construction Technology I**

This course introduces the student to the materials and methods used in construction associated with excavation and earth works, concrete works including reinforcing steel, masonry and metals. The purpose is to acquaint the student with the manufacturing process of various materials and the way in which the materials and methods are implemented in a construction project. The contents of this subject cover sections 2, 3, 4 and 5 of MasterFormat.

#### **A103 Measurement of Construction Work I**

This course introduces the student to basic blueprint reading and the measurement of construction work, including the proper use of the approved CIQS estimate form along with the fundamentals of estimating. This course will also cover sections 2, 3 and 4 of the CIQS Method of Measurement of Construction Works, published by the Canadian Institute of Quantity Surveyors.

#### **A104 Surveying Principles and Applications**

This course introduces the student to the equipment, methods and calculations used in land surveying. The student will study the various types of instruments along with the ability to interpret and record data from the various types of surveys and survey drawings.

#### **C105 Introduction to Computers**

This course will provide a general introduction to computers, application software, hardware, and computer systems. Emphasis is to be placed upon computer literacy topics with the main emphasis upon the use of commercial application software packages for word processing and spreadsheet.

*The Institute does not offer examinations on this course but will, through evaluation of existing education program, direct the member to appropriate courses.*

#### **C106 Economics I**

This course introduces the student to the theory of economics and addresses the micro economic policies, issues and debates. This course along with course 206, Economics II, will assist the quantity surveyor in predicting price fluctuations and explaining why prices on various projects have fluctuated or may fluctuate, in the future.

*The Institute does not offer examinations on this course, but will through evaluation of existing education program, direct the member to appropriate courses.*

#### **C107 Introduction to Canadian Business Law**

This course is intended as an introduction to the nature and framework of Canadian law, its operation and subdivisions. Emphasis shall be placed upon the study of the law of contract and the law of tort. This course is to provide a basis for future study of construction contracts and contract administration.

#### **C108 Basic Business and Technical Communications**

This course helps to prepare students for the complex writing tasks found in the workplace. Students are to learn the difference between informational, persuasive and researched writing. Students learn to express themselves clearly and concisely, focusing on audience and purpose.



## **Architectural Syllabus (continued)**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 200**

#### **A201 Construction Technology II**

This course adds to the knowledge gained in Construction Technology I, covering subjects dealing with wood and plastics, thermal and moisture protection, doors, windows and glazing, interior and exterior finishes as covered in sections 6, 7, 8 and 9 of MasterFormat.

#### **A202 Measurement of Construction Work II**

This course is a continuation of the studies introduced in Measurement of Construction Work I and covers the construction details found in more sophisticated structures. The course expands on the topics of Measurement of Construction Works I (subject 103) plus introduces sections 5, 6 and 7 covered by the CIQS Method of Measurement of Construction Works.

#### **C203 Construction Cost Accounting**

This course is an introduction to financial accounting concepts; accounting procedures, bookkeeping fundamentals, financial statements, and analysis of company financial data.

#### **C204 Construction Contracts**

This subject builds upon the principals of law and introduces the most commonly used standard forms of construction contracts issued by the Canadian Construction Documents Committee and the Canadian Construction Association.

#### **C205 Construction Management**

This subject deals with the organization of construction, construction projects and construction firms along with the interrelationship between the various parties involved in a construction project. Introduced are the subjects of scheduling, cost control and contract administration.

#### **C206 Economics II**

This course supplements the knowledge gained in Economics I by addressing the macroeconomic theories.

*The Institute does not offer examinations on this course, but will through evaluation of existing education program, direct the member to appropriate courses.*

#### **A207 Construction Technology III**

This course adds to the knowledge gained in Construction Technology I and II and covers sections 10, 11, 12, 13, 14, 15 and 16 of the MasterFormat specification divisions along with additional studies concerning larger scale site servicing and municipal servicing including water supplies and sewers.

#### **A208 National Building Code**

A study of Parts 1, 2, 3 and 9 of the National Building Code covers residential and small commercial construction. This course is to acquaint the student with the minimum requirements for building in Canada.



## **Architectural Syllabus (continued)**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 300**

#### **A301 Measurement of Construction Work III**

This course is a continuation of the studies introduced in Measurement of Construction Work I and II and covers the construction details found in more sophisticated structures. The course expands on the topics of 103 and 202 plus introduces sections 8, 9, 10, 11, 12, 13 and 14 covered by the CIQS Standard Method of Measurement.

#### **A302 Measurement of Construction Work - Practical Examination**

This is the final measurement course and is designed to be a summation of the knowledge gained in subjects 103, 202, and 301. The subject of General Requirements section 1 of the CIQS Standard Method of Measurement is also introduced.

#### **A303 Pricing and Bidding Procedures**

In this course, the student learns the principles and methods used in preparation of the unit prices for individual items of work. The student also learns the procedures and considerations required to prepare the total bid or tender price using the information obtained from quantity take-off, drawings and specifications.

#### **C304 Contract Administration**

This subject deals with the practical application and administration of construction contracts studied in subject 204 Construction Contracts. The student will also apply the legal principles studied in subject 107 Introduction to Canadian Business Law, as well as selected case law as it applies to the administration of the contract.

#### **C305 Construction Cost Control**

This course builds upon the knowledge gained in Construction Cost Accounting and the Measurement of Construction Works I, II, and III courses. It introduces the concept of financial control over the project by using the estimating data, production data and the cost data obtainable from all projects.

#### **A306 Measurement & Pricing of Civil Works**

This subject deals with engineered construction such as sewers, roads, shoring and underpinning and mass excavation works. Engineered work, unlike building construction, has a high component of equipment costs and as well, much of the work is undertaken in remote locations, which add additional costs not found in building construction.

#### **C307 Construction Scheduling**

This course introduces the concepts of project scheduling, including various types of schedules used in the construction industry. This course is designed to acquaint the candidate with the basic principals of scheduling to enable the candidate to prepare schedules from given or calculated data.

#### **C308 Cost Planning**

Using the knowledge developed in the measurement and pricing subjects, the student is introduced to concepts of cost planning from project inception to end of contract. This subject will cover various types of conceptual estimating, including elemental costing and analysis.

#### **C309 Development Economics**

This subject deals with the economic viability of a project. The student will be required to prepare feasibility studies and other economic analysis such as yield analysis and life cycle costing.



## **Mechanical Syllabus**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 100**

#### **C101 Construction Science**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **M102 Mechanical Technology I**

This course deals with the mechanical systems in the construction of not more than two stories such as housing and simple industrial buildings of conventional construction. In this course the student studies general mechanical principles of design, materials and methods and procedures dealing with plumbing, heating, ventilating, air conditioning and testing of systems.

#### **M103 Measurement of Mechanical Work I**

This course deals with the measurement of mechanical items covered under Mechanical Technology I. Emphasis is placed on the accuracy of measurement in a logical sequence together with neat presentation. The course will cover site works, building drainage, domestic water, plumbing fixtures and heating and ventilation.

#### **M104 Plumbing & Fire Protection Design**

This course is the development of the principles and the design of the plumbing and fire protection installations found in the types of buildings studied in Mechanical Technology I. Included is the calculation of loads and the application of plumbing and fire protection codes.

#### **C105 Introduction to Computers**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **C106 Economics I**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **C107 Introduction to Canadian Business Law**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **C108 Basic Business and Technical Communications**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **M109 Heating, Ventilation & Air Conditioning Design**

This course deals with the development of the principles of design of the heating, ventilation and air conditioning installations found in the types of buildings studied in Mechanical Technologies I & II including the calculations involved.



## **Mechanical Syllabus (continued)**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 200**

#### **M201 Mechanical Technology II**

This course is an extension of Mechanical Technology I and covers mechanical principles, methods and details found in more sophisticated structures such as medium rise residential, commercial, institutional and industrial buildings. The course covers fire protection, domestic hot water, drainage, safe works, general mechanical principles, and materials and methods employed in the more sophisticated systems.

#### **M202 Measurement of Mechanical Work II**

This course is an extension of previous studies and includes the measurement and description of mechanical work covered in Mechanical Technologies I and II.

#### **C203 Construction Cost Accounting**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **C204 Construction Contracts**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **C205 Construction Management**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **C206 Economics II**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **M207 Refrigeration, Automatic Controls, Insulation**

This course focuses on the practical applications of the knowledge and skills required to be productive in the refrigeration and air conditioning industry. Emphasis is placed on the digital electronic controls and system efficiency.

#### **M208 Mechanical Technology III**

This course deals with the problems encountered in the construction of large or multi-storied buildings of a complex nature or where specialized types of mechanical systems are called for. Included is a minor study of systems found in hospitals.



## **Mechanical Syllabus (continued)**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 300**

#### **M301 Measurement of Mechanical Work III**

This course is an extension of measurement of Mechanical Work I and II dealing mainly with the work covered in Mechanical Technology III.

#### **M302 Measurement of Mechanical Work - Practical Examination**

This subject covers all areas studied in Mechanical Technologies I, II and III and Measurement of Mechanical Work I, II and III. This subject is the final measurement exam in this syllabus.

#### **M303 Pricing and Bidding Procedures**

In this course, the student learns the principles and methods used in preparation of the unit prices for individual items of work. The student also learns the procedures and considerations required to prepare the total bid or tender price using the information obtained from quantity take-off, drawings and specifications.

#### **C304 Contract Administration**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **C305 Construction Cost Control**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **M306 Industrial Piping**

This course will introduce the student to the style and method of preparing a flow sheet of materials normally found in industrial piping installations. Particular emphasis will be placed upon knowledge and understanding of the special types of pipes and fittings used in these installations.

#### **C307 Construction Schedule**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **C308 Cost Planning**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **C309 Development Economics**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*



## **Electrical Syllabus**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 100**

#### **C101 Construction Science**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **E102 Electrical Technology I**

This subject covers calculations to fully electrify simple structures not exceeding two storeys such as housing and simple industrial buildings of conventional construction. The course includes general electrical principles and theory of design processes for lighting power requirements for alarms, communications and mechanical power requirements.

#### **E103 Measurement of Electrical Work I**

This subject covers the content of Electrical Technology I, Illumination Design and Electrical Code.

#### **E104 Illumination Design**

In this subject the student will study illumination of building interiors and exteriors as well as site lighting.

#### **C105 Introduction to Computers**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **C106 Economics I**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **C107 Introduction to Canadian Business Law**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **C108 Basic Business and Technical Communications**

*Common subject; please refer to the Level 100 Architectural Syllabus for details.*

#### **E109 Electrical Code I**

This subject deals with the latest edition of the Canadian Electrical Code and, because of the large volume of study involved, this will be divided into two subjects. This subject will include the primary portion, basically code requirements for 750 volts and less.





## **Electrical Syllabus (continued)**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 200**

#### **E201 Electrical Technology II**

This course builds upon the knowledge gained in Electrical Technology I and deals with more sophisticated structures such as medium rise residential, commercial, institutional and industrial buildings. Content will cover calculations to fully electrify these building types and classifications, and the design of mechanical installations found in these types of buildings.

#### **E202 Measurement of Electrical Work II**

This subject deals with the measurement of work covered by Electrical Technology I and II.

#### **C203 Construction Cost Accounting**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **C204 Construction Contracts**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **C205 Construction Management**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **C206 Economics II**

*Common subject; please refer to the Level 200 Architectural Syllabus for details.*

#### **E207 Electrical Technology III**

The subject builds upon the knowledge gained in Electrical Technologies I and II and deals with sophisticated structures such as high-rise residential, commercial, institutional, and industrial buildings including hospitals. The content will include calculations to fully electrify those building types and classifications, and the design of mechanical installations found in these types of buildings.

#### **E208 Mechanical Installations**

The intention of this course is the development of the principles in a design of mechanical installations found in the types of buildings studied in Electrical Technologies I and II.

#### **E209 Electrical Code II**

This subject will deal with the latest edition of the Canadian Electrical Code and can only be undertaken following completion of Electrical Code I. This course is more advanced and will cover voltage above 750 and amperage above 600.



## **Electrical Syllabus (continued)**

For complete syllabus details, visit [www.ciqs.org](http://www.ciqs.org)

### **Level 300**

#### **E301 Measurement of Electrical Work III**

This course will deal with measurement of electrical works covered by Electrical Technology III.

#### **E302 Measurement of Electrical Work - Practical Examination**

This subject is the final measurement subject in the electrical syllabus and covers all areas of electrical work covered by the study of electrical technology and the Canadian Electrical Code.

#### **E303 Pricing and Bidding Procedures**

In this course the student learns the principles and methods used in preparation of the unit prices for individual items of work. The student also learns the procedures and considerations required to prepare the total bid or tender price using the information obtained from quantity take-off, drawings and specifications.

#### **C304 Contract Administration**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **C305 Construction Cost Control**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **E306 Communication Design and Technology**

This course will deal with the state of the art design and technology of communication systems for buildings from simple structures to complex hospitals or commercial buildings.

#### **C307 Construction Scheduling**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **C308 Cost Planning**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*

#### **C309 Development Economics**

*Common subject; please refer to the Level 300 Architectural Syllabus for details.*