

DACUM Research Chart for: GIS Technician

Duties		Tasks											
A	Create / Acquire GIS Data* (3)	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)
A	Create / Acquire GIS Data* (3) continued	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	Create Image Data	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)								
C	Maintain GIS Data* (1)	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)		
D	Conduct Spatial/ Non-spatial Analysis (4) (Vector, Raster)	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)			
E	Generate GIS Products* (2) (hard copy, electronic)	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-8 Distribute hard copy products (E,C)			
F	Develop Software Applications	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			
G	Manage GIS Data	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					
H	Provide Technical Support*	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)							
I	Perform Administrative Tasks*	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)	
J	Pursue Professional Development	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

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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
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DACUM Research Chart: GIS Technician

DACUM Panel

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Sponsored by:

**The National Science Foundation;
Advance Technology Education Award #0401990**



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Date: September, 2005