

# DACUM Research Chart for: GIS Technician

Duties		Tasks											
<b>A</b>	<b>Create / Acquire GIS Data* (3)</b>	A-1 Define data requirements (C)	A-2 Research available data (C)	A-3 Purchase new data	A-4 Develop databases (e.g. define geometry, attributes) (C)	A-5 Define feature relationships/ behaviors (e.g. relate tables, relationship classes) (C)		A-6 Define feature behaviors (e.g. sub-types & domains) (C)		A-7 COGO legal descriptions (E)	A-8 Perform tablet digitization (E,C)	A-9 Perform "heads-up" (on-screen) digitization (E,C)	A-10 Geocode data (E,C)
<b>A</b>	<b>Create / Acquire GIS Data* (3) continued</b>	A-11 Determine data compatibility (e.g. projections) (E,C)	A-12 Perform data conversions (e.g. between formats) (E,C)	A-13 Populate GIS feature attributes (E,C)	A-14 QA/QC data (E,C)	A-15 Create metadata (E,C)	A-16 Collect field location data via GPS (E,C)	A-17 Collect field attribute data (E,C)					
<b>B</b>	<b>Create Image Data</b>	B-1 Scan hard copy images (E,C)	B-2 Georeference digital imagery (C)	B-3 Rectify images (C)	B-4 Perform image analysis (e.g. classification) (C)								
<b>C</b>	<b>Maintain GIS Data* (1)</b>	C-1 Develop a data maintenance schedules	C-2 Develop GIS procedures (e.g. to update data)	C-3 Edit GIS data (e.g. add, delete, update) (E,C)	C-4 QA/QC data (E,C)	C-5 Refresh/ replace layers (e.g. imagery, thematic layers) (C)		C-6 Convert between data formats (C)	C-7 Conduct database performance tuning (e.g. compress, build stats, index) (C)		C-8 Update metadata (E,C)		
<b>D</b>	<b>Conduct Spatial/ Non-spatial Analysis (4) (Vector, Raster)</b>	D-1 Create Models (e.g. process & scientific models, flow charts) (C)		D-2 Create scripts (C)	D-3 Pre-process Data (e.g. generalize, subset) (C)	D-4 Conduct Geoprocessing (e.g. clip, buffering, overlay, run models) (C)		D-5 Generate statistics (e.g. descriptive, spatial) (C)	D-6 QA/QC Data (C)	D-7 Interpret Results (C)			
<b>E</b>	<b>Generate GIS Products* (2) (hard copy, electronic)</b>	E-1 Create maps (E,C)	E-2 Create analysis reports (E,C)	E-3 Create charts (E,C)	E-4 Create tables (E,C)	E-5 Generate mailing labels (E,C)	E-6 Create graphic items (e.g. logos, headers, posters, exhibits) (E,C)		E-7 Distribute digital products (E,C)	E-7 Distribute hard copy products (E,C)			
<b>F</b>	<b>Develop Software Applications</b>	F-1 Define user software needs (C)	F-2 Determine application design format (e.g. platform, language)		F-3 Develop software applications	F-4 Customize commercial software (C)	F-5 Create map templates (C)	F-6 QA/QC software applications (e.g. beta test) (C)	F-7 Build help files	F-8 Enhance existing custom applications			
<b>G</b>	<b>Manage GIS Data</b>	G-1 Establish data custodianship (C)	G-2 Organize file structure (e.g. create directories, perform data and directory housekeeping) (C)		G-3 Archive / retrieve data (E,C)	G-4 Back-up / restore data (E,C)	G-5 Distribute data according to organizational policy (E,C)	G-6 Assign data/database permissions					
<b>H</b>	<b>Provide Technical Support*</b>	H-1 Resolve user technical problems (C)	H-2 Install Software (e.g. enhancements, service packs) (C)		H-3 Write Technical Guides (C)	H-4 Train GIS end-user(s) (C)							
<b>I</b>	<b>Perform Administrative Tasks*</b>	I-1 Correspond with others (e.g. email, mail, phone) (C)	I-2 Write informational reports (e.g. progress, technical, procedural, recommendations) (C)		I-3 Prepare cost estimates (e.g. time, equipment) (C)	I-4 Coordinate GIS projects (C)	I-5 Represent GIS at meetings (e.g. committees, user groups, organizational conferences) (E,C)		I-6 Maintain equipment/ supplies (E,C)	I-7 Maintain contracts (E)	I-8 Supervise Interns (C)	I-9 Participate in public relations activities (E,C)	
<b>J</b>	<b>Pursue Professional Development</b>	J-1 Participate in professional conferences (e.g. oral, poster submissions, publish/ submit articles) (E,C)		J-2 Participate in GIS user groups (E,C)	J-3 Take advanced training courses (e.g. technical training & education courses) (C)		J-4 Cross-train within organization (C)						

**Key:** \* Primary Duty (1) Ranking of Duties by Time Spent (E) Entry Level Task (C) Included in Curriculum

## General Knowledge

GIS Principles, Word Processing, Office Applications, Geometry, Trigonometry, Mathematics, Statistics  
Current GIS software: (MapInfo, SmallWorld, ArcGIS, ArcView, GeoMedia), Cartographic principles, Image processing (ERDAS),

Photogrammetry, Programming languages (VBA), Land surveying, GPS, Reading engineering-grade plans, Databases, Census data, Windows operating system, General Geography, Data exchange procedures

## Skills

Multi-tasking, Resourcefulness, Oral Communication, Writing, Technical writing, Printing legibly, Presentation, Cartographic Design, Analytical, Organizational, Time Management, Team Player, Ability to work independently, Facilitation, Computer, Network configuration, Data entry, Keyboarding

## Worker Behaviors

Initiative, Mentor, Sense of humor, Adaptability, Self-disciplined, Ethical, Willingness to learn, Self-motivated, Punctual, Organized, Detail-oriented, Open-minded

## Tools, Equipment, Supplies and Materials

Plotters, Printers, Scanners, P.C.s, Calculators, Engineering/Architectural scales, Servers, GPS (Trimble-GeoXT, Sokkia-GR 1000, Static or RTK), Laptops, Tablet PCs, PDA, Pocket PC, Digitizer, Total Station,

GIS Software: (ArcGIS, ArcIMS, ArcSDE, ArcPad, ArcGIS Extensions, Workstation ArcInfo, SmallWorld, MapInfo), MS Access, Auto CAD, Micro Station, IRASC, ERDAS Imagine, MS Office, MS Frontpage, Dreamweaver, Adobe Illustrator

## Future Trends and Concerns

Dominance of ESRI, lack of competition, Rapidly changing technology, Explosion of data, Public access to data, Security restrictions on data, ) Trend toward licensing & certification,

Need for on-going training, Mobile computing (remote access), Data standardization, Integration of software, Decentralization of GIS, End user Web applications, Data integration tools (GeoMedia)

## Contributors

County of San Diego  
City of Escondido  
City of San Diego  
US Fish & Wildlife  
EDAW  
WEST Consultants Inc.  
Sweetwater Authority  
City of Encinitas  
Jones & Stokes  
Padre Dam Municipal Water Dist.

Nolte & Associates, Inc.  
Tijuana River NERR  
City of Chula Vista  
CALTRANS  
City of Oceanside  
Geomorphis  
AMEC  
GeoVisual Solutions  
SANDAG  
Valley Center Munc. Water Dist.

Quartic Solutions, LLC  
City of San Diego  
PBS & J  
Valley Center M.W.D.  
City of Encinitas  
San Diego Data Processing Corp  
San Diego Reg. Econ. Dev't Corp.  
US Marine Corp  
Sweetwater Authority  
San Diego Police Depart.

Vista Irrigation District  
Helix Environmental  
Planning  
SANGIS  
MACTEC Eng. Consulting, Inc.  
Sweetwater Authority  
City of Lemon Grove  
SWFSC  
City of Escondido  
ESRI Business Solutions

# DACUM Research Chart: GIS Technician

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## DACUM Facilitators

John Johnson, Instructor, San Diego Mesa College (Facilitator)  
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