City College of San Francisco

California Resource Center
For Occupational Program Design and Evaluation

CURRICULUM PLAN (DACUM Phase II)

For Facilities Technician
Produced for City College of San Jose

Panel Members:

Joseph P. Allan, HVAC Supervisor, Sun Microsystems/Johnson Controls
Robert Fritch, Manager, Facility/Plant Maintenance, Tyco Electronics
John Hawk, Assistant Safety Coordinator, San Jose State University
Jerry Kissinger, Workforce Development Manager, Intel
Simon L. Martin, Chemical Systems Manager, Intel
Ted Santos, Facilities Coordinator (Retired), San Jose State University
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David Struck, Sales Engineer, Chevron Energy Solutions
Kieron Connolly, Instructor, City College of San Jose

Date: March 12, 2002

Location: San Jose City College

Facilitators: Kristin Hershbell and Rodney Santos, California Resource Center
# SUGGESTED SEQUENCE OF PROGRAM OF STUDY

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<th>Course</th>
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<td>B. Electrical</td>
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<td>C. HVAC</td>
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<td>D. Pumps, Plumbing &amp; Piping Systems</td>
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<td>E. Basic Electronics</td>
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<td>F. Automation Systems</td>
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<td>G. Environmental Health &amp; Safety</td>
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<td>H. Fire/Life Safety</td>
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<td><strong>Total</strong></td>
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PREREQUISITES

English
Writing skills
English proficient

Math
Math skills
Basic math skills
Advanced math

Engineering Science
Physics
Basic Chemistry

Basic Computer Skills
Computer skills

Tool Knowledge
Tool knowledge
Keep tool in proper working order
Mechanical aptitude
INSTRUCTIONAL UNITS WITH MAJOR LEARNING OUTCOMES

Facility Systems – 4 Units
K/S Site orientation
K/S Blueprint reading
K/S Basic construction knowledge
E2 Troubleshoot rooftop system
F4 Complete task notification
F5 Follow-up on work order
F1 Determine nature of concerns
F3 Update job status
K/S Customer service oriented
F2 Ascertain job scope
   Business ethics
K/S Communication skills
D11 Service compressed air system
*1A Inspect compressed air equipment
K/S Compressed air theory
G10 Repair compressed air system
D7 Clean cooling towers
G2 Replace fan motors
D4 Lubricate equipment
K/S Warranty issues
D3 Replace drive belts
*2A Inspect water treatment systems
C8 Service pneumatic systems
E7 Troubleshoot distilled water systems
D8 Maintain water treatment
   Inspect emergency systems
C7 Service air systems
   Service water systems

Electrical – 6 Units
K/S Blueprint reading
K/S Electrical theory
K/S Electrical components
G5 Repair/replace lighting components
E4 Locate electrical system failures
D5 Relamp lighting systems
*A5 Inspect emergency generator
**HVAC – 6 Units**
K/S Blueprint reading
C5 Monitoring air quality
   Set zone temperature
C3 Control building pressure
C6 Service water systems
   Service air systems
D6 Clean chiller tubes
E5 Troubleshoot chiller systems failures
G4 Replace/repair refrigerant compressors
E6 Troubleshoot condensate system failure
E3 Troubleshoot airflow system
D2 Replace air filters
* A7 Inspect high-pressure boilers
* A6 Inspect heating boilers
* A4 Inspect air handling equipment
* A3 Inspect mechanical coolant equipment
   Troubleshoot roof top system
K/S Fan laws (basic/applied)
   Fluid dynamics
G8 Repair/replace air conditioning units
K/S Psychometrics (basic/applied)
K/S Air flow theory (basic)
   Wielding

**Pumps, Plumbing & Piping Systems – 4 Units**
D10 Test backflow preventors
E8 Troubleshoot steam distribution system
G6 Repair plumbing
G7 Repair heat exchangers
G9 Repair steam distribution system
K/S Plumbing components
K/S Backflow preventors
K/S Fundamental operations of brazing/welding
G3 Repair pumps
   Pump laws
K/S Blueprint reading

**Basic Electronics – 4 Units**
K/S Electrical components
K/S Electrical theory
**Automation Systems – 2 Units**
G1  Repair pneumatic electronic control
E1  Troubleshoot energy management system
    Monitor air quality
C4  Set zone temperature
    Control building pressure
C2  Monitor central plant
C1  Monitor energy management system

**Environmental Health & Safety – 4 Units**
B1  Attend hazardous materials training
B2  Assess environmental conditions
B3  Identify hazardous conditions
B4  Handle hazardous material
B6  Lockout/tagout systems
    Monitor air quality
K/S Risk management
K/S Liability issues
    MSDS
    Rigging
    Personal protective equipment

**Fire/Life Safety – 3 Units**
K/S Standard first aid & CPR
D9  Test valves, emergency fire pumps, generators
D1  Test fire alarm system (horns & strobes)
B10 Check safety showers and eye washers
B9  Check and refill first aid stations
B7  Check & maintain life safety equipment
B8  Check fire extinguishers