

**CLASS SPECIFICATION**  
**County of Fairfax, Virginia**

**CLASS CODE:** 1823

**TITLE:** GIS SPATIAL ANALYST IV

**GRADE:** S-29

**DEFINITION:**

Under limited supervision, plans, coordinates and supervises one of the County's GIS Operation Teams (Applications Dev./Systems Team, Data Maintenance Team or the Customer Service Team) that support the County's Geographic Information Systems database, applications, services and data warehouse; provides strategic analysis and planning for existing and planned Geographic Information Systems including regional and/or multi-jurisdictional GIS initiatives; designs, develops, implements complex GIS spatial systems or databases and interfaces across all departments to determine appropriate GIS applications and methods on multiple projects. Ensures systems and GIS products comply with County-wide standards and pertinent legal requirements. Maintains high level of knowledge in all GIS tools and capabilities; and performs related work as required.

**DISTINGUISHING CHARACTERISTICS:**

This is a senior and advanced level and is distinguished from the GIS Spatial Analyst III by at least two of the following factors: additional supervisory responsibilities; high level spatial analysis skills like GIS network modeling or synthesis skills like advanced data layer merging using map algebra or buffering; high level GIS skills exploiting the spatial capabilities of GIS-oriented tools, utilities, databases, and other associated technology; high level application development skills. Incumbents develop/manage complex spatial projects across multiple agencies and provides strategic oversight and analysis of GIS development; supervises lower level analysts, and refers only highly unusual problems to the supervisor or other experts. Incumbents represent Fairfax County in and lead regional and/or multi-jurisdictional GIS initiatives. In addition to exceeding the characteristics of the GIS Spatial Analyst III, the incumbent's knowledge of specialized GIS utilities and technical extensions and capabilities is superior. The GIS Spatial Analyst IV also provides detailed technical training in specialized spatial analysis techniques to department staff across the County. The incumbents also provide substantial input about the overall strategic direction of GIS in the County.

**ILLUSTRATIVE DUTIES:**

Serves as project manager for multiple complex projects;  
Supervises, assigns, and evaluate work for GIS Spatial Analyst and Technicians;  
Researches, develops and implements GIS standards for databases, applications, and training programs;  
Establishes and implements technical standards for GIS systems;  
Maintains broad awareness of GIS/Spatial tools and solutions and investigates potential benefits to the County;  
Assists senior management in the development of RFP's and in evaluating responses to them;  
Works with County agencies to identify spatial solutions to complex business problems;

Monitors contract performance, ensures contract compliance, approves contract deliverables, and payments, resolves problems, and writes technical reports as needed;

Develops strategies for implementing new technologies and standards and for addressing performance issues and problem resolution;

Develops and maintains the County's GIS database;

Provides work counseling, guidance, and training as needed;

Formulates detailed project plans and time lines;

Coordinates efforts between GIS and other County staff and contracted technical personnel;

Provides senior supervision of GIS spatial application development initiatives;

Leads the design and development of complex GIS applications;

Designs, develops, and implements procedures for the administration of the GIS database;

Manages installation and upgrades of spatial system including databases, software, user applications, and hardware;

Assures spatial system quality;

Ensures spatial system security;

Tunes spatial system to ensure performance requirements are met;

Develops failover and recovery operations for spatial system;

Designs, documents, and implements spatial system administration procedures;

Designs, implements, and maintains County-wide inter-agency data flow and synchronization of spatial elements;

Designs, develops and maintains GIS database schemas and documentation;

Coordinates development/maintenance of tables and views in the GIS database for custom applications and business processes;

Assesses new and complex County requirements for GIS analysis and deliverables and determines which combination of data and tools will deliver appropriate solutions;

Provides expert spatial analysis skills to the County;

Communicates with agency GIS leaders to assess needs, establish priorities, and make assignments of GIS resources to project initiatives;

Collaborates on, participates in and where appropriate leads cross agency teams on GIS related issues.

Provides specialized technical training to County GIS users;

Coordinates with County agencies in providing connectivity between the GIS database and County enterprise databases;

Provides GIS liaison and coordination with neighboring jurisdictions and state agencies including leadership where appropriate.

Assists agencies with defining hardware and software specifications for GIS systems;

Assists staff and other County personnel with database development and maintenance of other data repositories that must interface with GIS;

Provides both technical and functional GIS presentations to Senior County Management, Board Members, and constituents;

Attends meetings and conferences related to GIS;

Performs any of the illustrative duties in support of the Emergency Operations Center (EOC);

Identifies training needs and develops/coordinates overall County training direction for GIS;  
Evaluates new or alternative approaches to spatial system development;  
Confers with users to determine spatial system requirements and program acceptability and/or to define and analyze requests for program modifications or corrections;  
Coordinates the implementation of spatial systems with users and operations personnel;  
Performs evaluation of suitability and capability, estimation and prediction using spatial tools;  
Performs any or all of the four traditional types of spatial analysis: spatial overlay and contiguity analysis, surface analysis, linear analysis, and raster analysis;  
Responsible to resolve highly complex database integrity, access and utilization issues, testing, new systems and methodologies, to recommend changes to systems, standards and specifications, and to resolve multi-dimensional client and technical issues;  
Provides technical project planning, resources and strategic inputs to support the preparation of annual business strategies; administering established project or operational budgets;  
Provides expert advice to in-house staff on the use of geo-spatial data, data integrity and limitations, developing discussion papers for senior management on new database and access technologies, strategic data acquisition/distribution and usage plans, sources of data, new data products and technical issues relating to client requirements;  
Diagnoses spatial system deficiencies, researching causal factors and providing expert advice on technical issues to senior management of own and client organizations;  
Excellent Verbal, writing and listening skills;

**REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Considerable knowledge of principles, practices and methods related to systems such as Oracle, ARC/INFO, ArcView, Access, and SDE, and other GIS tools, utilities, and databases.  
Considerable knowledge of advanced modeling techniques such as GIS network modeling, surface modeling, and/or very complex spatial analysis involving integrated use of numerous data themes and layers, and synthesis involving complex map algebra, etc.;  
Considerable knowledge of advanced overlay analysis operations using both vector and raster tools to answer complex questions;  
Considerable knowledge of constructing databases, developing normalized tables, and interfacing with different database systems such as Access data repositories;  
Considerable knowledge of GIS spatial application development techniques;  
Considerable knowledge of GIS potential application within large public and private organizations;  
Considerable knowledge of writing scripts such as SQL, Python, and various object oriented programming languages;  
Considerable knowledge of quality control and quality assurance functions primarily focusing on cadastral, planimetric, topographic, and natural data layers;  
Considerable knowledge of effective supervisory methods and practices;  
Ability to manage medium to large complex technical projects;  
Ability to plan, organize, and coordinate the work of subordinate staff and staff in other agencies;  
Ability to develop and implement new and innovative methods, techniques, and procedures;

Ability to document and communicate system modifications and enhancements;  
Ability to assist users in solving GIS systems and analytical problems;  
Ability to translate technical terminology into terms understandable to management and employees;  
Proven ability to communicate complex technical concepts to a wide range of audiences.  
Ability to establish and maintain effective business relationships;  
Familiarity with server operating systems such as UNIX;

**EMPLOYMENT STANDARDS:**

Any combination of education, experience and training equivalent to the following:  
Bachelor's degree in computer science, geography or related field; PLUS three years of experience in working with and developing systems utilizing GIS platforms such as ESRI's ArcGIS Desktop or Server software suite; or performing GIS modeling (e.g., relationship classes, topologies, 3-D, object, data) and spatial analysis (e.g., proximity analysis, image analysis, routing analysis). One of the three years of experience must have been in the capacity of a team or project lead in developing or implementing complex information systems.

**CERTIFICATES AND LICENSES REQUIRED:**

None.

REVISED: November 18, 2011  
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