

# DACUM Research Chart for UAS Maintenance Technician

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Duties		Tasks				
<b>A</b>	<b>Comply with UAS (Unmanned Aircraft Systems) Health and Safety Protocols</b>	A-1 Identify UAS health and safety hazards	A-2 Practice UAS risk management	A-3 Utilize UAS personal protective equipment (PPE)	A-4 Handle UAS HAZMAT (e.g., mixing, storage, utilization)	A-5 Dispose of UAS HAZMAT
<b>B</b>	<b>Comply with Foreign Object Elimination (FOE) Policies &amp; Procedures</b>	B-1 Practice FOE housekeeping (e.g., clean as you go)	B-2 Practice FOE zonal awareness	B-3 Employ FOE tool control practices	B-4 Report foreign object debris and damage (FOD/D)	B-5 Execute FOE lost tool procedures
<b>C</b>	<b>Comply with UAS Maintenance Documentation</b>	C-1 Review UAS technical documentation	C-2 Follow UAS technical documentation	C-3 Review UAS maintenance management system (MMS)	C-4 Generate UAS MMS record	C-5 Maintain UAS MMS
<b>D</b>	<b>Perform UAS Ground Control Station (GCS) Maintenance</b>	D-1 Emplace UAS GCS	D-2 Maintain UAS environmental control systems	D-3 Comply with UAS IA protocols	D-4 Configure UAS GCS software/firmware	D-5 Verify UAS network integrity
<b>E</b>	<b>Maintain UAS Datalinks</b>	E-1 Emplace UAS datalinks	E-2 Maintain UAS datalinks software and firmware configuration	E-3 Perform scheduled UAS datalinks maintenance	E-4 Perform unscheduled UAS datalinks maintenance	E-5 Secure UAS datalinks
<b>F</b>	<b>Perform Unmanned Aircraft (UA) Maintenance</b>	F-1 Emplace UA	F-2 Assess UA composite structures	F-3 Repair UA composite structures	F-4 Configure UA payload	F-5 Maintain UA software configuration
<b>G</b>	<b>Manage UAS Ground Support Equipment (GSE)</b>	G-1 Emplace UAS GSE	G-2 Configure UAS GSE	G-3 Perform scheduled UAS GSE maintenance	G-4 Perform unscheduled UAS GSE maintenance	G-5 Operate UAS GSE
<b>H</b>	<b>Execute UA Flight Operations</b>	H-1 Coordinate UA maintenance and flight ops schedules	H-2 Practice UA crew resource management (CRM)	H-3 Practice UA radio communications	H-4 Perform UA preflight inspections	H-5 Handle UA controlled cryptographic item (CCI)
<b>I</b>	<b>Manage UAS Parts</b>	I-1 Select UAS repair part	I-2 Receive UAS part	I-3 Process UAS defective part	I-4 Store UAS part	I-5 Maintain UAS part inventory
<b>J</b>	<b>Perform UAS Administrative Functions</b>	J-1 Comply with UAS QA policies and procedures	J-2 Maintain UAS professional credentials	J-3 Conduct UAS labor accounting	J-4 Perform UAS site survey	J-5 Manage UAS radio frequency (RF) usage

A-6 Practice UAS flight line safety protocols	A-7 Practice UAS shop safety protocols	A-8 Practice UAS operational security				
D-6 Perform scheduled UAS GCS maintenance	D-7 Perform unscheduled UAS GCS maintenance	D-8 Configure UAS GCS end product distribution (e.g., FMV, SIGINT)	D-9 Displace UAS GCS			
E-6 Optimize UAS datalinks	E-7 Displace UAS datalinks					
F-6 Perform scheduled UA maintenance	F-7 Perform unscheduled UA maintenance	F-8 Conduct UA ground handling and service operations	F-9 Modify UA composite structures	F-10 Displace UA		
G-6 Displace UAS GSE						
H-6 Evaluate UA aircraft health and status	H-7 Execute UA emergency procedures	H-8 Perform UA post-flight inspections				
I-6 Service UAS repair part						
J-6 Maintain UAS technical documentation	J-7 Generate UAS oral status reports	J-8 Generate UAS written status reports	J-9 Identify UAS calibration status (e.g., equipment, tools)	J-10 Generate UAS incident report		

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## General Knowledge and Skills

Access control lists  
Addressing/naming schemes in data networks  
Aircraft covering and finishes  
Aircraft drawings  
Aircraft electrical, fuel & instrument systems  
Aircraft landing gear systems  
Airframe inspection  
Analytical and troubleshooting skills  
Assembly and rigging  
Auxiliary power units  
Basic physics and electrical skills  
BIOS/UEFI verification  
Borderless, wireless and virtual local area networks  
Broadband connections  
Cabin atmosphere control systems  
Chemical storage, use, and disposal  
Cleaning and corrosion control  
Collaboration technology  
Command line interface commands  
Commercial composites  
Common manufacturing techniques  
Communication and navigation systems  
Composite application  
Composite mechanics/failures  
Computer components  
Configuration files  
Critical thinking skills  
Customer service  
Data centers  
Database management  
Documentation  
Dynamic host configuration protocol (DHCP)  
Engine cooling systems  
Engine electrical systems  
Engine exhaust and reverser systems  
Engine fuel systems  
Engine fire protection systems  
Engine inspection  
Engine instrument systems  
Ethernet networking  
Fire protection systems  
Fluid lines and fittings  
Fuel metering systems  
Ground operation and servicing  
Hydraulic and pneumatic power systems  
Ice and rain control systems  
Ignition and starting systems  
Induction and engine airflow systems  
Internet and cloud services  
IPv4 and IPv6 networks  
Laminate  
Laptop configuration  
Linux operating system  
Lubrication systems  
Maintenance forms and records  
Maintenance publications  
Materials and processes  
Mathematical skills  
Mechanic privileges and limitations  
Mechanical ability  
Microcomputer maintenance  
Mobile device configuration  
Negotiation skills  
Network address translation (NAT)  
Network architectures, configurations & utilities  
Network security  
Oral and written communication skills  
OEM Standard Repair Manual  
OS X operating system  
Position and warning systems  
Printer configuration  
Propellers  
Protocol layers in data networks  
Public speaking skills  
Reading comprehension  
Reciprocating engines  
Resource management  
Routers and routing protocols  
Serial connections  
Sheet metal and non-metallic structures  
Situational awareness  
Software licensing  
Subnetting and switches  
Time management and organizational skills  
Tunneling operations  
Turbine engines  
Unducted fans  
Virtualization  
Visual inspection skills  
Weight and balance  
Welding  
Windows operating system  
Wood structures

## Future Trends and Concerns

Additive manufacturing (e.g., 3D printing)  
Autonomous operations  
Available bandwidth  
Certification of personnel  
Certification of repair stations (Part 145)  
Changing workforce expectations (generational)  
Data analysis and exploitation  
Education and training  
Ethical usage  
Export administration regulations (EAR)  
Human factors  
Integrity of UAS with space-based systems  
International traffic in arms regulations (ITAR)  
Lack of qualified personnel  
Liability  
Line of sight (beyond)  
Navigational reliability  
Payload development  
Proliferation of UAS into National Airspace System (NAS)  
Public acceptance and concerns  
Regulations  
Standards (e.g., maintenance, training, manufacturing, certification)  
UAS countermeasures  
Virtual reality  
Workforce and economic development

## Acronyms

BIOS – Basic Input/output System  
FMV – Full-Motion Video  
HAZMAT – Hazardous Materials  
IA – Information Assurance  
OEM – Original Equipment Manufacturer  
PPE – Personal Protective Equipment  
QA – Quality Assurance  
SIGINT – Signals Intelligence  
UAS – Unmanned Aircraft Systems  
UA – Unmanned Aircraft  
UEFI – Unified Extensible Firmware Interface

## Worker Behaviors

Accountable  
Adaptable  
Dependable  
Good judgment  
Hard working  
Honest  
Integrity  
Maintains confidentiality  
Mature  
Motivated  
Personal hygiene  
Professional  
Punctual  
Reliable  
Self-starter  
Shows initiative  
Safe with Social Networking  
Tactful  
Team player

## Certifications

Certifying Technical Employee Competence (CertTEC)

- Avionics
- Basic Composites
- Basic Electricity and Electronics

Electronics Technicians Association (ETA)  
International

- Associate Certified Electronics Technician (CETa)

Federal Aviation Administration (FAA)

- Aviation Maintenance Technician – Airframe and Powerplant (A&P)

Federal Communications Commission (FCC)

- General Radio Operator's License (GROL)
- Marine Radio Operator's Permit (MROP)

National Center for Aerospace and Transportation Technologies (NCATT)

- Aircraft Electronics Technician (AET)
  - Autonomous Navigation Systems (ANS)
  - Dependent Navigation Systems (DNS)
  - Radio Communication Systems (RCS)
- UAS Maintenance

Satcom Direct

- AeroIT

## Tools, Equipment, Supplies and Materials

Aviation tin snips set  
Aviation uniform work shirts  
Awl scribe  
Blankets – heat  
Blow gun and air chuck for tires  
Boelube  
Bonder – hot  
Cable tester – modular  
Calculator  
Caliper – dial or digital, non-plastic  
Cleaning solution - electronics  
Cloth – lint free  
Compressed air service canister  
Controller – Johnson A419  
Coupler – 1/4"  
Couplers for shop air hose – L (Lincoln) type quick  
Data logger  
Die grinder – 90 degree  
Drill bit – #11, #21, #30, #40  
Drill motor – pneumatic, 3/8"  
Drive adaptor – 1/2" to 3/8"  
Drive socket set (3/8") and ratchet (12 point) – 3/8"  
through 7/8" deep  
Drive socket set (1 1/4") – 12 point & 6 point  
extensions, 3" – 6"  
Electrostatic discharge protection kit  
Electrostatic discharge wrist strap, mat, and cord  
Extension – 3/8" drive - 3", 6", 8"  
File – 8" half round bastard, 8" mill, 8" round bastard  
File card (cleaning brush)  
File handles (3)  
Flashlight and batteries  
Gas welding goggles – adjustable  
Gasket scraper  
Gauge – feeler (flat and round)  
Gloves – disposable, Nitrile  
Grease gun  
Hacksaw and blades (32 teeth per inch)  
Hair dryer – 1800W  
Hammer – ball peen, 8 oz.  
HAZMAT storage  
Hearing protection – ear muff or plug type  
Knife – pocket  
Magnet – telescopic  
Mallet – rawhide or plastic  
Marker – fine tip felt  
Mask respirator – 1/2, particulate & vapor cartridges  
Mechanical fingers  
Mirror – inspection  
Multimeter – digital, auto range  
Network loopback plugs  
Nut driver set  
Oven  
Pencil grinder – 90 degree  
Pick set  
Pliers – 8" channel lock, diagonal, duckbill, needle  
nose, safety wire, 6" slip joint, 6" or 8" vise grip  
Pliers set – snap ring  
Plug – 1/4"  
Power supply tester  
Punch – automatic center  
Punch and chisel set  
Rivet set – AN 470-3, AN 470-4, AN 470-5 (flush  
and #6)  
Rubber gloves – thick  
Ruler – pocket, 6"  
Safety glasses/goggles  
Safety wire stainless steel – 020, 031, 041  
Sander – dual action, 6"  
Saw – wet tile  
Scale – digital  
Screwdriver – 6" common, 8" common, 6" Phillips,  
8" Phillips, stubby common  
Socket drive (spark plug) - 7/8" deep thin wall  
Sockets – swivel, 1/4" and 3/8" drive  
Solder workstation  
Speed handle – 3/8"  
Square – combination  
Straight edge – engineer's scale (6" or 12")  
Thermal compound  
Thermocouple plugs – mini K  
Thermocouple wire – K type  
Thermocouples  
Tool box with lock (approximately 24" length, 12"  
height, 12" width)  
Vacuum base  
Vacuum gauge – 0-30"  
Vacuum hose/fittings – 6' by 1/4"  
Vacuum pump  
Valve core extractor – screwdriver type  
Wire stripper/crimpers  
Wrench set – Allen, 1/16" through 5/16"  
Wrench set – angle and crow's foot  
Wrench set – box open-end (12 point), 1/4" through  
1", which must include an 11/32" wrench  
Wrenches - ratcheting