COURSE INA3400: INTRODUCTION & SAFETY

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students develop an understanding of how the apprenticeship program operates along with noise control safety specific to various insulation jobs.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. describe the Alberta Apprenticeship and Industry Training System

- 1.1 identify the training profile of the insulator apprenticeship in Alberta, including:
  - 1.1.1 duties
  - 1.1.2 working conditions
  - 1.1.3 personal characteristics; e.g., manual dexterity, the agility required to work in cramped spaces, the ability to work at heights and in hot and cold environments, enjoy doing precision work
  - 1.1.4 educational requirements
  - 1.1.5 employment and advancement
  - 1.1.6 salary
  - 1.1.7 related occupational profiles
  - 1.1.8 related high school subjects
  - 1.1.9 related post-secondary field of study
- 1.2 explain the insulator program course outline learning outcomes and objectives
- 1.3 discuss the contents of the apprenticeship training record book, including:
  - 1.3.1 introduction; e.g., apprenticeship registration details, contact information, apprenticeship program, roles and responsibilities
  - 1.3.2 supervising information
  - 1.3.3 technical training; e.g., how to register, who is eligible, completion of training record, record of technical training courses
  - 1.3.4 time in occupation; e.g., what are the hourly requirements for the shift, who is eligible to record hours accumulated in the occupation, how are the hours recorded, initial hours credited, record of practical skills
  - 1.3.5 practical skills; e.g., who is eligible to maintain a record of completed practical skills, how is the completion of practical skills logged, record of completed practical skills
  - 1.3.6 certification examinations
  - 1.3.7 program completion
  - 1.3.8 review by apprenticeship staff
  - 1.3.9 notes

1.4 describe the responsibilities for the contract of apprenticeship by the apprentice, employer and Alberta Apprenticeship and Industry Training, considering:
- 1.4.1 the applicant shall be an apprentice under the *Apprenticeship and Industry Training Act* in the trade identified in Section 2 of this application and contract
- 1.4.2 the apprentice shall complete the apprenticeship program as required under the applicable regulations, or as agreed by Alberta Enterprise and Advanced Education and the employer in accordance with the *Apprenticeship and Industry Training Act*
- 1.4.3 the on-the-job training for the apprentice begins on the date the apprentice starts to work in the applicable trade for the employer, or as determined by Alberta Enterprise and Advanced Education in accordance with the *Apprenticeship and Industry Training Act*
- 1.4.4 the parties to this contract of apprenticeship shall comply with the *Apprenticeship and Industry Training Act*
- 1.4.5 this contract of apprenticeship comes into effect on the date it is registered with the Executive Director of Alberta Apprenticeship and Industry Training

1.5 identify industrial, commercial and residential fields that provide opportunities for insulators

2. perform safe work procedures pertaining to noise control

2.1 identify the physical hazards that are common to the industry, including:
- 2.1.1 constant noise
- 2.1.2 intermittent noise
- 2.1.3 impact noise

2.2 outline Occupational Health and Safety (OHS) regulations relevant to noise control, including:
- 2.2.1 exposure limits
- 2.2.2 noise measurement
- 2.2.3 controls
- 2.2.4 hearing protection
- 2.2.5 warning signs
- 2.2.6 hearing tests

2.3 recognize the different types and applications of hearing protection, including:
- 2.3.1 ear plugs
- 2.3.2 semi-insert ear plugs
- 2.3.3 earmuffs
- 2.3.4 noise reduction rating (NRR) value

2.4 recognize the procedures and applications during hot and cold exposure, such as:
- 2.4.1 in hot/humid environments, workers may be most comfortable in earplugs or ear bands
- 2.4.2 in colder climates, workers generally require earmuffs to help protect from both exposure to hazardous noise and inclement weather

2.5 describe the safety practices taken during hot and cold exposure

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
    3.2.1 demonstrate positive attitudes and behaviours
    3.2.2 be responsible
    3.2.3 be adaptable
    3.2.4 learn continuously
    3.2.5 work safely
3.3 demonstrate teamwork skills to:
    3.3.1 work with others
    3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

4.1 identify short-term and long-term goals
4.2 identify steps to achieve goals

COURSE INA3405: ASBESTOS AWARENESS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students develop an understanding of safety specific to working with asbestos.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. perform industry-practiced abatement procedural methods of control

1.1 identify the certification requirements for asbestos workers, including:
- 1.1.1 asbestos overview
- 1.1.2 asbestos safety outlined in the *Alberta Occupational Health & Safety (OHS) Act*, *Regulation* and *Code*
- 1.1.3 asbestos abatement methods
- 1.1.4 personal protective equipment
- 1.1.5 methods for monitoring and analysis of air quality

1.2 identify the different types of asbestos, including:
- 1.2.1 serpentine; e.g., chrysotile
- 1.2.2 amphibole; e.g., amosite, crocidolite, fibrous tremolite, fibrous anthophyllite and fibrous actinolite

1.3 describe the health effects associated to exposure to asbestos, including:
- 1.3.1 asbestosis
- 1.3.2 lung cancer
- 1.3.3 pleural and peritoneal mesothelioma
- 1.3.4 asbestos warts
- 1.3.5 pleural plaques
- 1.3.6 diffuse pleural thickening
- 1.3.7 pneumothorax

1.4 outline OHS regulations relevant to asbestos removal, including:
- 1.4.1 removal
- 1.4.2 encapsulation
- 1.4.3 enclosure
- 1.4.4 management plan

1.5 describe methods of asbestos abatement in the industry, considering the following:
- 1.5.1 low risk
- 1.5.2 moderate risk
- 1.5.3 high risk
- 1.5.4 special cases

1.6 list equipment, materials and safety accessories, including:
- 1.6.1 types of respirators
- 1.6.2 code of practice for respiratory protection
- 1.6.3 factors affecting respirator fit
- 1.6.4 methods of fit testing
- 1.6.5 inspection, cleaning, storage and maintenance
- 1.6.6 protective clothing

1.7 list work-site planning procedures and safety, including:
- 1.7.1 pre-job planning
- 1.7.2 site preparation
- 1.7.3 work procedures

1.8 list cleanup procedures and final inspection practices, including:
- 1.8.1 decontamination
- 1.8.2 disposal
- 1.8.3 air monitoring
- 1.8.4 smoke test
- 1.8.5 visual inspection
- 1.8.6 equipment inspection
- 1.8.7 temporary enclosure and decontamination facility inspection
- 1.8.8 air pressure differentials
- 1.8.9 walk-through after removal and before sealant spray

1.9 make use of asbestos removal tools and equipment, including:
- 1.9.1 portable HEPA-filtered exhaust units with extra fuses
- 1.9.2 replacement HEPA filters
- 1.9.3 flexible or rigid duct
- 1.9.4 vacuum cleaners fitted with HEPA filters
- 1.9.5 electrical extension cords
- 1.9.6 portable ground-fault circuit interrupter (GFCI)
- 1.9.7 garden hose
- 1.9.8 hand pump garden sprayer to wet asbestos
- 1.9.9 wetting agent (50 per cent polyoxyethylene ether and 50 per cent polyoxyethylene or equivalent)
- 1.9.10 hand tools, such as scrapers, nylon brushes, dust pans and shovels
- 1.9.11 scaffolds with railings
- 1.9.12 duct tape or an alternative tape with similar or better adhesive qualities
- 1.9.13 polyethylene sheeting having a minimum 6 mm thickness
- 1.9.14 6-mm thick labelled asbestos disposal bags
- 1.9.15 barriers and warning signs
- 1.9.16 mops and/or rags, water and other supplies for cleanup
- 1.9.17 sealant for edges to encapsulate the area
- 1.9.18 manometer, pumps and smoke generator
- 1.9.19 fire extinguisher
- 1.9.20 appropriate first aid kit

2. demonstrate basic competencies

2.1 demonstrate fundamental skills to:
- 2.1.1 communicate
- 2.1.2 manage information
- 2.1.3 use numbers
- 2.1.4 think and solve problems

2.2 demonstrate personal management skills to:
- 2.2.1 demonstrate positive attitudes and behaviours
- 2.2.2 be responsible
- 2.2.3 be adaptable
- 2.2.4 learn continuously
- 2.2.5 work safely

2.3 demonstrate teamwork skills to:
- 2.3.1 work with others
- 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

3.1 identify short-term and long-term goals

3.2 identify steps to achieve goals

COURSE INA3410: BONDING

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students develop an understanding of how adhesives, cements and mastics work and where they are to be used. They also learn theoretical and practical knowledge of how to prepare various substrates and apply adhesives, cements and mastics correctly.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. prepare surfaces to allow the application of adhesives, cements and mastics

- 1.1 identify the different types of adhesives, cements and mastics, including:
  - 1.1.1 non-reactive; e.g., drying, pressure-sensitive, contact, hot
  - 1.1.2 reactive; e.g. multi-part, one part
  - 1.1.3 natural
  - 1.1.4 synthetic
- 1.2 identify the different types of reinforcing materials; e.g., duct sealer, cotton canvas, aggregate, fibreglass
- 1.3 describe the types of surface preparation for adhesives, cements and mastics, including:
  - 1.3.1 clean the surface; e.g., detergents, liquids, dry
  - 1.3.2 degrease; e.g., methyl ethyl ketone (MEK), acetone or isopropyl alcohol
  - 1.3.3 abrade; e.g., fine grain sand paper (120-200 grit), emery cloth, steel wool or grit blasting
  - 1.3.4 surface alteration; e.g., chemical primers, scorching the surface, grit blasting or acid etching the surface
- 1.4 describe the application methods of adhesives, cements and mastics, including:
  - 1.4.1 non-reactive
  - 1.4.2 reactive
  - 1.4.3 natural
  - 1.4.4 synthetic
- 1.5 prepare a surface for an adhesive, cement or mastic, including:
  - 1.5.1 wood substrate
  - 1.5.2 concrete
  - 1.5.3 metal
  - 1.5.4 composite material; e.g., fibreglass, mesh, paper
- 1.6 apply an adhesive, cement or mastic to a surface

2. demonstrate basic competencies

2.1 demonstrate fundamental skills to:

- 2.1.1 communicate
- 2.1.2 manage information
- 2.1.3 use numbers
- 2.1.4 think and solve problems

2.2 demonstrate personal management skills to:

- 2.2.1 demonstrate positive attitudes and behaviours
- 2.2.2 be responsible
- 2.2.3 be adaptable
- 2.2.4 learn continuously
- 2.2.5 work safely

2.3 demonstrate teamwork skills to:

- 2.3.1 work with others
- 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

3.1 identify short-term and long-term goals

3.2 identify steps to achieve goals

COURSE INA3415: PIPE INSULATION

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn the fabrication and application of various insulation type fittings on pipe, taking into account the location of the pipe and the purpose of the pipe.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. install miters, elbows, tees and lateral type fittings
- 1.1 identify the common types of insulation fittings used in:
  - 1.1.1 straight runs
  - 1.1.2 elbows
  - 1.1.3 tee joints
  - 1.1.4 couplings
  - 1.1.5 reducers
  - 1.1.6 crosses
  - 1.1.7 valves
  - 1.1.8 hangers
- 1.2 identify long and short radius elbow fittings, considering the:
  - 1.2.1 heel
  - 1.2.2 throat
- 1.3 describe the fabrication methods of insulation fittings, considering:
  - 1.3.1 foam (tubular); e.g., flexible elastomeric, rigid, polystyrene
  - 1.3.2 wool (tubular); e.g., mineral, fibreglass
  - 1.3.3 cellular glass
  - 1.3.4 aerogel
- 1.4 fabricate common types of insulation fittings
- 1.5 install common types of insulation fittings on a shop project

2. install common types of insulation fasteners
- 2.1 identify the general types of insulation fasteners, including:
  - 2.1.1 mechanical; e.g., screws, strapping, rivet, self-adhesive hanger
  - 2.1.2 weld; e.g., weld pin, spotter pin
  - 2.1.3 adhesive; e.g., mastic, sealant, caulking, tape
- 2.2 outline preparation and application procedures for insulation fasteners
- 2.3 install insulation fasteners on a shop project

3. recognize polyvinyl chloride (PVC), canvas and metal type finishes

- 3.1 identify the applications of common types of finishes, considering:
  - 3.1.1 pipe freezing
  - 3.1.2 condensation control
  - 3.1.3 energy savings
  - 3.1.4 protection against extremes; e.g., temperatures, waterproofing
  - 3.1.5 noise control
- 3.2 describe the types of finishes, considering:
  - 3.2.1 canvas
  - 3.2.2 foil scrim
  - 3.2.3 PVC/fabric; e.g., smooth
  - 3.2.4 metal; e.g., aluminum
- 3.3 recognize the health risks associated when working with insulation finishes
- 3.4 identify the applications of pre-formed type fittings
- 3.5 identify the applications of vapour-barrier-type materials, including:
  - 3.5.1 polyethylene plastic
  - 3.5.2 PVC
  - 3.5.3 paint
- 3.6 apply general types of finishes

4. demonstrate basic competencies

- 4.1 demonstrate fundamental skills to:
  - 4.1.1 communicate
  - 4.1.2 manage information
  - 4.1.3 use numbers
  - 4.1.4 think and solve problems
- 4.2 demonstrate personal management skills to:
  - 4.2.1 demonstrate positive attitudes and behaviours
  - 4.2.2 be responsible
  - 4.2.3 be adaptable
  - 4.2.4 learn continuously
  - 4.2.5 work safely
- 4.3 demonstrate teamwork skills to:
  - 4.3.1 work with others
  - 4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

- 5.1 identify short-term and long-term goals
- 5.2 identify steps to achieve goals

COURSE INA3420: TOOLS & MATERIALS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn to operate and maintain hand and power tools and use materials safely to complete various insulating jobs.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. operate and maintain tools and shop equipment used in the trade

1.1 identify the different types of hand and power tools and shop equipment used in the trade, including:

- 1.1.1 measuring tapes/rules
- 1.1.2 protractors
- 1.1.3 adjustable wrenches
- 1.1.4 chain pipe wrenches
- 1.1.5 strap wrenches
- 1.1.6 hex keys
- 1.1.7 hacksaws and hacksaw blades
- 1.1.8 handsaws
- 1.1.9 chisels
- 1.1.10 screwdrivers
- 1.1.11 snips
- 1.1.12 pliers
- 1.1.13 files
- 1.1.14 file cleaning
- 1.1.15 hammers
- 1.1.16 chalk lines
- 1.1.17 levels
- 1.1.18 shovels
- 1.1.19 picks
- 1.1.20 pry bars
- 1.1.21 drills
- 1.1.22 twist drills
- 1.1.23 hole saws
- 1.1.24 cut-off saws
- 1.1.25 reciprocating saws
- 1.1.26 grinders
- 1.1.27 portable grinders
- 1.1.28 extension cords

1.2 describe the different types of hand and power tools and shop equipment used in the trade
1.3 operate hand and power tools and shop equipment used in the trade

2. perform the methods of material handling

2.1 identify the different methods of material handling, including:
- 2.1.1 wear appropriate clothing; e.g., loose-fitting, long-sleeved and long-legged clothing, head cover, gloves
- 2.1.2 wear personal protective equipment; e.g., respiratory protection, eye protection
- 2.1.3 remove fibres from skin and eyes
- 2.1.4 minimize dust generation
- 2.1.5 maintain adequate ventilation

2.2 outline the proper storage procedures of material
2.3 perform the different methods of handling insulating material

3. operate a stud welder

3.1 identify frequent types of fasteners used with stud welders, including:
- 3.1.1 mild steel
- 3.1.2 stainless steel
- 3.1.3 aluminum
- 3.1.4 brass

3.2 list the set-up procedures for a stud welder, including:
- 3.2.1 connect the welder to standard 115 V AC power
- 3.2.2 use extension cables at all times
- 3.2.3 twist all connectors to lock (or snap) in place
- 3.2.4 make sure the gun is set-up properly for the particular application
- 3.2.5 tighten all set screws (e.g., collet protectors and legs)
- 3.2.6 use legs and foot, if at all possible; fastener should extend 1⅛” past foot
- 3.2.7 connect the ground clamp tightly to a clean surface
- 3.2.8 connect the gun to negative (or gun) port, unless welding to paint, galvanization or rust
- 3.2.9 apply only light (⅛”), consistent pressure during the weld
- 3.2.10 use a proper gun spring for material welded; that is, silver for mild steels or stainless steel; black for aluminum; or copper for heavy-duty tip pins
- 3.2.11 use a pin at least ⅛” longer than material depth whenever welding cup head pins, and use paper washers on cup heads welded through foil-faced material
- 3.2.12 observe all electrical fire codes and rules of common sense

3.3 perform the set-up procedures for a stud welder

4. demonstrate basic competencies

4.1 demonstrate fundamental skills to:
- 4.1.1 communicate
- 4.1.2 manage information
- 4.1.3 use numbers
- 4.1.4 think and solve problems

4.2 demonstrate personal management skills to:
- 4.2.1 demonstrate positive attitudes and behaviours
- 4.2.2 be responsible
- 4.2.3 be adaptable
- 4.2.4 learn continuously
- 4.2.5 work safely

4.3 demonstrate teamwork skills to:
    4.3.1 work with others
    4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals
5.2 identify steps to achieve goals

COURSE INA3425: FIBRES & FOAM

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn about ceramic fibre insulation and extruded foam plastic insulation applications and associated health risks.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. **install ceramic fibre insulation**
   - 1.1 identify the applications of ceramic fibre insulation, including:
     - 1.1.1 cloth
     - 1.1.2 tape
     - 1.1.3 rope
     - 1.1.4 paper
     - 1.1.5 blanket
     - 1.1.6 board
   - 1.2 recognize the health risks associated when exposed to ceramic fibre insulation, such as:
     - 1.2.1 respiratory tract (nose and throat); e.g., scratchiness of nose and throat, cough, chest discomfort
     - 1.2.2 eyes; e.g., temporary mild irritation
     - 1.2.3 skin; e.g., temporary mild irritation
2. **install extruded foam plastic insulation**
   - 2.1 identify the applications of extruded foam plastic insulation, including:
     - 2.1.1 boards
     - 2.1.2 building forms
   - 2.2 recognize the health risks associated when exposed to extruded foam plastic insulation
   - 2.3 apply extruded foam plastic insulation to a shop project
3. **demonstrate basic competencies**
   - 3.1 demonstrate fundamental skills to:
     - 3.1.1 communicate
     - 3.1.2 manage information
     - 3.1.3 use numbers
     - 3.1.4 think and solve problems
   - 3.2 demonstrate personal management skills to:
     - 3.2.1 demonstrate positive attitudes and behaviours
     - 3.2.2 be responsible
     - 3.2.3 be adaptable
     - 3.2.4 learn continuously
     - 3.2.5 work safely

3.3 demonstrate teamwork skills to:
    3.3.1 work with others
    3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

4.1 identify short-term and long-term goals
4.2 identify steps to achieve goals

COURSE INA3430: POLYSTYRENES & WRAPS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn about polystyrene insulation and calcium silicate insulation applications and associated health risks.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. **install polystyrene insulation**
   - 1.1 identify the applications of polystyrene insulation, including:
     - 1.1.1 rigid insulation; e.g., boards, building forms
     - 1.1.2 spray foam
     - 1.1.3 sealant
     - 1.1.4 adhesive
   - 1.2 recognize the health risks associated when exposed to polystyrene insulation
2. **install calcium silicate insulation**
   - 2.1 identify the applications of calcium silicate insulation, including:
     - 2.1.1 wallboard
     - 2.1.2 paper
   - 2.2 recognize the health risks associated when exposed to calcium silicate insulation, such as:
     - 2.2.1 respiratory tract (nose and throat); e.g., scratchiness of nose and throat, cough, chest discomfort
     - 2.2.2 eyes; e.g., temporary mild irritation
     - 2.2.3 skin; e.g., temporary mild irritation, possible eruptions or lesions
     - 2.2.4 altered pulmonary function (chronic exposure)
   - 2.3 apply calcium silicate insulation to a shop project
3. **demonstrate basic competencies**
   - 3.1 demonstrate fundamental skills to:
     - 3.1.1 communicate
     - 3.1.2 manage information
     - 3.1.3 use numbers
     - 3.1.4 think and solve problems
   - 3.2 demonstrate personal management skills to:
     - 3.2.1 demonstrate positive attitudes and behaviours
     - 3.2.2 be responsible
     - 3.2.3 be adaptable
     - 3.2.4 learn continuously
     - 3.2.5 work safely

3.3 demonstrate teamwork skills to:
    3.3.1 work with others
    3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

4.1 identify short-term and long-term goals
4.2 identify steps to achieve goals

COURSE INA3435: WOOL & FIBREGLASS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn about mineral wool insulation and fibreglass insulation applications and associated health risks.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. install mineral wool insulation

1.1 identify the applications of mineral wool insulation, including:
- 1.1.1 insulation/sound absorber batting in construction of external walls, internal walls and roofs
- 1.1.2 pipe insulation
- 1.1.3 boiler and turbine insulation
- 1.1.4 fire resistance
- 1.1.5 packing material
- 1.1.6 hydroponics

1.2 recognize the health risks associated when exposed to mineral wool insulation, such as:
- 1.2.1 respiratory tract (nose and throat); e.g., scratchiness of nose and throat, cough, chest discomfort
- 1.2.2 eyes; e.g., temporary mild irritation
- 1.2.3 skin; e.g., temporary mild irritation
- 1.2.4 possible carcinogen

1.3 apply mineral wool insulation to a shop project

2. install fibreglass insulation

2.1 identify the applications of fibreglass insulation, including:
- 2.1.1 insulation/sound absorber batting in construction of external walls, internal walls and roofs
- 2.1.2 pipe insulation
- 2.1.3 storage tanks
- 2.1.4 cars
- 2.1.5 boats
- 2.1.6 hot tubs

2.2 recognize the health risks associated when exposed to fibreglass insulation, such as:
- 2.2.1 respiratory tract (nose and throat); e.g., sore throat, hoarseness and cough
- 2.2.2 dyspnea (breathing difficulty)
- 2.2.3 eyes; e.g., temporary mild irritation
- 2.2.4 skin; e.g., temporary mild irritation

2.3 apply fibreglass insulation to a shop project

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
  - 3.1.1 communicate
  - 3.1.2 manage information
  - 3.1.3 use numbers
  - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
  - 3.2.1 demonstrate positive attitudes and behaviours
  - 3.2.2 be responsible
  - 3.2.3 be adaptable
  - 3.2.4 learn continuously
  - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
  - 3.3.1 work with others
  - 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

- 4.1 identify short-term and long-term goals
- 4.2 identify steps to achieve goals

COURSE INA3440: CELLULAR GLASS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn about cellular glass insulation, polyurethane insulation and nanofiber insulation applications and associated health risks.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. install cellular glass insulation

1.1 identify the applications of cellular glass insulation, including:
- 1.1.1 chilled water pipes and equipment
- 1.1.2 stainless steel hot water lines
- 1.1.3 hot oil piping and equipment
- 1.1.4 liquefied natural gas (LNG) piping
- 1.1.5 green roof insulation
- 1.1.6 underground steam distribution
- 1.1.7 cold process pipes and equipment
- 1.1.8 LNG tank bases
- 1.1.9 ethylene plant pipes and equipment
- 1.1.10 fireproof building panels

1.2 recognize the health risks associated when exposed to cellular glass insulation, such as:
- 1.2.1 respiratory tract (nose and throat); e.g., dryness and irritation
- 1.2.2 eyes; e.g., irritation, inflammation, tearing, sensitivity to light
- 1.2.3 skin; e.g., irritation, abrasion
- 1.2.4 inhalation; e.g., scarring of lung tissue

1.3 apply cellular glass insulation to a shop project

2. install polyurethane insulation

2.1 identify the applications of polyurethane insulation, including:
- 2.1.1 open cell; e.g., interior wall construction
- 2.1.2 closed cell; e.g., home construction, roofing projects, outdoor applications

2.2 recognize the health risks associated when exposed to polyurethane insulation, such as:
- 2.2.1 respiratory tract (nose and throat); e.g., sore throat, dry cough, asthma, chemical bronchitis
- 2.2.2 eyes; e.g., mild irritation, blurred vision
- 2.2.3 skin; e.g., inflammation, rash

2.3 apply polyurethane insulation to a shop project

3. install nanofiber type insulation

3.1 identify the applications of nanofiber insulation, including:
- 3.1.1 filtration; e.g., liquid, air
- 3.1.2 performance apparel
- 3.1.3 acoustic
- 3.1.4 paper

3.2 recognize the health risks associated when exposed to nanofiber insulation, such as:
- 3.2.1 respiratory tract (nose and throat); e.g., silicosis, irritation
- 3.2.2 eyes; e.g., irritation
- 3.2.3 skin; e.g., irritation

3.3 outline the recommended handling procedures of nanofiber insulation

3.4 apply nanofiber insulation to a shop project

4. demonstrate basic competencies

4.1 demonstrate fundamental skills to:
- 4.1.1 communicate
- 4.1.2 manage information
- 4.1.3 use numbers
- 4.1.4 think and solve problems

4.2 demonstrate personal management skills to:
- 4.2.1 demonstrate positive attitudes and behaviours
- 4.2.2 be responsible
- 4.2.3 be adaptable
- 4.2.4 learn continuously
- 4.2.5 work safely

4.3 demonstrate teamwork skills to:
- 4.3.1 work with others
- 4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals

5.2 identify steps to achieve goals

COURSE INA3445: MATHEMATICS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students develop a basic understanding of mathematics skills necessary to successfully and accurately work in the insulator trade.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. solve basic mathematical problems

- 1.1 describe the basic calculator functions and operations using a:
  - 1.1.1 metric conversion calculator
  - 1.1.2 scientific calculator
- 1.2 perform basic math calculations using whole numbers, fractions and decimals, including:
  - 1.2.1 arithmetic of whole numbers and decimals
  - 1.2.2 addition
  - 1.2.3 subtraction
  - 1.2.4 multiplication
  - 1.2.5 division
- 1.3 perform number and measurement conversions using whole numbers, fractions and decimals, including:
  - 1.3.1 arithmetic of fractions
  - 1.3.2 equivalent fractions and reducing
  - 1.3.3 mixed numbers and improper fractions
  - 1.3.4 addition of fractions
  - 1.3.5 subtraction of fractions
  - 1.3.6 multiplication of fractions
  - 1.3.7 division of fractions
  - 1.3.8 division with feet and inches
  - 1.3.9 metric conversion
- 1.4 perform the order of operations known as BEDMAS (brackets, exponents, division, multiplication, addition, subtraction)

1.5 convert measurements between metric and imperial, including:
- 1.5.1 conversion of common and decimal fractions
- 1.5.2 changing common fractions to decimal fractions
- 1.5.3 changing decimal fractions to equivalent common fractions
- 1.5.4 changing decimal fractions to nearest practical fractions (approximate practical fractions)
- 1.5.5 decimal feet to inches and fractions of an inch, using a calculator
- 1.5.6 basic calculations with feet and inches
- 1.5.7 addition and subtraction with feet and inches
- 1.5.8 multiplication with feet and inches

1.6 calculate right angle problems using the Pythagorean theorem

2. calculate geometric perimeter and areas using applicable formulas

2.1 identify the general geometric formulas to calculate perimeter, including:
- 2.1.1 rectangle/square
- 2.1.2 triangle
- 2.1.3 parallelogram
- 2.1.4 circle
- 2.1.5 combination shapes

2.2 identify the general geometric formulas to calculate area, including:
- 2.2.1 rectangle/square
- 2.2.2 triangle
- 2.2.3 parallelogram
- 2.2.4 circle

2.3 solve geometric surface areas by combining the applicable formulas

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

4.1 identify short-term and long-term goals

4.2 identify steps to achieve goals

COURSE INA3450: BLUEPRINTS

Level: First Period Apprenticeship

Prerequisite: INA3900: Apprenticeship Safety

Description: Students learn how to read and interpret blueprints to correctly determine measurements and locations. Students also develop an understanding of scale and dimension and the use of common styles of drawings.

Parameters: Access to a material work centre, complete with basic insulator tools and materials, and to instruction from an individual with journeyperson certification in the insulator trade.

Resources: Please refer to the books and materials listed at Tradesecrets: Trades & Occupations List.

Outcomes: The student will:

1. **apply the skills in practicing the use of measurement scales, lines, symbols and pipe sizes**
   - 1.1 identify the different types of pipe sizes
   - 1.2 explain the different architectural symbols and lines, including:
     - 1.2.1 object line
     - 1.2.2 hidden line
     - 1.2.3 centre line
     - 1.2.4 extension line
     - 1.2.5 dimension line
     - 1.2.6 leader line
     - 1.2.7 circle
     - 1.2.8 diameter
     - 1.2.9 radius
     - 1.2.10 chord
     - 1.2.11 arc
     - 1.2.12 semi-circle
     - 1.2.13 segment
     - 1.2.14 sector
     - 1.2.15 tangent
     - 1.2.16 circumference
     - 1.2.17 architectural material symbols
     - 1.2.18 plumbing fixture symbols
     - 1.2.19 electrical symbols
   - 1.3 identify the different types of scale rulers, including:
     - 1.3.1 scaling and scale rules
     - 1.3.2 architectural scales; e.g., imperial scale rule, metric scale rule, tape measure
   - 1.4 perform measuring exercises using scale rulers
2. **prepare basic orthographic drawings**
   - 2.1 define the term pictorial drawing, considering:
     - 2.1.1 perspective
     - 2.1.2 oblique
     - 2.1.3 isometric

2.2 define the term orthographic drawing, considering:
- 2.2.1 orthographic projection; e.g., front view, top view, side view
- 2.2.2 third-angle orthographic projection
- 2.2.3 glass-box theory
- 2.2.4 top and right side views

2.3 draw basic orthographic drawings

3. recognize the divisions of a blueprint

3.1 identify the use of divisions in blueprints, including:
- 3.1.1 Division 00 Procurement and Contracting Requirements
- 3.1.2 Division 01 General Requirements
- 3.1.3 Division 02 Existing Conditions
- 3.1.4 Division 03 Concrete
- 3.1.5 Division 04 Masonry
- 3.1.6 Division 05 Metals
- 3.1.7 Division 06 Wood, Plastics, and Composites
- 3.1.8 Division 07 Thermal and Moisture Protection
- 3.1.9 Division 08 Openings
- 3.1.10 Division 09 Finishes
- 3.1.11 Division 10 Specialties
- 3.1.12 Division 11 Equipment
- 3.1.13 Division 12 Furnishings
- 3.1.14 Division 13 Special Construction
- 3.1.15 Division 14 Conveying Equipment
- 3.1.16 Division 21 Fire Suppression
- 3.1.17 Division 22 Plumbing
- 3.1.18 Division 23 Heating, Ventilating, and Air Conditioning (HVAC)
- 3.1.19 Division 25 Integrated Automation
- 3.1.20 Division 26 Electrical
- 3.1.21 Division 27 Communications
- 3.1.22 Division 28 Electronic Safety and Security
- 3.1.23 Division 31 Earthwork
- 3.1.24 Division 32 Exterior Improvements
- 3.1.25 Division 33 Utilities
- 3.1.26 Division 34 Transportation
- 3.1.27 Division 35 Waterway and Marine Construction
- 3.1.28 Division 40 Process Integration
- 3.1.29 Division 41 Material Processing and Handling Equipment
- 3.1.30 Division 42 Process Heating, Cooling, and Drying Equipment
- 3.1.31 Division 43 Process Gas and Liquid Handling, Purification, and Storage Equipment
- 3.1.32 Division 44 Pollution and Waste Control Equipment
- 3.1.33 Division 45 Industry-specific Manufacturing Equipment
- 3.1.34 Division 46 Water and Wastewater Equipment
- 3.1.35 Division 48 Electrical Power Generation

3.2 describe the divisions in blueprints

3.3 apply the divisions in blueprints corresponding to shop drawings

4. demonstrate basic competencies

4.1 demonstrate fundamental skills to:

- 4.1.1 communicate
- 4.1.2 manage information
- 4.1.3 use numbers
- 4.1.4 think and solve problems

4.2 demonstrate personal management skills to:

- 4.2.1 demonstrate positive attitudes and behaviours
- 4.2.2 be responsible
- 4.2.3 be adaptable
- 4.2.4 learn continuously
- 4.2.5 work safely

4.3 demonstrate teamwork skills to:

- 4.3.1 work with others
- 4.3.2 participate in projects and tasks

5. create a transitional strategy to accommodate personal changes and build personal values

5.1 identify short-term and long-term goals

5.2 identify steps to achieve goals

COURSE INA3455: INA PRACTICUM A

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

COURSE INA3460: INA PRACTICUM B

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

COURSE INA3465: INA PRACTICUM C

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

COURSE INA3470: INA PRACTICUM D

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journeyperson certification or an experienced professional with journeyperson certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
   - 1.1 identify regulations and regulatory bodies related to the credential
   - 1.2 describe personal roles and responsibilities, including:
     - 1.2.1 key responsibilities
     - 1.2.2 support functions/responsibilities
     - 1.2.3 code of ethics
   - 1.3 describe personal work responsibilities and categorize them as:
     - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
     - 1.3.2 non-routine tasks; e.g., emergencies
     - 1.3.3 tasks requiring personal judgement
     - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
   - 2.1 evaluate application of competencies developed in related CTS courses
   - 2.2 evaluate standards of performance in terms of:
     - 2.2.1 quality of work
     - 2.2.2 quantity of work
   - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
   - 2.4 evaluate the work environment in terms of:
     - 2.4.1 location
     - 2.4.2 floor plan of work area
     - 2.4.3 analysis of workflow patterns

2.5 evaluate a professional in a related occupation in terms of:
- 2.5.1 training and certification
- 2.5.2 interpersonal skills
- 2.5.3 technical skills
- 2.5.4 professional ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:
- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:
- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:
- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

COURSE INA3900: APPRENTICESHIP SAFETY

Level: First Period Apprenticeship

Prerequisite: None

Description: Students develop knowledge, skills and attitudes in the practice of workshop health and safety, communication and career planning.

Parameters: Access to a materials work centre and to instruction from an individual with specialized training in occupational health and safety (and understanding of the insulator industry) and/or an insulator.

ILM Resources: Safety Legislation, Regulations and Industry Policy in the Trades 650101a; Climbing, Lifting, Rigging and Hoisting 650101b; Hazardous Materials and Fire Protection 650101c; Communication 090101d

Note: This course may promote discussions around sensitive topics (e.g., injury and death) in the context of student safety with respect to workplace hazards.

Outcomes: The student will:

1. **describe legislation, regulations and practices intended to ensure a safe workplace in the insulator apprenticeship trade**
   - 1.1 demonstrate the ability to apply the *Occupational Health and Safety (OHS) Act*, *Regulation* and *Code*, as well as the changes from Bill C-45
   - 1.2 explain the core requirements applicable to all industries, including:
     - 1.2.1 engineering controls
     - 1.2.2 administrative controls
     - 1.2.3 personal protective equipment (PPE)
   - 1.3 demonstrate an understanding of the 26 parts of the OHS Code requirements applicable to all industries
   - 1.4 demonstrate an understanding of the 12 parts of the OHS Code requirements applicable to specific industries and activities
   - 1.5 demonstrate an understanding of the 11 OHS Code Schedules that the Explanation Guide does not address
   - 1.6 explain the role of the employer and employee in regard to occupational health and safety legislation, considering:
     - 1.6.1 employer responsibilities (OHS Regulation)
     - 1.6.2 employee responsibilities (OHS Regulation)
     - 1.6.3 Workplace Hazardous Materials Information System (WHMIS)
     - 1.6.4 fire regulations
     - 1.6.5 Workers' Compensation Board (WCB)
     - 1.6.6 related advisory bodies and agencies; e.g., Alberta Construction Safety Association (ACSA), Construction Owners Association of Alberta (COAA), Occupational Health and Safety Council (OHSC), Work Safe Alberta, Safety Codes Council
   - 1.7 explain industry practices for hazard assessment and control procedures in four main hazard categories, including:
     - 1.7.1 biological
     - 1.7.2 chemical

1.7.3 ergonomic
1.7.4 physical hazards

1.8 identify and describe hazard assessment tools that both employees and employers must use in assessing and controlling work-site hazards, including:
1.8.1 work-site hazard identification and assessment
1.8.2 health and safety plan
1.8.3 joint work-site health and safety committee
1.8.4 emergency response plans
1.8.5 first-aid and incident reports

1.9 identify and describe employer engineering controls that provide the highest level of worker protection, including:
1.9.1 elimination
1.9.2 substitution
1.9.3 redesign
1.9.4 isolation
1.9.5 automation

1.10 identify and describe employer administrative controls that limit hazards to the lowest level possible, including:
1.10.1 safe work practices
1.10.2 job procedures, policies and rules
1.10.3 work/rest schedules to reduce exposure
1.10.4 limiting hours of work
1.10.5 scheduling hazardous work during non-peak times

1.11 describe the responsibilities of employees and employers to apply emergency procedures, including:
1.11.1 emergency response plans
1.11.2 first aid

1.12 describe positive tradesperson attitudes with respect to legal responsibilities for all workers, including:
1.12.1 housekeeping
1.12.2 lighting
1.12.3 personal protective equipment (PPE)
1.12.4 emergency procedures

1.13 describe the roles and responsibilities of employers and employees with respect to the selection and use of personal protective equipment (PPE), including:
1.13.1 eye protection; e.g., class 1 (spectacles), class 2 (goggles), class 3 (welding helmets), class 4 (welding hand shields), class 5 (hoods), class 6 (face shields), class 7 (respirator face pieces)
1.13.2 flame resistant clothing
1.13.3 foot protection; e.g., category 1, 2 or 3 footwear requirements
1.13.4 head protection; e.g., class G (general), class E (electrical), class C (conducting)
1.13.5 hearing protection; e.g., earplugs or earmuffs
1.13.6 life jackets and personal flotation devices (PFDs)
1.13.7 limb and body protection
1.13.8 respiratory protective equipment; e.g., particulate filters; chemical cartridges or canisters; airline respirators, hoods, helmets and suits; self-contained breathing apparatus (SCBA)
1.13.9 a combination of any of the above

2. describe the use of personal protective equipment (PPE) and safe practices for climbing, lifting, rigging and hoisting in the insulator apprenticeship trade

- 2.1 select, use and maintain specialized PPE and materials for climbing, lifting and loading, including:
  - 2.1.1 full body harness
  - 2.1.2 body belt
  - 2.1.3 ladders
  - 2.1.4 scaffold systems
  - 2.1.5 lifting and moving equipment
  - 2.1.6 PPE for lifting
  - 2.1.7 materials handling equipment; e.g., forklift, four-wheel dolly, chain hoist, overhead crane
- 2.2 describe manual lifting procedures, including correct body mechanics, considering:
  - 2.2.1 back safety
  - 2.2.2 general procedure for lifting
  - 2.2.3 employer and employee preventive actions to avoid back injuries
- 2.3 describe rigging hardware and the safe work load associated with:
  - 2.3.1 wire rope slings
  - 2.3.2 synthetic fibre web slings
  - 2.3.3 chain slings
  - 2.3.4 rigging hardware inspection
- 2.4 select the correct equipment for rigging typical loads, including:
  - 2.4.1 eye bolts
  - 2.4.2 shackles
  - 2.4.3 rings and links
  - 2.4.4 hooks
  - 2.4.5 swivels
  - 2.4.6 spreader bars and equalization beams
  - 2.4.7 blocks
  - 2.4.8 sheaves
  - 2.4.9 turnbuckles
- 2.5 describe hoisting and load-moving procedures
- 2.6 explain the most commonly used sling configurations to connect a load to a hook, including:
  - 2.6.1 vertical hitch
  - 2.6.2 bridle hitch
  - 2.6.3 single and double basket hitch
  - 2.6.4 wrap hitch
  - 2.6.5 single and double choker hitch
- 2.7 demonstrate the standard movement signals a signaler is required to know to signal a crane operator, including:
  - 2.7.1 hoist and lower load
  - 2.7.2 raise and lower boom
  - 2.7.3 swing boom
  - 2.7.4 stop
  - 2.7.5 emergency stop
  - 2.7.6 dog everything

3. describe the safety practices for hazardous materials and fire protection in the insulator apprenticeship trade

- 3.1 describe the roles, responsibilities, features and practices related to the Workplace Hazardous Materials Information System (WHMIS) program, including:
  - 3.1.1 suppliers', employers' and employees' responsibilities
  - 3.1.2 WHMIS classifications
  - 3.1.3 health effects from exposure to chemicals
- 3.2 describe the three key elements of WHMIS, including:
  - 3.2.1 worker education
  - 3.2.2 supplier and workplace product labelling
  - 3.2.3 material safety data sheets
- 3.3 describe handling, storage and transportation procedures when dealing with hazardous material, including:
  - 3.3.1 handling, storing and transporting flammable liquids
  - 3.3.2 handling, storing and transporting compressed gas
  - 3.3.3 storing incompatible materials
- 3.4 describe safe venting procedure when working with hazardous materials, including:
  - 3.4.1 mechanical general ventilation
  - 3.4.2 local ventilation
  - 3.4.3 portable smoke extractor
  - 3.4.4 working in a confined space
- 3.5 describe fire hazards, classes, procedures and equipment related to fire protection, including:
  - 3.5.1 elements of a fire
  - 3.5.2 classes of fires
  - 3.5.3 fire extinguisher labels
  - 3.5.4 extinguishing small fires
  - 3.5.5 the PASS method

4. demonstrate communication skills and workshop safety as they pertain to occupational health and safety standards

- 4.1 use various types of communication to provide trade-related information, employing standard terms for components and operations, including:
  - 4.1.1 personal appearance
  - 4.1.2 business appearance
  - 4.1.3 suppliers and sales representatives
  - 4.1.4 customers
  - 4.1.5 tradespeople
- 4.2 identify key areas of responsibility that an employee has in regards to shop and trade safety, including:
  - 4.2.1 housekeeping
  - 4.2.2 waste containers
  - 4.2.3 power tools and rotating machinery
  - 4.2.4 compressed air
  - 4.2.5 exhaust gases
  - 4.2.6 control of carbon monoxide (CO)
  - 4.2.7 hazardous materials, dangerous goods and controlled products
- 4.3 explain the correct use of fire extinguishers and explain fire prevention techniques

5. describe the role of apprenticeship within the insulator industry

5.1 discuss the obligations and responsibilities of apprentices on the job and in technical training

5.2 outline the scope of the trade

5.3 identify and demonstrate the use of proper construction terminology and building components

6. demonstrate an understanding of the insulator apprenticeship trade and of apprenticeship opportunities that exist by creating a personal career portfolio

6.1 demonstrate an understanding of the insulator apprenticeship trade and related job opportunities

6.2 describe what it means to be an apprentice and describe requirements for the employee and employer

6.3 refine and present a personal career portfolio, showing evidence of strengths and competencies, including:

- 6.3.1 application completion
- 6.3.2 cover letter
- 6.3.3 résumé with references

6.4 demonstrate knowledge of workplace requirements, rights and responsibilities and relate this knowledge to personal career/employment expectations

6.5 outline the educational requirements to move into the insulator apprenticeship trade and:

- 6.5.1 conduct successful employment searches
- 6.5.2 communicate in the language in which business is conducted
- 6.5.3 prepare a personal employment search portfolio
- 6.5.4 use technologies, tools and information systems appropriately for job preparation

7. demonstrate basic competencies

7.1 demonstrate fundamental skills to:

- 7.1.1 communicate
- 7.1.2 manage information
- 7.1.3 use numbers
- 7.1.4 think and solve problems

7.2 demonstrate personal management skills to:

- 7.2.1 demonstrate positive attitudes and behaviours
- 7.2.2 be responsible
- 7.2.3 be adaptable
- 7.2.4 learn continuously
- 7.2.5 work safely

7.3 demonstrate teamwork skills to:

- 7.3.1 work with others
- 7.3.2 participate in projects and tasks

8. create a transitional strategy to accommodate personal changes and build personal values

8.1 identify short-term and long-term goals

8.2 identify steps to achieve goals