Construction

Required Components for the SHSM–Construction

1. A bundle of 10 Grade 11 and Grade 12 credits that comprises:
   - four construction major credits
   - four other required credits from the Ontario curriculum, in English, mathematics, and a choice of science or business studies
   - two cooperative education credits tied to the sector.
2. Seven sector-recognized certifications and/or training courses/programs (five compulsory and a choice of two electives)
3. Experiential learning and career exploration activities within the sector
4. Reach ahead experiences connected with the student's postsecondary pathway
5. Development of Essential Skills and work habits required in the sector, and documentation of them using the OSP

Profile of the Construction Sector

INSIGHT

The requirements of this SHSM are unique and are geared to the construction sector. However, the design of all SHSM programs follows a consistent model, described in **Section A: Policy**.

According to the Ontario Construction Secretariat, the construction industry is one of Ontario's largest employers. The Construction Sector Council has created a province-by-province, trade-by-trade labour market forecast for the next nine years. In Ontario, it is estimated that 60,000 workers will be required to replace those retiring, who will take essential technical, supervisory, and management skills with them. Furthermore, an additional 75,000 workers will be needed to fill positions related to new construction between 2009 and 2017.[1]

There are four categories of work in the construction industry. Each requires the use of different equipment and workers with a variety of skills. Depending on the career chosen, a graduate could work in any or all of these categories:

- new home building and renovation, including building, remodelling, or renovating houses and apartment buildings
- heavy industrial construction, including building industrial facilities such as cement, automotive, chemical, or power plants, refineries, and oil-sands installations

1 Construction Sector Council, Careers in Construction, www.careersinconstruction.ca

- institutional and commercial construction, including building commercial and institutional buildings and structures such as stadiums, schools, hospitals, grain elevators, and swimming pools
- civil engineering construction, including engineering projects such as highways, dams, water and sewer lines, power and communication lines, and bridges.

The SHSM–Construction enables students to build a foundation of sector-focused knowledge and skills before entering apprenticeship training, college, university, or an entry-level position in the workplace.

Depending on local circumstances, this SHSM may be designed to have a particular focus. Where a choice of focus areas is offered, students may select one.

Occupations in the Construction Sector

The following table provides examples of occupations in the construction sector, with corresponding NOCs, sorted according to the type of postsecondary education or training the occupations would normally require.

FIND IT!

See **Section A1.6** for more on occupations and NOCs.

Apprenticeship Training	College
• Brick and Stone Mason 7281 • Carpenter 7271 • Construction Millwright 7311 • Electrician 7241 • Heating and Air Conditioning Contractor 7313 • Painter and Decorator 7294 • Plumber 7251 • Roofer 7291	• Architectural Design Technician/Technologist 2251 • Civil Engineering Technologist 2231 • Construction Estimator 2234 • Construction Manager 0711 • Construction Technologist 2231 • Contractor and Supervisor – Electrical Trades and Telecommunications 7212 • Home Inspector 2264 • Interior Designer 5242 • Residential Home Builder or Renovator 0712
University	**Workplace**
• Architect 2151 • Electrical Engineer 2133 • Mechanical Engineer 2132 • Structural Engineer 2131	• Carpenter Helper 7611 • Concrete Finisher 7282 • Construction Trades Helper and Labourer 7611 • Demolition Worker 7611 • Drywall Installer 7611 • Helper – Construction Trades 7611 • Home Renovator 0712

Note: Some of the names of occupations in this table may differ slightly from the names given in the National Occupation Classification system. The names listed here reflect common usage by institutions and organizations in this sector in Ontario.

Postsecondary Programs and Training in the Construction Sector

The following are examples of programs and training related to careers in the construction sector and the accreditations associated with each.

Apprenticeship Training

Brick and Stone Mason	Certificate of apprenticeship/ certificate of qualification
Concrete Finisher	Certificate of apprenticeship/ certificate of qualification
Construction and Maintenance Electrician	Certificate of apprenticeship/ certificate of qualification
Construction Craft Worker	Certificate of apprenticeship/ certificate of qualification
Construction Millwright	Certificate of apprenticeship/ certificate of qualification
Drywall, Acoustic, and Lathing Applicator	Certificate of apprenticeship/ certificate of qualification
General Carpenter	Certificate of apprenticeship/ certificate of qualification
Plumber	Certificate of apprenticeship/ certificate of qualification
Refrigeration and Air Conditioning Systems Mechanic	Certificate of apprenticeship/ certificate of qualification
Sheet Metal Worker	Certificate of apprenticeship/ certificate of qualification

College

Air Conditioning and Refrigeration Engineering Technician	Diploma
Applied Technology – Construction and Environment: Regulations and Compliance	Bachelor's degree
Applied Technology – Construction Science and Management	Bachelor's degree
Architectural Technician	Diploma
Architectural Technology	Advanced diploma
Building Inspection Technician	Diploma
Construction Engineering Technology	Advanced diploma

Electrical Engineering Technician – Industrial	Diploma
Electrical Power Generation	Diploma
Electrical Techniques	Diploma
Fire Protection Engineering Technician	Diploma

University

Civil Engineering	Bachelor's degree, honours
Electrical Engineering	Bachelor's degree, honours
Industrial Engineering	Bachelor's degree, honours
Mechanical Engineering	Bachelor's degree, honours

Training for the Workplace

Construction Techniques	Certificate
Gas Metal Arc Welding	Certificate
Mechanical Techniques – Construction	Certificate
Mechanical Techniques – CNC/CAD/CAM Specialist	Certificate
Mechanical Techniques – Design	Certificate
Welding Techniques	Certificate

Required Components for the SHSM–Construction

The SHSM–Construction has the following five required components:

1. A bundle of 10 Grade 11 and Grade 12 credits

These credits make up the bundle:

- four construction major credits that provide sector-specific knowledge and skills
- four other required credits from the Ontario curriculum, in English, mathematics, and science or business studies, in which some expectations are met through learning activities contextualized to the construction sector
- two cooperative education credits that provide authentic learning experiences in a workplace setting, enabling students to refine, extend, apply, and practise sector-specific knowledge and skills.

FIND IT!

See **Section A1.2** for more on SHSM credits.

Credits		Apprenticeship Training		College		University		Workplace	
		Gr. 11	Gr. 12	Gr. 11	Gr. 12	Gr. 11	Gr. 12	Gr. 11	Gr. 12
Construction Major		**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
includes content delivered in the sector's context	**English**		**1**		**1**		**1**	**1**	**1**
	Mathematics	**1**	**1**	**1**	**1**	**1**	**1**	**1**	
	Business Studies or Science	**1**		**1**		**1**		**1**	
Cooperative Education		**2**		**2**		**2**		**2**	
Total number of credits		**10**		**10**		**10**		**10**	

Note: Multiple credits in the Ontario technological education curriculum allow additional instructional time for the practice and refinement of skills needed to develop student performance to the levels required for certification, entry into apprenticeship programs, or participation in school–work transition programs (see *The Ontario Curriculum, Grades 11 and 12: Technological Education, 2009*, page 17).

2. Seven sector-recognized certifications and/or training courses/programs

The SHSM in construction requires students to complete seven sector-recognized certifications and/or training courses/programs. Of these, five are compulsory and the remaining two are electives that must be chosen from the list in the following table. Note that items in the table that are capitalized are the proper names of specific certifications or training courses/programs that are appropriate for the SHSM. Items that are lowercased are names of the areas or categories within which specific certifications or training courses/programs should be selected by the school or board. The requirements are summarized in the table below.

FIND IT!

See **Section A1.3** for more on SHSM certifications and training.

Five compulsory				
Cardio-Pulmonary Resuscitation (CPR) Level A	fall protection	generic (i.e., not site-specific) instruction about the Workplace Hazardous Materials Information System (WHMIS)	health and safety – basic	Standard First Aid

Two electives from the list below			
chainsaw safety	confined space awareness	electrical safety	elevated work platforms
energy efficiency training	hoisting and rigging	insulated concrete forming	lift truck safety
personal protective equipment – construction	powder-actuated tools	propane in construction	scaffold safety
suspended access equipment	traffic control	trenching safety	

3. Experiential learning and career exploration activities

Experiential learning and career exploration opportunities relevant to the sector might include:

- one-on-one observation of a cooperative education student at a placement in the construction sector (example of job twinning)
- a day-long observation of a skilled tradesperson in the construction sector (example of job shadowing)
- a one- or two-week work experience with an individual employed in the construction sector (example of work experience)
- participation in a local, provincial, or national Skills Canada competition
- a tour of a municipal planning department
- attendance at a construction sector trade show, conference, or job fair
- a volunteer experience with a non-profit organization such as Habitat for Humanity.

FIND IT!

See **Section A1.4** for more on experiential learning and career exploration activities.

POLICY

Note that volunteer activities in an SHSM cannot be counted towards the hours of community involvement required to earn the OSSD.

4. Reach ahead experiences

Students are provided one or more reach ahead experiences – opportunities to take the next steps along their chosen pathway – as shown in the following examples:

- Apprenticeship: visiting an approved apprenticeship delivery agent in the sector
- College: interviewing a college student enrolled in a sector-specific program
- University: observing a university class in a sector-related program
- Workplace: interviewing an employee in the sector.

FIND IT!

See **Section A1.5** for more on reach ahead experiences.

5. Essential Skills and work habits and the OSP

Students will develop Essential Skills and work habits required in the sector and document them using the OSP, a component of the SHSM.

FIND IT!

See **Section A1.6** for more on Essential Skills and work habits.

Pathways for the SHSM–Construction

A table illustrating the four pathways and required credits leading to completion of this SHSM is provided below. You will also find tables illustrating sample bundles of credits, and other useful resources, on the ministry's SHSM website.

TOOLS AND RESOURCES

Visit the ministry's SHSM website at www.edu.gov.on.ca/eng/teachers/studentsuccess/specialist.html for:

- sample bundles of credits specific to this SHSM
- a list of organizations and resources specific to this SHSM.

Awareness building (Grades 7 and 8)

See **Section 5.5** for information on building awareness of SHSM programs among students in Grades 7 and 8.

Exploration (Grades 9 and 10)

See **Section 5.5** for information on providing Grade 9 and 10 students with opportunities for exploration of SHSM programs. In addition, students considering this SHSM can be encouraged to enrol in the following courses to become better informed about careers and postsecondary options in the sector:

- Exploring Technologies: This Grade 9 course is recommended for all students following SHSM pathways that have a technological education focus. The course provides students with opportunities to explore a variety of technologies, including construction technology, by engaging in activities related to them.
- Career Studies (compulsory) and Discovering the Workplace: Some of the expectations in these Grade 10 courses provide opportunities for students to explore occupations and other postsecondary options in the sector and to participate in experiential learning activities.
- Construction Technology: This course is recommended for any Grade 10 student who is considering enrolling in an SHSM–Construction program.

Specialization (Grades 11 and 12)

Students acquire the sector-specific knowledge and skills required to earn their OSSD with an SHSM–Construction by completing its five required components. Students and their parents/guardians are encouraged to consult with guidance counsellors and teachers to select the courses that will enable students to pursue their goals.

Students pursuing an apprenticeship pathway should consider OYAP, which enables them to start an apprenticeship while earning their OSSD.

Students pursuing a university pathway are advised to complete their required cooperative education credits in Grade 11, in order to allow room in their timetables in Grade 12 for credits needed to meet university entrance requirements.

When helping students plan their SHSMs, particularly with respect to the selection of courses to fulfil the requirement for credits in the major, teachers should bear in mind that technological education courses can be offered as single-credit or multiple-credit courses.

Program pathways: SHSM–Construction

- Shaded boxes – required credits in the bundle for the SHSM–Construction
- (C) – compulsory credit for the OSSD

Grade 9 *Exploration*	**Grade 10** *Exploration*	**Apprenticeship Training Pathway** *Specialization*		**College Pathway** *Specialization*		**University Pathway** *Specialization*		**Workplace Pathway** *Specialization*	
		Grade 11	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**
An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit
(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English
(C) Mathematics	(C) Mathematics	(C) Mathematics	Mathematics	(C) Mathematics	Mathematics	(C) Mathematics	Mathematics	(C) Mathematics	Mathematics
(C) Science	(C) Science	Science or Business Studies *in either Gr. 11 or Gr. 12*		Science or Business Studies *in either Gr. 11 or Gr. 12*		Science or Business Studies *in either Gr. 11 or Gr. 12*		Science or Business Studies *in either Gr. 11 or Gr. 12*	
(C) Geography of Canada	(C) Canadian History	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**
(C) Core French	(C) Career Studies/ Civics	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**	**Construction Major**
(C) Healthy Active Living	(C) The Arts	May be used as a (C) Cooperative education (2 credits), related to the sector, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits), related to the sector, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits), related to the sector, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits), related to the sector, *in either Gr. 11 or Gr. 12*	
Exploring Technologies	Construction Technology	Cooperative Education *or* an optional or a compulsory credit	Cooperative Education *or* an optional or a compulsory credit	Cooperative Education *or* an optional or a compulsory credit	Cooperative Education *or* an optional or a compulsory credit	Science	Mathematics	Cooperative Education *or* an optional or a compulsory credit	Cooperative Education *or* an optional or a compulsory credit