

DACUM Research Chart for Electromechanical Technology Program

DACUM Panel

John Aden
Owner
Aden Engineering
Pleasant Dale NE

Terry Andre
Maintenance Technician
Pfizer Global Manufacturing
Lincoln NE

Alan Benes
Maintenance Supervisor
Square D Company
Lincoln NE

John Edson
Maintenance Trainer
Lozier Corporation
Omaha NE

Allen Fangmeyer
Maintenance Technician
Hamilton Sandstrand
York NE

Steven Max
Substation Technician I
Nebraska Public District I
Ogallala NE

Randy Parde
Training Specialist
3M Corporation
Valley NE

DACUM Facilitators

John Pierce
Ron Snyder

Produced for



**Beatrice, NE
Lincoln, NE
Milford, NE**

www.southeast.edu

August 6-7, 2007

DACUM Research Chart for Electromechanical Techn

Duties		←			
A B C D E F	Repair Equipment →	A1 Repair Equipment	A2 Identify repair need(s)	A3 Troubleshoot equipment	A4 Acquire replacement parts, i.e. purchase, fabricate
	Perform Preventative/Predicted Maintenance →	B1 Create a preventative maintenance procedure	B2 Schedule preventative maintenance	B3 Execute preventative procedures	B4 Modify preventative maintenance procedures
	Install Equipment →	C1 Research equipment requirements, i.e. utilities, sq. footage, weight, lay-out	C2 Prepare installation site	C3 Schedule installation	C4 Acquire installation materials
	Rebuild/Retrofit Equipment →	D1 Define Project scope	D2 Perform design work	D3 Acquire rebuild materials, i.e. parts, supplies	D4 Organize project
	Verify Equipment Performance →	E1 Acquire baseline data	E2 Perform pre-start up inspection	E3 Perform start up and shut down procedures	E4 Dry-cycle equipment
	Enhance Professional Skills →	F1 Identify training needs, i.e. deficiencies, certifications, personal interests	F2 ID training options, i.e. on-the-job training, factory, manuals	F3 Select training options	F4 Complete training activity

What is DACUM (Developing A Curriculum)? DACUM is a relatively new and innovative approach to occupational analysis for persons employed in a given job or occupational area.

The profile chart that results from the DACUM analysis is a detailed and graphic portrayal of the skills or competencies training needs assessments, (4) worker performance evaluations, (5) competency test development, (6) meeting ADA

DACUM has been successfully used to analyze occupations at the professional, managerial, technical, skilled, and semi-skilled. Any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform in order to perform the tasks correctly.

A carefully chosen group of about 6-8 experts from the occupational area form the DACUM committee. Committee members develop the DACUM chart. Modified small-group brainstorming techniques are used to obtain the collective expertise of the committee.

ology Program

TASKS

A5 Replace parts	A6 Train machine operator, i.e. set-up, procedure, sequence	A7 Correct process, i.e. raw materials, environment, tooling	A8 Perform machine adjustments	A9 Verify repair	A10 Clean-up repair environment	A11 Return to production	A12 Document repair
B5 Complete preventative maintenance documentation							
C5 Position equipment	C6 Connect utilities	C7 Integrate auxiliary equipment	C8 Proceed to verify equipment performance				
D5 Perform tear down	D6 Evaluate components	D7 Perform modifications	D8 Re-assemble equipment	D9 Verify function of rebuild/retro fit	D10 Return to production	D11 Update documentation i.e., p.m's., parts, prints, work orders	
E5 Perform qualification process	E6 Release to production	E7 Complete documentation i.e. work order, parts report, billing information					
F5 Apply/evaluate training	F6 Document training	F7 Train colleagues					

is. It has proven to be a very effective method of quickly determining, at a relatively low cost, the competencies or tasks that must be performed b

involved in the occupation being studied. The DACUM analysis can be used as a basis for (1) curriculum development, (2) student learning, (3) requirements, (7) ISO 9000 requirements, etc.

killed levels. DACUM operates on the following three premises: (1) expert workers are better able to describe/define their job than anyone else, (2) form, and (3) all tasks have direct implications for the knowledge and skills, tools and equipment, and worker behaviors that workers must have in

members are recruited directly from business, industry, or the professions. The committee works under the guidance of a facilitator for two days to and consensus of the committee.

Tools, equipment, supplies and materials

- Multi-meter
- Computer
- Ammeter
- Power tools
- Hand tools
- Precision measuring devices
- Temperature probes
- Chart recorder
- Vibration monitors
- Thermal scanner
- High speed camera
- Belt tension meter
- Oscilloscope
- Megger
- Vacuum leak tester
- Fork lift
- Machine jacks and rollers
- Power lift equipment
- Scissor lift
- Boom lift
- Welder
- Torches
- Milling machine
- Machining equipment
- Cutting torch
- Plasma cutter
- Office Equipment
- Power Factor Analyzer
- Programmable logic control
- Phase meter
- Pressure gauge
- Anemometer
- Sound pressure meter
- Light meter
- Ph meter
- Communication radio
- Pagers
- Cell phones
- Oil
- Lubricants
- Chemicals
- Paints
- Welding rod
- Personal protective equipment
- Digital camera
- Durometer meters
- Gauss meters
- Rockwell Hardness machine
- Tachometers
- Solder tools
- Laser alignment equipment
- Abrasives

Future Trends/Concerns

- Continually learning
- Retention
- Recruitment
- Data driven
- Constant improvement
- Increasing complexity
- Constant changing technology
- Increased Safety compliance standards
- Increasing certification requirements
- Increasing to be multi-skilled
- Environmental concerns
- Keep up with old and new technology
- Lack of appreciation
- Language barriers
- More computer skills
- Diversity in the workplace, age, sex, race
- Global economy
- Combining job tasks
- Automation

General knowledge and skills

- Welding
- Communications
- Oral, written, email, foreign language, multi-lingual, sign language
- Computer skills
- Electrical
- Electronics
- Multi-tasking
- Mechanical
- Fluid Power
- Pneumatics
- Hydraulics
- Drafting
- Machining
- Measurement
- Meter use
- Test Equipment
- Troubleshooting
- Chemical knowledge
- Reading
- Math
- Physics
- Hand- tool operation
- Time Management
- Power tool operations
- Safety practices
- Programmable Logic Computer fundamentals
- Motion Control
- Motor control systems
- Electrical Code
- Organizational skills
- Conduit bending
- Soldering and De-Soldering
- OSHA
- Worker ergonomics
- Arc flash
- Lock out/tag out
- Confined space entry
- Fall protection
- EPA
- Industrial controls
- Hearing protection
- PPE
- Permits and Inspections
- Plumbing and fitting
- Paint
- Metal Bending
- Metallurgy

SAMPLE ACROYNMS

- PLC- Programmable Logic Control
- PPE- Personal Protective Equipment
- PM- Preventative Maintenance
- EH&S- Environmental Health and Safety
- OSHA- Occupational Safety Health Act
- NEC- National Electrical Code
- PI C- Production Inventory Control
- HVAC- Heating, ventilation and air conditioning
- ISO- International Standards Organization
- EPA- Environmental Protection Agency
- OJT- On-the-job-training

Worker behaviors

- Flexibility
- Persistent
- Good listener
- Team player
- Positive attitude
- Patient
- Handle stress
- Open minded
- Reliable
- Takes orders well
- Questioning attitude
- Can-do attitude
- Creative
- Alert
- Timeliness
- Ethics
- Consistent
- Diverse
- Loyal
- Honest
- Dedicated
- Housekeeping
- Good hygiene
- Safety conscious
- Respectful
- Professionalism
- Humble
- Logical thinking
- Common sense
- Methodical
- Organized
- Willing to travel