BULLETIN 99 - 10 **Date: April 19, 1999**

U.S. Department of Labor Employment and Training Administration Office of Apprenticeship Training, Employer and Labor Services (OATELS) Washington, D.C. 20210	Distribution: A-541Headquarters A-546 All Field Tech A-547 SAC; Lab. Com	Subject: New Apprenticeable Occupation-- Production Technologist Code: 200
Symbols: DNIP/FK		Action: Immediate

PURPOSE: To inform Office of Apprenticeship Training, Employer and Labor Services (OATELS) Bureau of Apprenticeship and Training (BAT) Staff of a new apprenticeable occupation.

Production Technologist
O*NET Code: 51-2092.00
RAIS Code: 1027 CB
Training Term: Competency - based
Type of Training: Competency - based

BACKGROUND: The request for the apprenticeability of this occupation was submitted by Kenneth Edwards, Director of Research and Technical Services-IBEW, on behalf of both Lucent Technologies and the IBEW. The occupation was officially recognized as apprenticeable December 1997, but a bulletin was never issued. This occupation will be added to the Bureau's list of recognized apprenticeable occupations.

AA production technologist is a member of a self-managed work team that is responsible for planning, coordinating and performing work in fabricating, assembling, testing, inspecting and repairing electronic products, systems, subassemblies, components or parts. The production technologist also is responsible for performing routine equipment adjustment and maintenance, training and developing workers, and ensuring that the production process meets business and regulatory requirements.

The production technologist training program is competency based. A suggested work process schedule and outline of related instruction is attached.

On April 7, 1999, Lucent Technologies and the IBEW formally signed National Apprenticeship Standards for the Production Technologist for the eight Product Realization Centers located throughout the U. S. that will be participating in this training. This program was developed by DNIP staff and will be serviced nationally. A Bulletin will be issued separately on those National Apprenticeship Standards.

ACTION:
Note: State Directors, please share this information with our SAC partners where appropriate.

Attachment

WORK PROCESSES SCHEDULE
PRODUCTION TECHNOLOGIST
O*NET Code: 51-2092.00 RAIS Code: 1027 CB

ON-THE-JOB TRAINING

This is a performance based apprenticeship program premised on competencies demonstrated in lieu of time considerations. The apprenticeship is composed of sixteen sets of competencies called Units. The time permitted to succeed at any given unit is six months. The Apprentice, at their discretion, may test out of the Units at a pace faster than the scheduled pace. To complete and be certified in a Unit, the apprentice must succeed at the validated competency tests designed for that set of objectives and complete the on the job training.

On-the-Job Training Experience

1. Manufacturing Control Systems:
   Troubleshoot and improve manufacturing systems; plan and manage production schedules

2. Introduction to DC Electronics:
   Read and interpret schematics; measure DC electrical values with appropriate instrumentation; troubleshoot DC circuits and related components; manual soldering.

3. Introduction to AC Electronics:
   Read and interpret schematics, measure AC/DC values with appropriate instrumentation; troubleshoot common AC and DC circuits and related components; micro-miniature soldering.

4. Semiconductor Devices and Applications:
   Read/interpret schematics; troubleshoot semiconductors and sub-circuits; measure input/output values with appropriate instrumentation.

5. Digital Devices and Circuitry:
   Read/interpret schematics; troubleshoot digital devices related support circuitry; measure input/output values and logic states using appropriate instrumentation.

6. Industrial/Solid State Controls & Systems:
   Read/interpret schematics; troubleshoot industrial control circuits; measure input/output values and logic states using appropriate instrumentation; troubleshoot related devices such as power distribution devices, pilot devices, industrial timers, industrial sensors, and electrical motors.

7. Microprocessors.
   Read/interpret schematics; troubleshoot microprocessors and interfaces including supporting subsystems; measure input/output values and logic states using appropriate instrumentation.

8. Wireless Communication:
   Read/interpret schematics, troubleshoot RF devices and circuits; measure input/output values and logic states using appropriate instruments.

9. Blueprint Reading for Manufacturing:
   Read and interpret engineering drawings, geometric dimensioned and toleranced drawings, fluid power symbology and manuals for equipment and systems.

10. Introduction to Mechanical Systems:
    Read and interpret catalogs and published data; plan, schedule, and perform routine maintenance of equipment/systems; perform routine troubleshooting; measure performance of system with appropriate instrumentation.

11. Introduction to Surface Mount Technology:
    Setup and operate automated component placement equipment; operate electrostatic discharge control system; operate statistical process control system

12. Surface Mount Technology 2:
    Setup and operate automated packaging equipment, screen printing processes, automated soldering processes automated curing or heat processes; assist in surface development/deployment of surface mount production cell and cycle-time reduction process.

13. Industrial Data Processing:
    Identify information technology applications; use hardware system software, application software, and data files in a manufacturing information system.

14. Industrial Quality Control:
    Apply data collection and statistical analysis methods for quality control; participate in operation of quality control system using SPC methods.

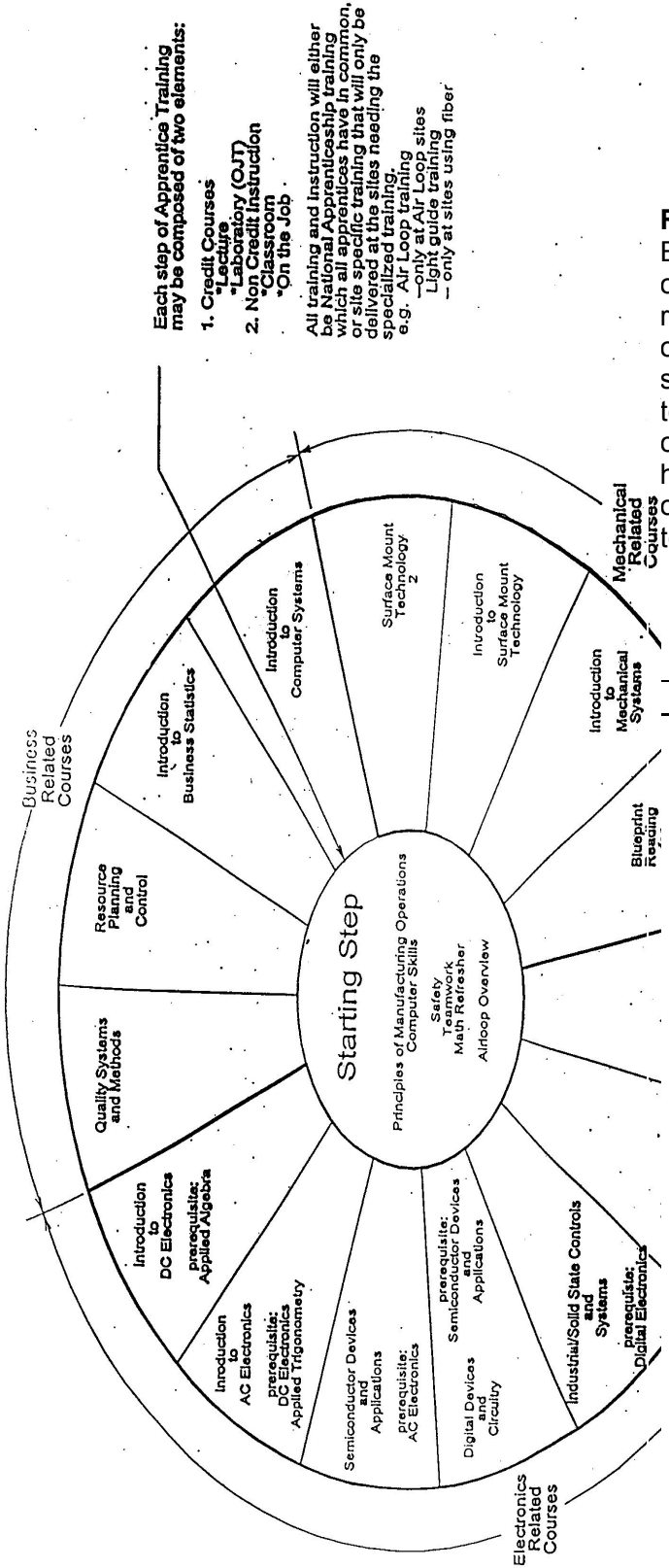
15. Total Quality Control:
    Apply requirements of IS09000 to the processes and procedures of the P.C.; participate in development and use of continuous improvement plans and total quality systems; assist in managing the performance of the P.C..

16. LAN Technology and Automated Data Collection
    Install computer systems and support and troubleshoot factory network; attach and manage on-line devices for data collection, telemetry, and control; connect LAN to larger LAN and WAN environment.

ATTACHMENT B

RELATED INSTRUCTION OUTLINE

PRODUCTION TECHNOLOGIST
726.261-560



PRODUCTION TECHNOLOGIST

Related and Supplementary Training - credit courses

Each apprentice shall be required to undertake a minimum of one set of job competencies every six months. The apprentice shall be required to pursue the related instruction offered for the selected set of job competencies. Or, at the apprentice's election, test out of the selected job competencies. Having selected a set of competencies to pursue, the apprentice must successfully complete the competency testing by the end of six months or be considered to have consumed one testing opportunity. Only two successive testing opportunities are allowed. Failure to succeed within two successive testing opportunities eliminates the apprentice from the program.

Electrical/Electronics Technology	**Clock Hrs.**	**Credit Hrs.**
Introduction to DC Electronics	45	3
Introduction to AC Electronics	45	3
Semiconductor Devices and Applications	45	3
Digital Devices and Circuitry	45	3
Industrial/Solid State Controls & Systems	45	3
Microprocessors	45	3
Wireless Communications	45	3
Subtotal	315	

Mechanical Technology		**Credit**
Blueprint Reading for Manufacturing	45	3

Introduction to Mechanical Systems	45	3
Subtotal	90	6

Manufacturing Technology		**Credit Hrs.**
Introduction to Surface Mount Technology	45	3
Surface Mount Technology 2	45	3
Subtotal	90	6

Business/Information Management		**Credit Hrs.**
Introduction to Computer Systems	45	3
Introduction to Business Statistics	45	3
Resource Planning and Control	45	3
Quality Systems and Methods	45	3
Principles of Manufacturing Operations	45	3
Subtotal	**225**	**15**

Apprentice Related & Supplementary Training Total 720 Hrs. 48 Cr. Hrs.

Non-Credit Courses		Clock Hrs.	Credit Hrs.
Computer Skills		15	
Teamwork		12	
Math Refresher		20	
Manual Soldering		12	
Lead Awareness		8	
Micro-Miniature Soldering		6	
Safety		20	
Communication Skills		8	
Conflict Resolution		8	
Effective Meetings		8	
Problem Solving-		12	
Statistical Process Control		12	
ISO 9000		12	
Supplier Certification		12	
Cycle-Time Reduction		12	
Leadership		8	
Customer Service		8	
Teamwork and Trust		8	
Diversity		12	
	Subtotal	**213**	

National Production Technologist Apprenticeship Program

Electronics Block

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Introduction to DC Electronics	3		Manual Soldering	12				
			Lead Awareness	8				
Total Hours	45		Total Hours	20		Total Hours		
						Grand Total Classroom Total Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training.
In a six month period using 40 hour work weeks approximately 1000 hours is available for apprenticeship training.

National Production Apprenticeship Program
First Training Block

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
			Computer Skills	15		Local Product Overview	16	
Principles of Manufacturing Operations	3	45	Teamwork	12				
			Math Refresher	20				
Total Hours	4	45	Total Hours	47		Total Hours	16	
						Grand Total Classroom and Laboratory Hours	108	

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Using the figures above as typical, 884 On the Job Training hours are available.

National Production Technologist Apprenticeship Program

Core Credit Classes	Credit Hours	OJT	Core Non-Credit Classes	Clock Hours	OJT	Site Specific Training	Hours	OJT
Introduction to AC Electronics	3		Micro-Miniature Soldering	6				
Total Hours	45		Total Hours	6		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Semiconductor Devices and Applications	3		Safety	20				
Total Hours	45		Total Hours	20		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Industrial/Solid State Controls & Systems	3		Conflict Resolution	8				
Total Hours	45		Total Hours	8		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Digital Devices and Circuitry	3		Communication Skills	8				
Total Hours	45		Total Hours	8		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	Credit Hours	OJT	Core Non-Credit Classes	Clock Hours	OJT	Site Specific Training	Hours	OJT
Wireless Communications	3		Problem-Solving	12				
Total Hours	45		Total Hours	12		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	Credit Hours	OJT	Core Non-Credit Classes	Clock Hours	OJT	Site Specific Training	Hours	OJT
Microprocessors	3		Effective Meetings	8				
Total Hours	45		Total Hours	8		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Blueprint Reading for Manufacturing	3		Statistical Process Control	12				
Total Hours	45		Total Hours	12		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training.
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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Introduction to Mechanical Systems	3		ISO 9000	12				
Total Hours	45		Total Hours	12		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training.
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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Surface Mount Technology 2	3		Cycle-Time Reduction	12				
Total Hours	45		Total Hours	12		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training.
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National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Introduction to Surface Mount Technology	3		Supplier Certification	12				
Total Hours	45		Total Hours	12		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training. In a six month period using 40 hour work weeks approximately 1000 hours is available for apprenticeship training.

National Production Technologist Apprenticeship Program

Core Credit Classes	Credit Hours	OJT	Core Non-Credit Classes	Clock Hours	OJT	Site Specific Training	Hours	OJT
Introduction to Computer Systems	3		Leadership	8				
Total Hours	45		Total Hours	8		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training. In a six month period using 40 hour work weeks approximately 1000 hours is available for apprenticeship training.

National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Introduction to Business Statistics	3		Customer Service	8				
Total Hours	45		Total Hours	8		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training.
In a six month period using 40 hour work weeks approximately 1000 hours is available for apprenticeship training.

National Production Technologist Apprenticeship Program

Core Credit Classes	**Credit Hours**	**OJT**	**Core Non-Credit Classes**	**Clock Hours**	**OJT**	**Site Specific Training**	**Hours**	**OJT**
Quality Systems and Methods	3		Diversity	12				
Total Hours	45		Total Hours	12		Total Hours		
						Grand Total Classroom and Laboratory Hours		

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National Production Technologist Apprenticeship Program

Core Credit Classes	Credit Hours	OJT	Core Non-Credit Classes	Clock Hours	OJT	Site Specific Training	Hours	OJT
Resource Planning and Control	3		Teamwork and Trust	8				
Total Hours	45		Total Hours	8		Total Hours		
						Grand Total Classroom and Laboratory Hours		

All time spent working as an apprentice pursuing advancement of job skills can be shown as On the Job Training. In a six month period using 40 hour work weeks approximately 1000 hours is available for apprenticeship training.