

MICRO-COMPUTER REPAIR TECHNICIAN

APPENDIX A

O*NET CODE 49-2011.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	Approximate Hours
A. Basic Repair Skills	100
1. Soldering/desoldering techniques	
a. Desoldering – single sided boards, double sided boards, multi-layered boards, surface mount components, RF Shields/heat sinks	
b. Soldering – single sided, double sided, multi-layered, surface mount components, wire splices, cable connectors	
c. Miscellaneous – solder types, solder temperatures, circuit board repairs	
2. Safety procedures	
a. High voltage	
b. Electro-static	
3. Tools and Equipment	
a. Basic knowledge of hand tools	
b. Basic knowledge of power tools	
B. Theory of Operation	160
1. CPU's – Microprocessor, ROM, RAM, Buffering, Input-Output	
2. Keyboards	
3. Monitors – Monochrome, color/graphics, enhanced color/graphics, video graphics array, projection panels and projectors	
4. Diskette drives – 5.25" 360KB, 5.25" 1.2 MB, 3.5" 720 KB, 3.5" 1.44 MB	
5. Fixed disks – internal, external, removable	

- 6. CD-ROM drives – internal compact disc, external compact disc
 - 7. Tape Backups – internal tape drives, external tape drives
 - 8. Printers – DOT Matrix Daisy Wheel, Thermal, Ink Jet, Impact, Laser
 - 9. Local networks
- C. Diagnostics: Various models of at least two brands of micro-computers** **400**
- D. Test Equipment** **100**
- 1. Multimeter
 - a. Analog
 - b. Digital
 - 2. Transistor tester
 - 3. Capacitor tester
 - 4. Frequency counter
 - 5. Oscilloscope
 - 6. Fluke 9010A
 - 7. Diagnostic ROM cards
 - 8. Miscellaneous Testing Hardware
 - a. Wrap plugs, SCSI test boards, Busmaster test boards, light meter, laser power meter
- E. Preventive Maintenance** **700**
- 1. On at least two brands of micro-computers; CPU's Disk drives, Keyboards, Monitors, Fixed discs, Networks
 - 2. On various types of printers made by at least two different manufacturers
 - 3. Card Readers
 - 4. Tape Backup Units
 - 5. CD-ROM drives
- F. Field Service & Installation** **1,000**
- 1. Customer Relations
 - 2. Operational check of equipment
 - 3. Minor repairs
 - 4. Transport of major repairs

- a. Lab
 - i. Computers
 - ii. fixed disks
 - iii. monitors
 - iv. printers
 - v. keyboards
 - vi. networks
 - vii. diskette drives
- 5. Installation
 - a. All systems

G. Trouble Shooting and Repair 4,000

- 1. Computers (at least two different brands)
- 2. Monitors (at least two different brands)
- 3. Keyboards (at least two different brands)
- 4. Diskette drives (at least two different brands)
- 5. Fixed disk (at least two different brands)
- 6. Miscellaneous Tape Backup Drives
- 7. Printers (at least two different brands)
- 8. Networks (at least two different brands)

H. Inventory 100

- 1. Inventory and control
 - a. Parts, tools and test equipment, supplies

I. Procurement 80

- 1. Parts
 - a. New
 - b. Exchange
- 2. Tools
 - a. Contract
 - b. Non-contract
- 3. Supplies
 - a. Contract
 - b. Non-contract

J. Commercial Software Packages **1,200**

1. Operating systems
2. Word processors
3. Spread sheets
4. Data bases
5. Desk top publishing
6. CAD/CAM software
7. Graphic software
8. Network operating systems

K. Service Manuals **160**

1. Procurement
2. Updating
3. Maintenance of library

Approximate Total Hours **8,000**

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://dol.ny.gov/public-work-and-prevailing-wage>.

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APPENDIX B

RELATED INSTRUCTION

Safety

1. Basic Job Safety (50 hours)
2. Standard First Aid – minimum 6.5 hours every 3 years
3. CPR – annually
4. OSHA Regulations
5. Sexual Harassment Prevention Training – MUST comply with Section 201-g of the Labor Law

Math for the Workplace (100 hours)

1. Basic Algebra Review (including Boolean)
2. Problem Solving
3. Physics
4. Financial
5. Statistics
6. Graphs
7. Budget Management

Software Applications (226 hours)

(These should be current and state of the art. Including the following categories)

1. Operating Systems
 - a. Disk Operated
 - b. Network Operated
2. Word Processing
3. Data Base Management
4. Desktop Publishing
5. Spreadsheets
6. CAD
7. Graphics (presentation, mapping, graphing)

Hardware Related (125 hours)

1. Preventative Maintenance and Troubleshooting
2. Maintaining PC Equipment

3. Manufacturer Certification Courses

Human Relations/Effective Communications (72 hours)

1. Identifying and dealing with different personality types
2. How perceptions influence behavior
3. What motivates people
4. Effective verbal, written and listening skills
5. Typical language problems
6. Team Work
7. Customer Relations

A Minimum of 144 Hours of Related Instruction are Required for Each Apprentice for Each Year.

Appendix B topics are approved by New York State Education Department.