



ONTARIO COLLEGE OF TRADES

ORDRE DES MÉTIERS DE L'ONTARIO

Apprenticeship
Training Standard

Schedule of Training

Micro Electronics
Manufacturer

Trade Code: 630A

Development Date: 2005

MICRO ELECTRONICS MANUFACTURER

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PREFACE

This Schedule of Training was developed by the Ministry of Training, Colleges, and Universities (MTCU), in partnership with the Industry Advisory Committee and in consultation with representatives from the industry. This document is intended to be used by apprentice, supervisor/trainer and sponsor/employer as a "blueprint" for training and as a prerequisite for completion and certification.

This training document becomes the apprentice's only record of workplace training performance.

Supervisor/trainer and apprentice are required to sign off and date the skill following each successful acquisition, unless a skill is marked shaded (optional).

The care and maintenance of this training document are the joint responsibility of the apprentice and the sponsor/employer. By signing off the skill, the supervisor/trainer and the apprentice are indicating that the apprentice has demonstrated competence of the skill. This training standard has been developed specifically for documenting the apprentices' acquisition of skills of the trade.

Please Note:

Apprenticeship Training and Curriculum Standards were developed by the Ministry of Training, Colleges and Universities (MTCU). As of April 8th, 2013, the Ontario College of Trades (College) has become responsible for the development and maintenance of these standards. The College is carrying over existing standards without any changes.

However, because the Apprenticeship Training and Curriculum Standards documents were developed under either the *Trades Qualification and Apprenticeship Act* (TQAA) or the *Apprenticeship and Certification Act, 1998* (ACA), the definitions contained in these documents may no longer be accurate and may not be reflective of the *Ontario College of Trades and Apprenticeship Act, 2009* (OCTAA) as the new trades legislation in the province. The College will update these definitions in the future.

Meanwhile, please refer to the College's website (www.collegeoftrades.ca) for the most accurate and up-to-date information about the College. For information on OCTAA and its regulations, please visit: www.collegeoftrades.ca/about/legislation-and-regulations.

DEFINITIONS

ACA

Apprenticeship and Certification Act, 1998

Certificate of Apprenticeship (C of A)

Certification issued to individuals who have demonstrated that they have completed an apprenticeship in Ontario.

Certificate of Qualification (C of Q)

Certification issued to C of Q applicants who have achieved a passing grade on the certification exam for their trade.

Competence

The ability of an individual to perform a skill repeatedly and without assistance in the workplace to the standard set out in the Training Standard or Schedule of Training.

Competency Analysis Profile

A document that identifies the training needs of an individual trade and details the skills/skill sets that must be demonstrated.

Industry Committee (IC) - under the ACA and Provincial Advisory Committee (PAC) under the TQAA

Under the ACA and TQAA, the Minister may appoint a provincial committee in any trade or group of trades to advise the Minister in matters relating to the establishment and operation of apprenticeship training programs and trades qualifications.

Journeyman or Equivalent

A person who has acquired the knowledge and skills in a trade, occupation or craft as attested to by a provincial or territorial authority.

Mandatory

Status assigned to unshaded individual skills, skill sets or general performance objective which must be signed off for the apprentice to complete their program.

Optional

Status assigned to shaded individual skills, skills sets or general performance objective for which sign-off is not required for the apprentice to complete the program.

Schedule of Training

An apprenticeship training standard which includes the on-the-job performance objectives and off-the-job learning outcomes

Sign-off

Signature of the sponsor/employer of record or an individual, to whom that sponsor or employer has delegated signing authority, indicating an apprentice's achievement of competence.

Skill

Individual skill described in the Training Standard (note: does not mean the larger skill groups referred to in the Training Standard as Skill Sets, Training Units, or General Performance Objective, but the individual skills that make up those groups).

Skill Sets

Group of individual skills found in the Training Standard (may also be called Training Unit or General Performance Objective)

Skill Set Completion Form (and Learning Outcome Completion Form)

Lists all skill sets and includes space for sign-off by sponsor/employer of record.

Sponsor/Employer

Means a person that has entered into a registered training agreement under which the person is required to ensure that an individual is provided with workplace-based training in a trade, other occupation or skill set as part of an apprenticeship program approved by the Director.

Sponsor/Employer of Record

Refers to the sponsor or employer documented as the signatory to the current training agreement or contract. In order for an sponsor/employer to be considered for the training of apprentices, they must identify that the workplace has qualified journeypersons or equivalent on site and can identify that the workplace has the tools, equipment, materials, and processes which have been identified by Provincial Advisory Committees (PACs) or Industry Committees (ICs) to be required for the trade.

Supervisor

An individual, who oversees the execution of a task, oversees the actions or work of others.

Trainer

A qualified trainer in a compulsory trade is a journeyperson with a Certificate of Qualification or in a voluntary trade is an individual who is considered equivalent to a journeyperson with a Certificate of Qualification.

TQAA

Trades Qualification and Apprenticeship Act.

Training Standard

A document that has been written in concise statements, which describe how well an apprentice must perform each skill in order to become competent. In using the document, trainers will be able to ensure that the apprentice is developing skills detailed for the occupation.

IMPORTANT DIRECTIONS

Apprentice

1. All complete skills or skill sets must be signed and dated by both the apprentice and sponsor/employer when either all terms of the contract have been completed or the apprentice leaves the employ of the employer.
2. It is the responsibility of the apprentice to inform the apprenticeship staff at the local Ministry of Training, Colleges and Universities office regarding the following changes:
 - change of sponsor/employer address;
 - change of apprentice name or address;
 - transfer to a new sponsor/employer.
3. The Skill Set Completion Form and Learning Outcome Completion Form must be completed and signed by the current sponsor/employer and presented to the local Apprenticeship Client Services Office at the fulfillment of all terms of a Training Agreement.
4. The apprentice completion form with the Completed and Authorized Schedule of Training must be presented to the local Apprenticeship Client Services Unit.

Sponsors/Employers and Supervisors/Trainers

The Schedule of Training identifies skills and supporting learning outcomes required for this trade/occupation and its related training program.

This Schedule of Training has been written in concise statements which describe how an apprentice must perform each skill/outcome in order to become competent. Competence means being able to perform the task to the required standard.

In using this training standard, supervisors/trainers will be able to ensure that the apprentice is developing the skills detailed for the trade/occupation.

Supervisors/Trainers and apprentices are required to sign off and date the skills following each successful acquisition.

Sponsors/Employers participating in this training program will be designated as the Signing Authority and are required to attest to successful achievement by signing the appropriate box included at the end of each skill set.

NOTICE OF COLLECTION OF PERSONAL INFORMATION

1. At any time during your apprenticeship training, you may be required to show this training standard to the Ministry of Training, Colleges and Universities (the Ministry). You will be required to disclose the signed Apprenticeship Completion form to the Ministry in order to complete your program. The Ministry will use your personal information to administer and finance Ontario's apprenticeship training system, including confirming your completion and issuing your certificate of apprenticeship.
2. The Ministry will disclose information about your program completion and your certificate of apprenticeship to the Ontario College of Trades, as it is necessary for the College to carry out its responsibilities.
3. Your personal information is collected, used and disclosed by the Ministry under the authority of the Ontario College of Trades and Apprenticeship Act, 2009.
4. Questions about the collection, use and disclosure of your personal information by the Ministry may be addressed to the:

Manager, Employment Ontario Contact Centre
Ministry of Training, Colleges and Universities
33 Bloor St. E, 2nd floor, Toronto, Ontario M7A 2S3
Toll-free: 1-800-387-5656; Toronto: 416-326-5656
TTY: 1-866-533-6339 or 416-325-4084.

**ROLES & RESPONSIBILITIES OF APPRENTICE, SPONSOR/EMPLOYER
AND SUPERVISOR/TRAINER**

Apprentice “Apprenticeship is Learning On-the-job”

- Practice safe work habits.
- Use your apprenticeship training standard as a journal to keep track of which skills you have achieved.
- Talk over your training plan with your Training Consultant, Employer, Union, or Sponsor.
- Know what tools are required for your trade and how to use them.
- Ask questions and keep asking.
- Talk to your employer about your training needs.
- Demonstrate enthusiasm and good work habits.
- Ensure that you and your supervisor/trainer sign off skill/skill sets upon demonstration of competency.

Sponsor/Employer “Training is an Investment”

- Demonstrate safe work habits.
- Attest to successful achievement by signing the skill/skills sets.
- Provide opportunities and time for the apprentice to learn the trade.
- Offer practical trade training experiences that cover all of the skill sets.
- Foster work ethics that support training while minimizing productivity losses.
- Set out clear expectations, then recognize or reward performance excellence.
- Involve both the apprentice and supervisor/trainer in developing the training plan.
- Use the Training Standard as a monitoring tool and part of regular performance evaluations.
- Select supervisors/trainers with good communication skills and who work well with others.
- Encourage supervisors/trainers to take upgrading courses - (e.g. Train the Trainer, Mentor Coach, etc).
- Complete the Skill Set Completion Form once the apprentice has demonstrated competency in the training.
- Ensure that the apprentice always works under the direction of or has access to a qualified supervisor/trainer.
- Vary the apprentice’s exposure to all the skills set out in the training standard.

Supervisor/Trainer

- Demonstrate safe work habits.
- Treat apprentices fairly and with respect.
- Use the Training Standard as a guide to evaluating competence in each skill area. In using the Training Standard, supervisors/trainers will be able to ensure that the apprentice is developing skills detailed for the trade/occupation.
- Review the Training Standard with the apprentice and develop a training plan.
- Respond fully to all questions.
- Be patient. Explain what is to be done then, show how it is done, and then let the apprentice demonstrate the task.
- Provide continuous feedback.
- Sign off individual skills/skill sets once the apprentice demonstrates competence in the skill.

Suggestions for Assessing the Progress of the Apprentice in the Workplace

- Use informal daily observation.
- Provide constructive feedback to build confidence.
- Allow the supervisor/trainer time to teach and demonstrate the skills.
- Take prompt action wherever problems occur.
- Conduct regular performance reviews involving the apprentice, supervisor/trainer and sponsor/employer.
- Use the Training Standard as the reference for establishing the competency of the apprentice.

MICRO ELECTRONICS MANUFACTURER

SKILL SET COMPLETION FORM

SKILLS SETS	TITLE	SIGNING AUTHORITY
1.0	WORKS SAFELY	
2.0	INTERPERSONAL AND COMMUNICATION SKILLS	
3.0	GATHERS, CHECKS AND INTERPRETS DATA AND DOCUMENTATION	
4.0	MAINTAINS PRODUCTION ENVIRONMENTAL STANDARDS	
5.0	PERFORMS PROCESS SET UP	
6.0	MAINTAINS PRODUCTION QUALITY	

NOTE ON SHADED PERFORMANCE OBJECTIVES AND SKILLS:

- Shaded performance objectives and skill sets are optional. The shaded skills do not have to be demonstrated or signed-off for completion of the on-the-job component of the apprenticeship
- The learning outcomes will cover all of the skill sets, both shaded and unshaded

LEARNING OUTCOMES COMPLETION FORM

Date of Completion	Organization Name(s)	SIGNING AUTHORITY

MICRO ELECTRONICS MANUFACTURER

APPRENTICE COMPLETION FORM

APPRENTICE NAME	
Print	
Signature	
Client ID	

Skill Sets and Learning Outcomes when completed should be signed by the Supervisor/Trainer and presented with this completion form to your local Apprenticeship Client Services Office. Any supporting documentation should also be attached.

In-school Completed Yes () No () Not applicable ()
(Proof to be provided)

Hours completed as
Per Contract: Yes () No () Not applicable ()

SPONSOR/EMPLOYER INFORMATION	
Name	
Address	
Telephone	
E-mail Address	
Signature of Signing Authority	

You will be required to disclose this signed form to the Ministry of Training, Colleges and Universities in order to complete your program. The Ministry will use your personal information to administer and finance Ontario's apprenticeship training system.

For further information please see the notice/declaration for collection of personal information that is referenced in the table of contents of this training standard.

MICRO ELECTRONICS MANUFACTURER

A. DESCRIPTION/DUTIES

A MICRO ELECTRONICS MANUFACTURER:

- Operates and monitor process equipment including manual, automatic and semi-automatic manufacturing equipment to produce micro-electronic products.
- Sets up process equipment and adhere to clean room procedures.
- Performs some or all the following tasks with the above mentioned process equipment using micro-electronic manufacturing equipment to spin coat, photo align, develop, etch, measure, implant oxides, sputter, print, test, inspect, measure, dice and bake.
- Identifies and mark/record defective products.
- Collects, record and summarize inspection and test results.
- Operates various testing equipment and tools.
- Compares test results to specifications and take action.
- Maintains detailed and complete process result reports.
- Maintains a product tracking system.
- Participates in continuous process improvement programs.

Equipment operation may include:

- | | | |
|---------------------------------------|--------------------------|--------------------|
| • automated/manual inspection | • plasma/track etcher(s) | • developer |
| • automated visual inspection station | • component shaping | • computer |
| • chemical vapour deposition machine | • plating/de-flashing | • bar code |
| • dicing saw - framed wafer wash | • tape and reel | • product shipping |
| • metal sputtering equipment | • etchers | • printer |
| • particle counter | • spin-coaters | • strippers |
| • wire bonders | • die-attachments | • testing |
| • measurement equipment | • wet bench | • sealers |
| • sub micron electronic microscope | • furnaces | • tube |
| • spin rinser/dryer | • ion implant | • probers |
| • pressurized canister feed | • ovens | |

A MICRO ELECTRONICS MANUFACTURER demonstrates knowledge of:

- Safe Working Practices
- Interpersonal and Communication Skills
- Gathering, Confirming and Interpreting Data and Documentation
- Production Environmental Standards
- Process Set Up
- Production Quality

BENCHMARK/GUIDELINE TOTAL TRAINING TIMEFRAMES: (ON-THE-JOB AND OFF-THE-JOB):

4000 hours

Includes 304 hours of in-school training.

B. ON-THE-JOB PERFORMANCE OBJECTIVES

1.0 WORKS SAFELY

1.1 Work safely in a production by: following company procedures, wearing, adjusting and maintaining safety protective equipment, referencing the Occupational Health and Safety Act, and by working around various types of operating and stationary equipment.

_____ Date Completed	_____ Apprentice	_____ Supervisor/Trainer
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1.2 Identify, ensure proper labelling and handle hazardous materials and store or dispose of same by following government and company regularities and procedures.

_____ Date Completed	_____ Apprentice	_____ Supervisor/Trainer
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1.3 Maintain a clean and safe work station(s).

_____ Date Completed	_____ Apprentice	_____ Supervisor/Trainer
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MICRO ELECTRONICS MANUFACTURER

2.0 INTERPERSONAL AND COMMUNICATION SKILLS

- 2.1 Demonstrate teamwork skills (inter-personal skills, problem solving and conflict resolutions skills etc.) in the development and maintenance of an effective teamwork concept in the workplace.

Date Completed

Apprentice

Supervisor/Trainer

- 2.2 Ensure customer satisfaction (internal/external)

Date Completed

Apprentice

Supervisor/Trainer

MICRO ELECTRONICS MANUFACTURER

3.0 GATHERS, CHECKS AND INTERPRETS DATA AND DOCUMENTATION

- 3.1 Use computer skills to enter/access data, load/download data and summarize data in the performance of job responsibilities.

Date Completed

Apprentice

Supervisor/Trainer

- 3.2 Gather and interpret data (charts, graphs, technical information) and apply statistical analysis to ensure control and improvement of process(s).

Date Completed

Apprentice

Supervisor/Trainer

- 3.3 Confirm/check production schedule documentation.

Date Completed

Apprentice

Supervisor/Trainer

- 3.4 Confirm standard operating procedure to ensure required job preparation including verification of revisions, prints and schematics, and engineering change orders.

Date Completed

Apprentice

Supervisor/Trainer

MICRO ELECTRONICS MANUFACTURER

4.0 MAINTAINS PRODUCTION ENVIRONMENTAL STANDARDS

- 4.1 Wear appropriate clean room clothing to prevent contamination of product. Practice personal hygiene for a given class of clean room to prevent contamination of product. Control movement in a clean room to avoid turbulence and contamination of products as adhere to clean room procedures to prevent contamination of product.

Date Completed

Apprentice

Supervisor/Trainer

- 4.2 Handle product by observing standard operating procedure.

Date Completed

Apprentice

Supervisor/Trainer

- 4.3 Ensure optimum production conditions by monitoring environmental conditions (temperature, humidity, etc.) and reporting any abnormalities to appropriate personnel.

Date Completed

Apprentice

Supervisor/Trainer

MICRO ELECTRONICS MANUFACTURER

5.0 PERFORMS PROCESS SET UP

5.1 Ensure availability of equipment, tools and supplies prior to setting up to the process.

Date Completed

Apprentice

Supervisor/Trainer

5.2 Confirm standard parameters set-up by referencing required documentation.

Date Completed

Apprentice

Supervisor/Trainer

5.3 Confirm standard operating procedures to ensure required process set-up including verification of revisions, prints and schematics, and engineering change orders.

Date Completed

Apprentice

Supervisor/Trainer

5.4 Set up materials and equipment and load required software to ensure that standard process procedures are in place.

Date Completed

Apprentice

Supervisor/Trainer

MICRO ELECTRONICS MANUFACTURER

6.0 MAINTAINS PRODUCTION QUALITY

- 6.1 Perform standard verification run to confirm standard operating procedures, the run shall include testing (e.g. electro, mechanical etc.), and take corrective action for off standard product/equipment.

Date Completed

Apprentice

Supervisor/Trainer

- 6.2 Load product following standard operating procedures.

Date Completed

Apprentice

Supervisor/Trainer

- 6.3 Demonstrate an understanding of product flow(s) and the relation(s) to finished product.

Date Completed

Apprentice

Supervisor/Trainer

- 6.4 Monitor process and take appropriate action for off-standard conditions.

Date Completed

Apprentice

Supervisor/Trainer

- 6.5 Troubleshoot malfunctioning equipment and/or off-standard product/process/ materials and take appropriate action (e.g. shut down process and record and/or report to appropriate).

Date Completed

Apprentice

Supervisor/Trainer

- 6.6 Ensure process returned to normal operating standard.

Date Completed

Apprentice

Supervisor/Trainer

MICRO ELECTRONICS MANUFACTURER

- 6.7 Resume process operations and ensure that, standard operating procedure are implemented.

Date Completed

Apprentice

Supervisor/Trainer

- 6.8 Inspect and/or test product and rework, touch up, dispose of "out of spec" product and/or forward product to next stage and follow standard operating procedures.

Date Completed

Apprentice

Supervisor/Trainer

C. LEARNING OUTCOMES

1. Quality System Regulations I

By the completion of the course, apprentices will demonstrate knowledge of quality systems (such as ISO 9000 & ISO13485) & regulatory standards used in manufacturing environments, as well as expectations for apprentices working in a regulated industry.

- Describe the need for document controls in the manufacturing industry and the significance of accurate record keeping practices, so they can model desired behaviours.
- Describe the purpose of quality certifications and audits as well as their role and responsibility and apply when participating in quality audit activities, and identify and apply the maintenance of these standards everyday.

2. Quality Systems Regulations II

By the completion of the course, apprentices will demonstrate knowledge of production and process controls, as well as monitoring and feedback activities that are necessary to their work.

- Identify the significance of production and process controls, inspection activities, diverse measurement techniques and test equipment used in manufacturing, and apply the steps involved in process validation, enabling them to improve their effectiveness with these tasks.
- Identify and determine exception reporting for nonconforming product as well as corrective and preventative actions for the entire CAPA system enabling them to execute related tasks effectively.

3. Quality Systems Regulations III

Upon completion of the course, apprentices will demonstrate knowledge of design controls, acceptance activities and material/product controls that can be applied on the job.

- Describe the steps involved in the design control process and how R&D transfers design into manufacturing requirements.
- Describe the scope of identification and traceability activities as well as statistical control techniques used in in-coming, in-process and final testing.
- Identify the types and uses of material and product control including packaging, handling, storage and distribution.

4. Basic Applied Statistical Analysis for Process Improvement

Upon completion of this course, apprentices will demonstrate knowledge of basic statistical analysis tools and techniques for extracting information from collected data to aid in problem solving and decision-making

C. Learning Outcomes continued:

5. Introduction to Measurement System Assessment/metrology

By the completion of the course, apprentices will identify and determine the basic tools and techniques for understanding the capability of measurement systems and apply to identify and eliminate sources of measurement system variation.

6. Manufacturing Operations Design and Technology

Upon completion of the course, apprentices will identify and determine how decisions are made relative to process types and design; process layout and flow; process technology as well as job design and work organization, to support changes in their work environment.

7. Manufacturing Planning and Control

By the end of this course, apprentices will identify the fundamentals of capacity planning, inventory planning and management, supply chain activities and MES and apply and communicate this knowledge and with various support groups

8. Machine Set-up/Job Planning and Preparation

Upon completion of this course, apprentices will identify and determine critical overall considerations involved in the planning, preparation and trouble-shooting problems in an automated production job.

9. Improvement Tools and Techniques for Manufacturing I

Upon completion of this course, apprentices will demonstrate knowledge of highly regarded processes and tools employed for improving manufacturing success and identify and apply to recognize opportunities and recommend possible improvement actions. Apprentices will demonstrate knowledge of:

Six Sigma

- Process improvement through eliminating defects
- Key concepts: Critical to quality, defect, process capability, variation, stable operations, design for six sigma
- DMAIC (Define, Measure, Analyze, Improve, Control)
- 5 Why's

C. Learning Outcomes continued:

LEAN

- Reduction of waste to improve overall customer value
- Implementing ‘flow’ of work to eliminate work
- Principles: pull processing, perfect first-time quality, waste minimization, continuous improvement, flexibility, building and maintaining supplier relations, automation, load leveling and production flow, visual control

Five S’s

- Standardized methodology for clean-up: sort, straighten, shine, systemize, sustain
- Relationship to LEAN and JIT (just in

10. Improvement Tools and Techniques for Manufacturing II

Upon completion of this course, apprentices will demonstrate knowledge of highly regarded processes and tools employed for improving manufacturing success to be able to recognize opportunities and recommend possible improvement actions. Apprentices will demonstrate knowledge of:

Kaisen

- Continuous improvement
- Eliminate waste
- Just-in-time delivery
- Humanizing workplace

FMEA (Failure Mode and Effects Analysis)

- Method to examine potential failures in products or processes used to evaluate risk management priorities
- Selecting remedial actions to reduce cumulative impacts of life-cycle risks from system failure
- Listing consequences if each part fails, then evaluating associated risk

Poke Yoke

- Mistake proofing through behavior shaping
- Establishing limits on how tasks can be performed

TOC (Theory of Constraints)

- Management philosophy to continually achieve more of the goal of the system
- Internal resource constraints, market constraints, policy constraints
- Five focusing steps
- TOC thinking tools

C. Learning Outcomes continued:

TQM (Total Quality Management)

- Management strategy to embed awareness of quality in all organization processes
- Quality assurance through statistical methods – random sampling
- Isolating causes of failures and correcting

11. Measuring Manufacturing Performance and Interpreting Financial Results

Upon completion of this course, apprentices will demonstrate knowledge of measuring performance, significance of various dashboard metrics including yields, manufacturing costs, and efficiency measures, and identify and apply actions to positively effect performance results. Apprentices will also demonstrate knowledge of business drivers, terms used to communicate business performance, and insight to financial reports.

12. Adapting to Change

Upon completion of this course, apprentices will identify and apply skills to prepare them for the changes they will experience in their work responsibilities, environments and teams by demonstrating knowledge of the change process and applying time and stress management strategies to cope positively with change.

13. Environmental Health and Safety I

At completion of the course, apprentices will describe and contribute to a safe and responsible work environment and demonstrate knowledge of their responsibilities and legislation relating to health and safety and the environment.

- Ontario Occupational Health and Safety Act:
- Regulations for Industrial Establishments
- Workplace Hazardous Materials Information System

14. Environmental Health and Safety II

Upon completion of the course, apprentices describe and contribute to a safe and responsible work environment and demonstrate knowledge of their responsibilities and legislation relating to health and safety and the environment.

- Environmental Legislation:
- Ontario Environmental Protection Act Waste Management and Airborne Contaminant Discharge Monitoring and Reporting regulations

15. Communications

By the completion of this course, students will identify and apply skills to overcome barriers to good communication. Apprentices will demonstrate how to get their message across clearly and precisely, without misunderstandings, apply communication skills in: active listening, speaking, questioning, giving feedback, interviewing, writing, and conducting meetings.

C. Learning Outcomes continued:

16. Teamwork and Conflict Resolution

Upon completion of this course, apprentices will identify key expectations for working productively with others and the behaviors that are critical in a team environment. Apprentices will identify and apply conflict resolution, negotiating skills, dealing with difficult situations, and creative problem solving.

17. Point of Care Testing Customers

Upon completion of the course, apprentices will demonstrate knowledge of care industry, market and target customers and identify from a customer's perspective the advantages, disadvantages, risks and challenges of point of care testing.

18. Product Concept & Manufacturing

By the completion of the course, apprentices will identify and describe the various activities involved in the research and development phase, as well as the many actions associated with the acquisition of materials, manufacture, testing and storage of product.

19. Test Platforms

Upon completion of the course apprentices will demonstrate knowledge of how the i-STAT works, and identify what tests the various cartridges perform and for which symptoms or conditions. They will demonstrate knowledge of the need of the range degree of sensitivity, of correlation completion at the customer site, and how the central data system collects information from the analyzer.

MICRO ELECTRONICS MANUFACTURER

APPRENTICE RECORD

APPRENTICE NAME (Print):

SPONSOR/EMPLOYER INFORMATION	
Training Agreement #	
Name	
Address	
Telephone	
E-mail Address	

SUMMARY OF TRAINING	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	

Date Completed

Apprentice

Supervisor/Trainer

MICRO ELECTRONICS MANUFACTURER

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