

The Canadian Education Standard for Architects

This document is endorsed by the following regulatory authorities

(Canadian Architectural Licensing Authorities):

- Architectural Institute of British Columbia
- Alberta Association of Architects
- Northwest Territories Association of Architects
- Saskatchewan Association of Architects
- Manitoba Association of Architects
- Ontario Association of Architects
- Ordre des architectes du Québec
- Architects' Association of New Brunswick/Association des architectes du Nouveau-Brunswick
- Nova Scotia Association of Architects
- Architects Association of Prince Edward Island
- Architects Licensing Board of Newfoundland and Labrador

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1 Introduction and Principles

The Canadian Educational Standard for Architects (CES) is the academic qualification requirement established by the Canadian Architectural Licensing Authorities (CALA) for candidates seeking to practice architecture in Canada.

The CES is empowered by the *Conditions for Licensure for Architects in Canada* that has been developed and adopted collectively by CALA. That document endorses a variety of pathways to licensure that allows broad but comprehensive access to the profession for candidates from diverse circumstances, and includes nationally recognized standards of competence that establish consistent criteria that candidates must meet regardless of their chosen path to licensure.

The CES has two components – one for institutions and one for individuals. It establishes Student Performance Criteria and Program Performance Criteria for Canadian university schools of architecture accredited by an organization recognized by CALA (see Section 3.1) and hours-based Curriculum Standards for candidates with degrees or diplomas in architecture from institutions that are not accredited by an organization recognized by CALA (see Sections 3.2, 3.3 and 5).

The roadmap to licensure in Canada includes four primary pathways. Three of these (defined in Section 3) involve recognition of architectural education based on broad areas of study that meet certain professional and general education requirements as detailed in Section 5. Though the format of each pathway is quite different, all three produce candidates with similar levels of academic achievement.

The CES has been developed in accordance with both the core principles of the UNESCO/UIA Charter for Architectural Education and the relevant sections of the UIA Accord on Recommended International Standards on Professionalism in Architectural Practice.

2 Certification of Educational Qualifications

The Canadian Architectural Certification Board (CACB) was established by CALA's predecessor (Councils of the Canadian Architectural Licensing Authorities) in 1976. It was granted authority to act on its behalf and to assess the educational qualifications of individuals holding a professional degree or diploma in architecture. CALA continues to endorse the CACB in this role.

Candidates must have their academic qualifications certified as having met the educational components of the requirement for entry to the profession by the CACB prior to, or as a part of, the application process for registration or licensure with any of the Canadian Architectural Licensing Authorities.

3 Satisfying the Canadian Educational Standard

The three ways that the Canadian Education Standard for Architects can be satisfied academically for admission to provincial and territorial architectural associations in Canada are described as follows:

3.1 Accredited Professional Degree

Candidates may be granted CACB Academic Certification that their education meets the educational standards for entry to the profession following graduation from:

- A professional program of architectural education in Canada that has been accredited by the CACB (Detailed requirements, standards and procedures for the evaluation of architecture programs seeking or maintaining accreditation are described in the CACB documents *Conditions and Terms for Accreditation* and *Procedures for Accreditation of Professional Degree Programs in Architecture*);
- A professional program in the United States that has been accredited by the National Architectural Accrediting Board (NAAB); or
- Professional programs accredited by other bodies recognized by the Regulators.

Conditional Certification may be granted to graduates of programs of architectural education in Canada that are granted Candidacy Status by CACB during their accreditation process. In the event that such school of architecture programs do not achieve accreditation within the required timeframe, graduates of those programs may be required to undertake additional courses.

3.2 Degree or Diploma Not Accredited by the CACB

Candidates with a valid degree or diploma in architecture that is accepted as a requirement for registration or licensure in its country of origin, but is not accredited by the CACB or the NAAB, may apply for CACB Academic Certification to determine whether their education, or the degree program, meets the curriculum standards described in this document. This involves a detailed evaluation of the individual's academic record, which is outlined in the CACB's *Conditions and Procedures for the Certification of Educational Qualifications*. Graduates from programs at Canadian schools of architecture whose degrees were granted prior to the implementation of the Accreditation System in Canada fall also into this category. These programs include:

- University of British Columbia
- University of Calgary
- University of Manitoba
- Carleton University
- Technical University of Nova Scotia (now Dalhousie University)
- Université Laval
- McGill University
- Université de Montréal
- University of Toronto
- University of Waterloo

3.3 Diploma from the Royal Architectural Institute of Canada Syllabus Program

Candidates, who have received a Graduate Diploma in Architecture from the RAIC Syllabus of Studies, may be granted CACB Academic Certification following a review of the requisite courses and guided studies against the curriculum standards described in Section 5 of this document. Though graduates of the Syllabus program are assessed against the CES, it is intended that the program is substantially based on the Student Performance Criteria and Program Performance Criteria that exist for CACB-accredited Canadian university schools of architecture. These can be found in Appendix A of this document.

4 Types of Professional Degree Programs

The most common types of professional degree programs generally recognized by the Regulators include:

- Bachelor of Architecture Program – requiring a minimum of five years of study (or 4 years following CEGEP in Quebec), or
- Master of Architecture Program – requiring a minimum of three years of study following an unrelated bachelor's degree, or two years following a four-year, related pre-professional degree; it does not preclude variations approved by the Regulators.

5 Curriculum Standards for Certification of Non-Accredited Degrees

The Curriculum Standards identify the required components of a professional architectural degree program and their specific requirements in terms of content and duration.

Academic credits in four architectural subject areas must be achieved to meet the curriculum standard. These include:

- Design
- Culture and Communications
- Technical Knowledge
- Professional Practice

In addition, academic credits for studies with other than architectural content, are required to impart general knowledge and develop the students' intellectual capacity to undertake professional studies and allow them to complete minors or develop areas of concentration that are outside of architectural studies. Non-architectural-specific studies enable students to appreciate their professional studies in the broader context of the natural, cultural and social world. These studies are categorized as:

- Electives
- General Education

A professional degree program must include a total of **160 semester hours** in accordance with semester hour equivalents as outlined in the CACB's Conditions and Procedures for the Certification of Educational Qualifications. A semester hour is equivalent to 1 hour of CACB approved lectures or 2 hours of CACB approved laboratory/studio instruction per week for the duration of the semester or term. For programs that operate on a quarter system, 1.5 quarter hours are equivalent to one semester hour.

The requirements related to each of the professional, general and elective areas are as follows:

5.1 Design

Design is defined as analysis, synthesis, judgment and communication which architects use to understand, bring together, assess and express ideas which lead to a built project.

At least **40 semester hours** of credit must be completed in courses related to:

- Basic design theories, methods, and precedents to the conception, configuration, and design of buildings, spaces, building elements, and tectonic components.
- Small buildings (residential, single use)
- A complex building (multi use and advanced program)
- Site design
- Urban design/context
- Details (material components, assemblies and and/or architectural elements)
- Use of a range of techniques for two-dimensional and three-dimensional representation, computational design, modeling, simulation, and fabrication.

At least **10 semester hours** of credit must be completed in courses related to:

Complex Building Design based on a concept, a building program, and a site which broadly integrates contextual factors, structural and environmental systems, building envelopes and assemblies, regulatory requirements, and environmental stewardship.

5.2 Culture and Communications

At least **12 semester hours** of credit must be completed in courses related to:

History of architecture and urban design regarding with consideration of cultural, political, ecological, and technological factors that have influenced their development.

At least **6 semester hours** of credit must be completed in courses related to:

Diverse needs, values, behavioral norms, and social/spatial patterns that characterize different global cultures and individuals and the implications of diversity on the societal roles and responsibilities of architects.

At least **6 semester hours** of credit must be completed in courses related to:

The broader ecologies that inform the design of buildings and their systems and of the interactions among these ecologies and design decisions.

5.3 Technical Knowledge

At least **4 semester hours** of credit must be completed in courses related to:

Applicable building codes, regulations, and standards for a given building and site, including universal design standards and the principles that inform the design and selection of life-safety systems.

At least **4 semester hours** of credit must be completed in courses related to:

Basic principles used in the appropriate selection and application of architectural materials as it relates to fundamental performance, aesthetics, durability, energy, resources, and environmental impact.

At least **6 semester hours** of credit must be completed in courses related to:

Principles of structural behavior in withstanding gravitational, seismic, and lateral forces, including the selection and application of appropriate structural systems.

At least **4 semester hours** of credit must be completed in courses related to:
Basic principles used in the design of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, durability, energy, material resources, and environmental impact.

At least **6 semester hours** of credit must be completed in courses related to:
Basic principles that inform the design of passive and active environmental modification and building service systems, the issues involved in the coordination of these systems in a building, energy use and appropriate tools for performance assessment, and the codes and regulations that govern their application in buildings.

5.4 Professional Practice

At least **6 semester hours** of credit must be completed in courses related to:

- Organization of the profession, the Architects Act(s) and its regulations, the role of regulatory bodies, the paths to licensure including internship, and the reciprocal rights and responsibilities of interns and employers.
- Ethical issues involved in the formation of professional judgment; the architect's legal responsibility under the laws, codes, regulations, and contracts common to the practice of architecture; intellectual property rights; and the role of advocacy in relation to environmental, social, and cultural issues.
- Basic principles and types of practice organization, including financial management, business planning, entrepreneurship, marketing, negotiation, project management, and risk mitigation, as well as an understanding of trends that affect the practice.
- Various contracts common to the practice of architecture.
- Relationships among key stakeholders in the design process; the methods for selecting consultants and assembling teams; building economics and cost control strategies; the development of work plans and project schedules; and project delivery methods.

5.5 General Education

A total of at least **32 semester hours** of credit must be completed in general education subject areas. Specifically, at least 14 semester hours must be completed in:

- Language Composition (a minimum of 2 semester hours)
- Humanities or Social Sciences (a minimum of 6 semester hours)
- Mathematics or Natural Sciences (a minimum of 6 semester hours)

The remaining 18 semester hours may be taken in any of the general subject areas listed above. These courses may be included either as an admission requirement or as part of the professional degree curriculum.

Definitions of the general education subject areas are as follows:

Language Composition is defined as written communication that explains, interprets, analyses or presents and supports a point of view, utilizing the principles and conventions of standard language.

Humanities are defined as the academic disciplines that study the human condition through the recognition, comprehension, analysis and interpretation of various forms of art and literature. (Studio and performing art courses are not acceptable in this subject but may be acceptable as electives.)

Social Sciences are defined as the study of the social life of human groups and individuals through the analysis of economic, historical, political, psychological and sociological aspects of society

Mathematics is defined as the study of the measurement, relationships and properties of quantities and sets, using numbers and symbols. It has numerous branches, including arithmetic, algebra, geometry and calculus.

Natural Science is defined as the study of the physical universe and is divided into two general areas: biological science and physical science.

5.6 Electives

At least **24 semester hours** of credit must be completed in:

- Architectural subjects (beyond the minimum requirements of each professional studies subject areas)
- Specialized elective subjects outside of the professional program.

Appendix A

Performance Criteria for Accredited Canadian University Schools of Architecture

Program Performance Criteria (PPCs) and Student Performance Criteria (SPCs) have been developed by the Regulators and CACB as conditions for accreditation for Canadian University Schools of Architecture. These are contained in the CACB *Terms and Conditions for Accreditation*, and include a roster of six PPCs and twenty-four SPCs intended to foster an integrated approach to learning. They are defined as follows; their order is not intended to imply weight or importance.

Program Performance Criteria

PPC 1. Professional Development

The Program must demonstrate its approach to engaging with the profession and exposing students to a breadth of professional opportunities and career paths, including the transition to internship and licensure.

PPC 2. Design Education

The Program must demonstrate how it situates and values education and training in design at the core of the curriculum, including the ways in which the design curriculum weaves together the social, technical, and professional streams of the curriculum.

PPC 3. Global Perspectives and Environmental Stewardship

The Program must demonstrate how it embraces the diverse contexts that define contemporary architecture, including local, global, and environmental interests.

PPC 4. Collaboration, Leadership, and Community Engagement

The Program must demonstrate how it supports and fosters effective individual and team dynamics, a spirit of collaboration and inclusion, community engagement, and diverse approaches to leadership.

PPC 5. Technical Knowledge

The Program must describe how it engages fundamental and emerging technical aspects of building construction.

PPC 6. Breadth of Education

The Program must demonstrate how it provides an opportunity for students to participate in general studies and elective studies in the pursuit of a broad understanding of human knowledge and a deeper study of topics within the discipline of architecture.

Student Performance Criteria

A. DESIGN

A1. Design Theories, Precedents, and Methods

The student must demonstrate an ability to articulate a design process grounded in theory and practice, an understanding of design principles and methods, and the critical analysis of architectural precedents.

A2. Design Skills

The student must demonstrate an ability to apply design theories, methods, and precedents to the conception, configuration, and design of buildings, spaces, building elements, and tectonic components.

A3. Design Tools

The student must demonstrate an ability to use the broad range of design tools available to the architectural discipline, including a range of techniques for two-dimensional and three-dimensional representation, computational design, modeling, simulation, and fabrication.

A4. Program Analysis

The student must demonstrate an ability to analyze and respond to a complex program for an architectural project that accounts for client and user needs, appropriate precedents, space and equipment requirements, the relevant laws, and site selection and design assessment criteria.

A5. Site Context and Design

The student must demonstrate an ability to analyze and respond to local site characteristics, including urban, non-urban, and regulatory contexts; topography; ecological systems; climate; and building orientation in the development of an architectural design project.

A6. Urban Design

The student must demonstrate an ability to analyze and respond to the larger urban context where architecture is situated; its developmental patterning and spatial morphologies; the infrastructural, environmental, and ecological systems; to understand the regulatory instruments that govern this context; the broader implications of architectural design decisions on the evolution of cities; and the impact of urbanism on design.

A7. Detail Design

The student must demonstrate an ability to assess, as an integral part of design, the appropriate combinations of materials, components, and assemblies in the development of detailed architectural elements through drawing, modeling, and/or full-scale prototypes.

A8. Design Documentation

The student must demonstrate an ability to document and present the outcome of a design project using the broad range of architectural media, including documentation for the purposes of construction, drawings, and specifications.

B. CULTURE, COMMUNICATIONS, AND CRITICAL THINKING

B1. Critical Thinking and Communication

The student must demonstrate an ability to raise clear and precise questions; record, assess, and comparatively evaluate information; synthesize research findings and test potential alternative outcomes against relevant criteria and standards; reach well-supported conclusions related to a specific project or assignment; and write, speak, and use visual media effectively to appropriately communicate on subject matter related to the architectural discipline within the profession and with the general public.

B2. Architectural History

The student must have an understanding of the history of architecture and urban design in regard to cultural, political, ecological, and technological factors that have influenced their development.

B3. Architectural Theory

The student must have an understanding of conceptual and theoretical frameworks and how they have shaped architecture and urban design.

B4. Cultural Diversity and Global Perspectives

The student must have an understanding of the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different global cultures and individuals and the implications of diversity on the societal roles and responsibilities of architects.

B5. Ecological Systems

The student must have an understanding of the broader ecologies that inform the design of buildings and their systems and of the interactions among these ecologies and design decisions.

C. TECHNICAL KNOWLEDGE

C1. Regulatory Systems

The student must have an understanding of the applicable building codes, regulations, and standards for a given building and site, including universal design standards and the principles that inform the design and selection of life-safety systems.

C2. Materials

The student must have an understanding of the basic principles used in the appropriate selection and application of architectural materials as it relates to fundamental performance, aesthetics, durability, energy, resources, and environmental impact.

C3. Structural Systems

The student must have an understanding of the principles of structural behavior in withstanding gravitational, seismic, and lateral forces, including the selection and application of appropriate structural systems.

C4. Envelope Systems

The student must have an understanding of the basic principles used in the design of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, durability, energy, material resources, and environmental impact.

C5. Environmental Systems

The student must have an understanding of the basic principles that inform the design of passive and active environmental modification and building service systems, the issues involved in the coordination of these systems in a building, energy use and appropriate tools for performance assessment, and the codes and regulations that govern their application in buildings.

D. COMPREHENSIVE DESIGN

D1. Comprehensive Design

The student must demonstrate an ability to produce an architectural design based on a concept, a building program, and a site which broadly integrates contextual factors, structural and environmental systems, building envelopes and assemblies, regulatory requirements, and environmental stewardship.

E. PROFESSIONAL PRACTICE

E1. The Architectural Profession

The student must have an understanding of the organization of the profession, the Architects Act(s) and its regulations, the role of regulatory bodies, the paths to licensure including internship, and the reciprocal rights and responsibilities of interns and employers.

E2. Ethical and Legal Responsibilities

The student must have an understanding of the ethical issues involved in the formation of professional judgment; the architect's legal responsibility under the laws, codes, regulations, and contracts common to the practice of architecture; intellectual property rights; and the role of advocacy in relation to environmental, social, and cultural issues.

E3. Modes of Practice

The student must have an understanding of the basic principles and types of practice organization, including financial management, business planning, entrepreneurship, marketing, negotiation, project management, and risk mitigation, as well as an understanding of trends that affect the practice.

E4. Professional Contracts

The student must have an understanding of the various contracts common to the practice of architecture.

E5. Project Management

The student must have an understanding of the relationships among key stakeholders in the design process; the methods for selecting consultants and assembling teams; building economics and cost control strategies; the development of work plans and project schedules; and project delivery methods.