# Electronics Assembler
# Guide to Course Content

## 2022-2023

Saskatchewan
Apprenticeship and
Trade Certification
Commission

Online: www.saskapprenticeship.ca

*Recognition:*
*To promote transparency and consistency, this document has been adapted from the 2011*
*Electronics Assembler Occupational Analysis For Saskatchewan.*

*A complete version of the Occupational Analysis can be found* at Electronic Assembler Occupational Analysis

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# STRUCTURE OF THE GUIDE TO COURSE CONTENT

To facilitate understanding of the occupation, this guide to course content contains the following sections:

**Description of the Electronics Assembler Trade:** an overview of the trade's duties and training requirements.

**Technical Training Course Content for the Electronics Assembler trade**: a chart which outlines the model for SATCC technical training sequencing. For the harmonized level of training, a cross reference to the Harmonized apprenticeship technical training sequencing, at the learning outcome level, is provided.

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# DESCRIPTION OF THE ELECTRONIC ASSEMBLER TRADE

*Electronics Assemblers include interpreting assembly drawings, schematics and production instructions; assembling, testing, reworking and repairing circuit boards, cables, wire harnesses, chassis and equipment racks, primarily at manufacturing facilities.*

**Training Requirements:** To graduate from each level of the apprenticeship program, an apprentice must successfully complete the required technical training and compile enough on-the-job experience to total at least 1800 hours each year. Total trade time required is 3600 hours and at least 2 years in the trade. Graduating apprentices may be eligible for both Journeypersons and IPC certification.

There are two levels of technical training delivered by SED Systems in Saskatoon:

**Level One:**          3 weeks (one 2-week and one 1-week session)
**Level Two:**          3 weeks (three 1-week sessions)

The information contained in this pamphlet serves as a guide for employers and apprentices. The pamphlet briefly summarizes the training delivered at each level of apprenticeship training.  An apprentice spends approximately 6% of the apprenticeship term in a technical training institute learning the technical and theoretical aspects of the trade. The hours and percentages of technical and practical training may vary according to class needs and progress.

The content of the technical training components is subject to change without notice.

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# TECHNICAL TRAINING COURSE CONTENT

This chart outlines the model for Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training sequencing.

## Level One                                                    3 weeks

**Prepares for Production**
- safety procedures
- material and component identification (fasteners, electronic devices and materials, hand and power tools)
- solder theory and solderability for both tin/lead and lead free technology
- interpreting documentation (schematics, wiring lists, engineering assembly drawings)
- IPC Workmanship standards are taught and requirements for **IPC-J-STD-001** and **IPC-A-610** certificates are met and issued
- theory of inspection and statistical process control; defect definition and disposition
- ESD procedures (using materials and equipment, following specialized instructions)
- introduction to multimeters
- working from a schematic the apprentice will produce a functioning cca with modifications

**Produces circuit cards**
- building cards (preparing, populating, secondary assembly)
- hand soldering cards (produces, reworks and repairs cca's with surface mount and through-hole technology)
- machine soldering card theory (demonstrations when available)
- hand cleaning cards
- environmental coatings (spraying, dipping and reworking cards and coatings)

**Wire terminations**
- wire preparation
- wire terminations (pierce, hook, turret, and gold cup)

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**Rework and Repair of Circuit Cards**
- non-destructive component removal and installation
- preheating and auxiliary heating methods
- cca modifications and laminate repair
- replacement of conductors, lands, and eyelets
- IPC Workmanship standards are taught and requirements for **IPC-7711/7721** certificates met and issued

**Produces cables, wires and harnesses**
- prepares cables (cutting, stripping, tinning and labeling)
- terminates cables (solder and crimp connectors, reflow connectors and mechanical terminations)
- assembles harnesses (routing and bundling wires and cables)
- rework procedures and wiring splices
- IPC workmanship standards are taught and requirements for **IPC/WHMA-A-620** certificates are met and issued

**Assembles chassis and racks**
- preparing chassis, subassemblies and racks (assembling, modifying and repairing)
- installing components (installing by mechanical and adhesives; applying labels and markings; installing harnesses)

**Product testing**
- use of the multimeter
- use of computer-automated test equipment / programs

**Material Handling**
- packaging assemblies
- use of material handling equipment

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