

What is GIS?

- Digital mapping & visualization software
- Used to...
 - Layer data on a map, find patterns, and model scenarios
 - Solve problems and make decisions with location awareness
- Used by... Most industries across the globe

<https://gis.com>

Key themes

- Informed decision making
- Compliance
- Situational awareness
- Prepare, respond, recover
- Management
 - Assets, people, projects



Two types of GIS jobs

All GIS, all
the time

GIS as a
component

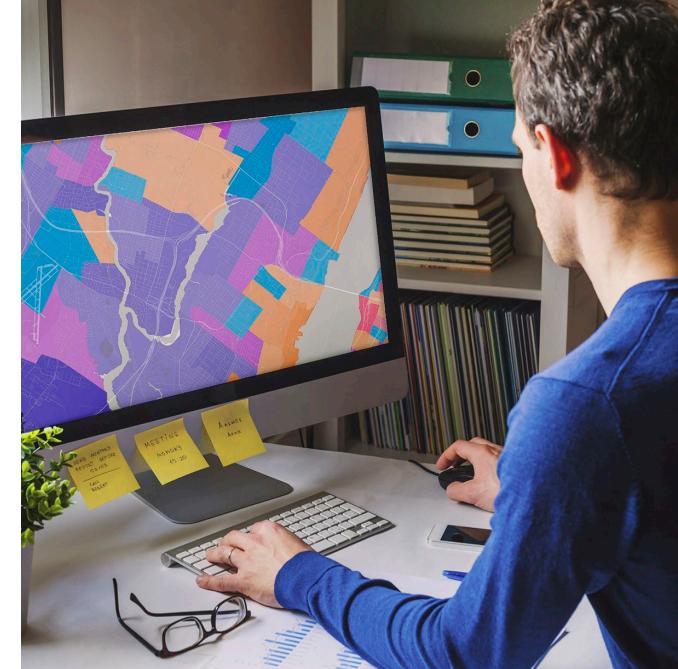
- Map-centric
- ArcGIS every day
- GIS analyst, technician, or specialist

- Map friendly
- ArcGIS regularly used
- Wildland fire manager, conservation specialist, realtor, business owner, etc.

GIS technician

Entry-level professional who manages geospatial data

- Organize, collect, input, convert, and maintain GIS data
- Administer the database
- Extract the data for others to use

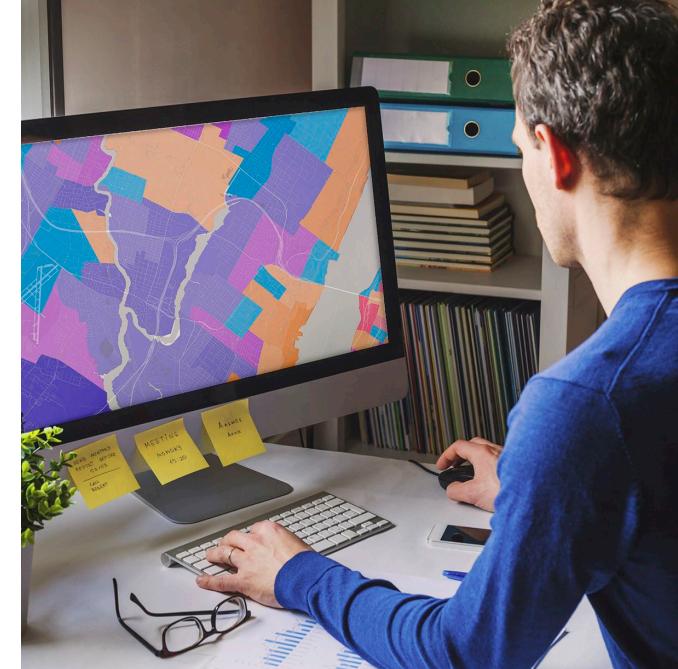


All GIS, all
the time

GIS technician

Example jobs

- Map infrastructure for an engineering firm
- Track pipe or power lines for a utility company
- Manage land use at a government agency
- Chart property boundaries for a surveying company



All GIS, all
the time

GIS technician

Job outlook (US)

- Salary in US: \$59,329/year (\$29/hr)
 - Majority between \$45,000 and \$70,000
 - Top earners: \$87,500
- Projected growth: 6% from 2025-2035
 - 3,200 new jobs

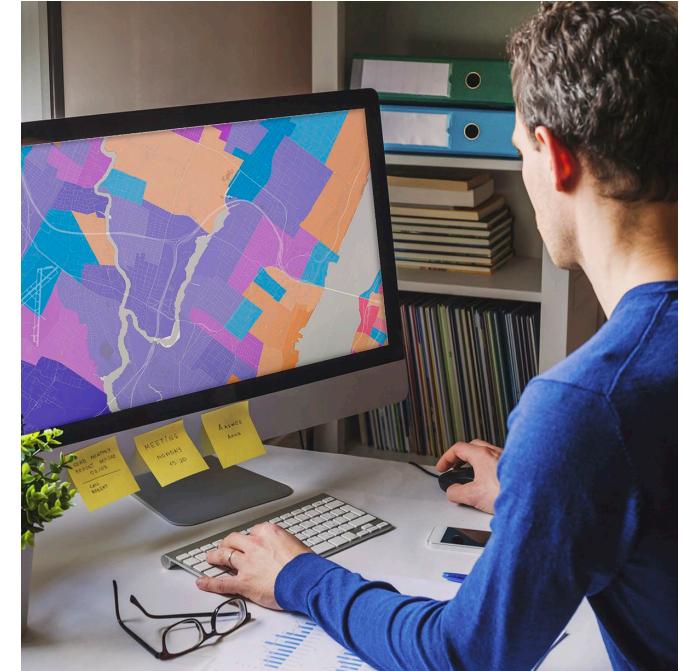


All GIS, all
the time

GIS technician

Job qualifications

- Degree
 - GIS certificate (some companies)
 - Associate's in GIS, geography, or computer science
 - Bachelor's in GIS, computer science, engineering, environmental geospatial technologies, or related is preferred
 - Coursework in geography, computer technology, cartography
 - Master's helpful for advancing in the career
- Technical skills
 - Knowledge of GIS principles
 - GIS software experience
 - Computer programming
- Soft skills
 - Observation
 - Attention to detail, precision, and accuracy



All GIS, all
the time

GIS as a component

Law enforcement

Crime analyst

- GIS used to...
 - Map and analyze crime data to identify potential crime locations
 - Optimize station locations and patrol routes
- Salary: \$65,006/year (\$31/hr)
 - Majority between \$49,500 - \$78,500
 - Top earners: \$91,500
- Projected growth: 6% by 2031
- Requirements
 - Bachelor's in criminal justice, sociology, public administration, statistics
 - Law enforcement experience (ex: civilian entry-level job at a police department)
 - Some: Police officer (law enforcement exam, classroom & field training)
 - US citizen or resident | Polygraph test | Background check
 - Some: Crime analyst certification
 - Skills: Investigative skills, critical thinking, communication, attention to detail, research and analytical skills, computer literacy, teamwork
- Try the GIS: [Perform visibility analysis to increase security](#)



Collect, interpret, and synthesize crime data to identify patterns, support investigations, and inform crime prevention and resource allocation.

GIS as a component

Energy Utilities

Entry-level environmental planner

- GIS used to...
 - Conduct spatial analysis and mapping
 - Capturing pre- and post-construction aerial footage using drones
- Salary: \$79,834/year (\$38/hr)
 - Majority between \$70,000-90,000
 - Top earners: \$98,500
 - All experience levels - \$81,000 - \$141,000
- Projected growth: 5% from 2021-2031
- Requirements
 - Bachelor's in environmental planning, geography, GIS, natural resources, or related
 - Familiarity with electrical transmission and distribution line construction activities
 - (Some) FAA Part 107 Commercial Drone Pilot
 - Skills: Esri GIS Software, GPS competency, field data collection, problem-solving, communication, computer & math skills, writing environmental compliance plans
- Try the GIS: [Use drone images to take precise measurements at a construction site](#)



Ensures compliance with environmental laws and minimizes environmental impacts. Works on environmental plans and permits, conducts spatial analysis and mapping, and coordinates with federal, state, and local agencies.

GIS as a component

Conservation

Entry-level sustainability consultant

- GIS used to...
 - Collect, manage, analyze, and visualize environmental data
 - Map environmental features, analyze impacts on natural resources, conduct site assessments
 - Create maps and dashboards for strategic environmental decision making and compliance
- Salary: \$57.583/year (\$28/hr)
 - Majority between \$49,000 - \$67,500
 - Top earners: \$80,000
- Projected growth: 4-8% from 2025-35
- Requirements
 - Bachelor's or higher in environmental studies, sustainable development, construction, earth science, engineering, or related
 - (Recommended) Industry certification
 - An understanding of federal and state environmental regulations
 - Skills: Project management, communication & presentation skills
- Try the GIS: [Generate travel areas for charging stations](#) | [Investigate how nitrogen impacts the environment](#)



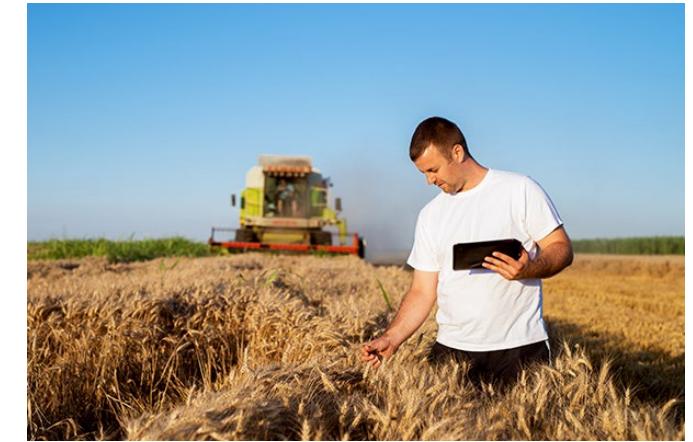
Balance profitability and protecting the environment. Address energy use, create economic policies, perform assessments required by law, and lobby for industry regulations.

GIS as a component

Natural resources & agriculture

Integrated pest management specialist

- GIS used to...
 - Map pest distributions
 - Coordinate targeted pest control
- Salary: \$44,797/year (\$22/hr)
 - Majority between \$41,000 - \$48,500
 - Top earners: \$52,500
 - Apprentice in Riverside: Starting at \$18.50/hr
- Projected growth: 5% from 2024-34 (5100 new jobs)
- Requirements
 - High school diploma w/ courses in agricultural education, plant science, agricultural mechanics, horticulture, chemistry, and biology
 - Optionally: Associate's or Bachelor's in plant science, agribusiness, or related
 - State license
 - On-the-job training
- Try the GIS: [Manage forest harvest and chemical activities](#) (**NEED UPDATE?**)



Develop and manage a financially sound, environmentally safe, and effective pest management strategy, in compliance with pesticide application laws and regulations.

[Example GIS story](#)

[Career video](#)

GIS as a component

Education

Middle school teacher

- GIS used to...
 - Supplement topics with interactive maps
 - Teach students GIS as a career skillset
- Salary: \$57,503/year (\$28/hr)
 - Majority between \$45,000 - \$62,000
 - Top earners: \$71,500
- Projected growth: -2% (decline) from 2024-34 (12,400 fewer jobs)
- Requirements
 - Bachelor's
 - Public school: State-issued certification or license
- Try the GIS:
 - Earth science lessons: [Exploring topographic features](#) | [Processes that shape the Earth's surface](#)
 - Computer science lesson: [Vacation locations](#)
 - US history lesson: [Dust bowl](#) | [Redlining](#)
 - GIS lesson: [Make a map of areas that need more trees for heat resilience](#) | [Map a historic cholera outbreak](#)



Teach and mentor students in grades 6-8, focusing on specific subjects. Craft and execute lesson plans that align with standards, assess student progress, manage classroom environment, and communicate with parents, school, and district.

Business - Retail

Retail store owner

- GIS used to...
 - Determine ideal locations for a store & areas for targeted marketing
 - Understand local spending habits to stock inventory
 - Plan delivery routes
- Salary: \$66,024 (\$32/hr) Varies widely!
 - Majority between \$59,404 - \$74,890
 - Top earners: \$82,962
- Projected growth: 0.6% 2022-2032
- Requirements
 - High school diploma or GED
 - Recommended: Bachelor's in business administration or related
 - Retail or store management experience
 - Skills: Business acumen, customer focus, leadership & management, communication, problem-solving, familiarity with point-of-sale and retail management software
- Try the GIS: [Use demographic data to study regional markets](#) | [Choose candidate areas for a convenience store \(using AI\)](#)

GIS as a component



Manage all aspects of your business, including finances, product sourcing, staff management, and daily operations to maximize profitability and customer satisfaction.

GIS as a component

Business – Logistics and distribution

Logistics coordinator

- GIS used to...
 - Visualize and analyze location-based data to optimize supply chain operations
 - Route planning, fleet tracking, facility location, risk assessment
- Salary: \$46,899/year (\$23/hr)
 - Majority between \$39,000 - \$52,000
 - Top earners: \$62,000
- Projected growth: 17% from 2024-2025
- Requirements
 - High school diploma or GED
 - Some: Associate's or Bachelor's in business administration, logistics or related
 - Work experience & on-the-job training
 - Future career growth through Master's degree and certifications
 - Skills: Analytical thinking, problem-solving, organizational skills, time management
- Try the GIS: [Plan routes to optimize deliveries](#)



Manage the supply chain, including overseeing product storage & distribution, track quality & quantity, communicating deliveries and timelines, and complying with safety requirements and laws.

GIS as a component

Health & emergency medical services

Public health planner

- GIS used to...
 - Map and track diseases and disease risk
 - Identify vulnerable populations
 - Plan for emergencies and assess health risks
 - Monitor environmental factors like air and water quality
- Salary: \$67,853/year (\$33/hr)
 - Majority between \$48,000 - \$81,500
 - Top earners: \$101,500 | Entry-level: \$59,500
- Projected growth: 17% from 2020-2030
- Requirements
 - Bachelor's or Master's in public health, health administration, or related
 - Some: Certification required or preferred
 - Experience with public health principles, program planning, data analysis and GIS, and community engagement
 - Skills: Analytical, organizational, communication, project management
- Try the GIS: [Create a policy map to address health conditions](#) | [Where does healthcare cost the most?](#)



Improve community health and address healthcare needs by analyzing health data, assessing risks, and addressing social factors that influence health.

GIS as a component

Construction

Drone pilot (with mapping/GIS)

- GIS used to...
 - Plan and execute drone flights for site surveys and inspections, monitoring safety, progress, and compliance
 - Analyze drone-gathered data to inform decisions
- Salary: \$95,168/year (\$46/hr)
 - Majority between \$71,000 - \$115,500
 - Top earners: \$138,000
 - Entry-level: \$36,000-51,000/yr (higher paired with GIS & mapping)
- Projected growth: 13% from 2024-2032
- Requirements
 - FAA Part 107 Certificate
 - Knowledge of drone piloting, aerial survey, and regulations
 - Familiarity with GIS, photogrammetry software, GPS navigation systems
 - Skills: Attention to detail, effective communication, problem-solving ability
- Try the GIS: [Create 2D products with ArcGIS Drone2Map - Create imagery products and take precise measurements at a construction site](#)



Operate and manage drones to survey, inspect, and monitor construction sites. Analyze data gathered by drones to help project managers make informed decisions.

GIS as a component

Public safety – Wildland fire

Wildland fire operations specialist

- GIS used to...
 - Create real-time incident maps & inform decisions
 - Predict fire behavior
 - Track and deploy resources
 - Share public information
- Salary: \$53,740/year (\$25/hr)
 - Majority between \$42,500 - \$56,500
 - Top earners: \$76,200
- Projected growth: 5% from 2022-2032
- Requirements
 - High school diploma or equivalent
 - Practical field experience & specialized fire training and certifications in wildland fire suppression, incident management, and leadership
 - For advancement: Associate's or Bachelor's in fire science or forestry
 - Skills: Leadership, physical fitness, effective teamwork, adaptability, quick decisions under pressure
- Try the GIS: [Explore an interactive wildfire app](#) | [Make a dashboard to monitor wildfires](#)



Protect lives, property, and natural resources from wildfires. Plan, manage, and track wildland fire suppression and prescribed fire operations. Handle fire suppression activities and resource assignments. Educate the public about wildfires.

GIS as a component

Transportation - Roads & Highways

Transportation planner

- GIS used to...
 - Analyze traffic projections, economic data, population data, and land use data
 - Interpret geographic data about existing transportation systems
 - Prepare and present transportation planning proposals
- Salary: \$74,255/year (\$36/hr)
 - Majority between \$68,500 - \$81,500
 - Top earners: \$100,500
- Projected growth: 7% by 2030
- Requirements
 - Bachelor's in civil engineering, urban planning, transportation planning
 - Some: Master's degree, professional license and/or certification
 - Familiarity with industry computer software, including Esri ArcGIS
 - Skills: Communication, project management, statistics, and mathematical modeling
- Try the GIS: [Oversee snowplows in real-time](#) | [Assess access to public transit](#) | [Visualize the expansion of public transportation](#) | [Find electric charging stations](#)

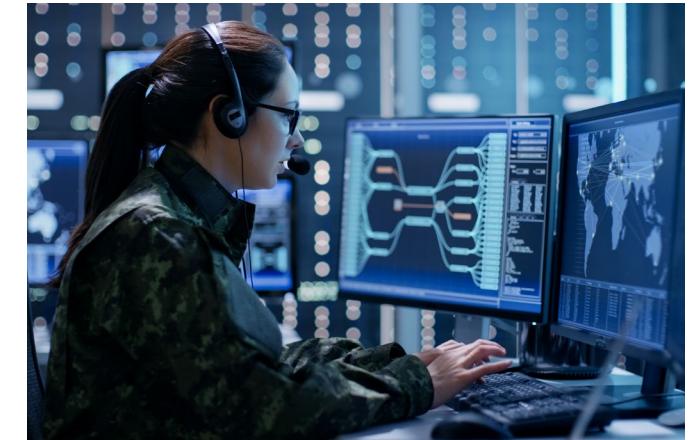


Organize and develop transit routes and projects through studying, analyzing, and evaluating data from current and future transportation systems.

GIS as a component

Government Code compliance inspector

- GIS used to...
 - Map code violations
 - Track complaints and inspections
 - Analyze data for patterns and trends, identifying high-risk areas
- Salary: \$56,905/year (\$27/hr)
 - Majority between \$38,500 - \$65,500
 - Top earners: \$94,500
- Projected growth: 3% from 2024-34
- Requirements
 - High school diploma or equivalent
 - (Preferred) Associate's, or Bachelor's (architecture, construction, engineering, or related)
 - Certification (International Code Council or a state association)
 - (some) Additional coursework or experience in code enforcement, criminal justice, or related
 - Valid driver's license & clean background check
 - Skills: Communication, interpersonal skills, ability to read construction plans, record keeping
- Try the GIS: Explore the [MS4 compliance inspection survey in the example AEC Surveys](#)



Make sure people and organizations meet legal and regulatory requirements. Investigate, document, and enforce municipal, zoning, health, and safety regulations.

GIS as a component

Election management

Election coordinator

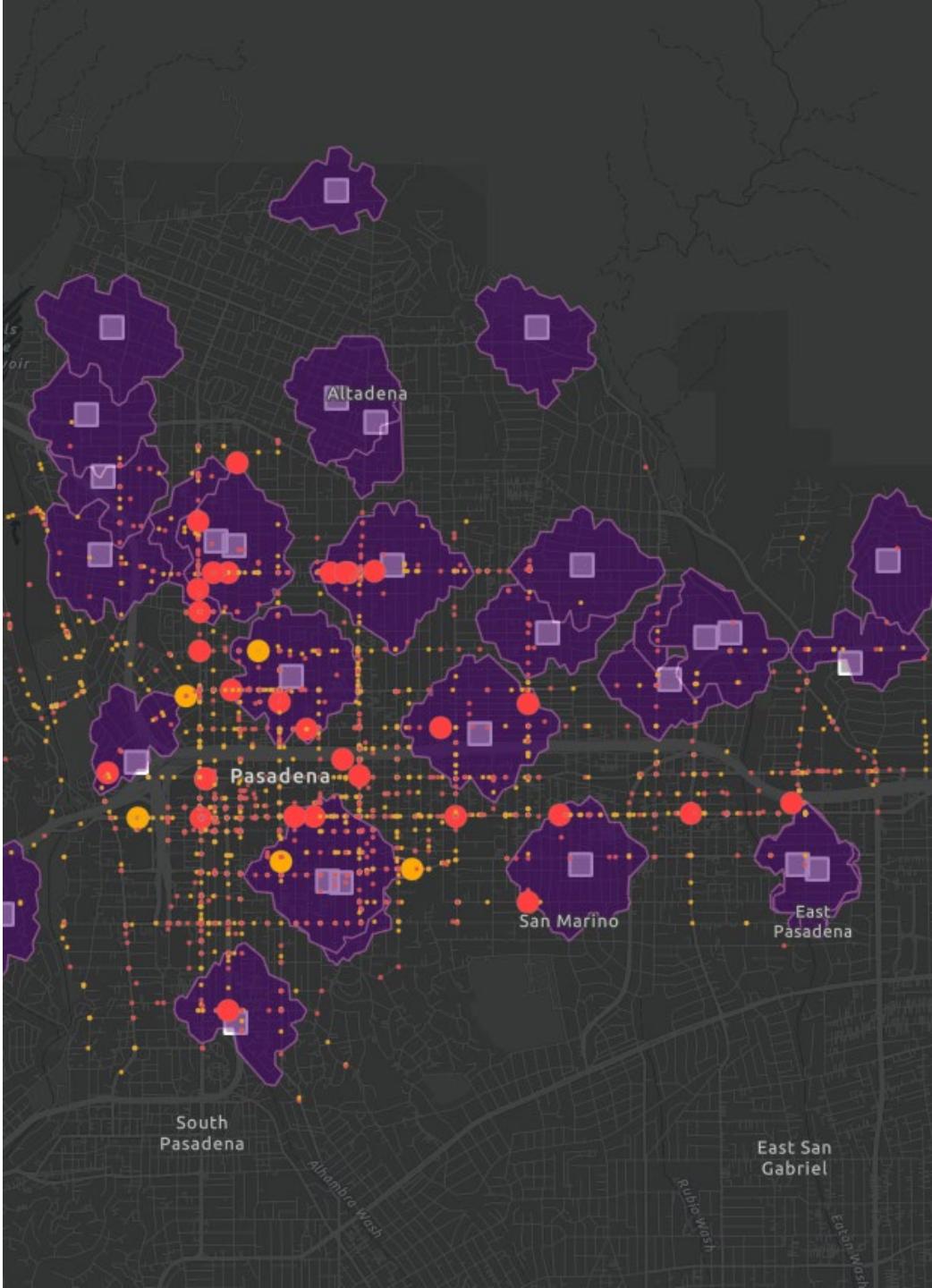
- GIS used to...
 - Determine, map, and manage polling and drop-box locations (worker scheduling, supply distribution)
 - Facilitate redistricting and precinct size changes
 - Communicate with the public for voter and representative information, and election results
- Salary: \$57,869/year (\$28/hr)
 - Majority between \$40,500 - \$69,500
 - Top earners: \$86,000
- Projected growth: -3% from 2024-2034; Cyclical based on election years
- Requirements
 - Associate's or High school diploma + experience
 - (some) Bachelor's in public administration, political science, or related
 - Preferred knowledge: Voter registration databases, ballot tabulation software, compliance reporting systems, project management, election law knowledge
 - Career growth: Experience, professional certifications
 - Skills: Communication, problem-solving, leadership, adaptability, patience
- Try the GIS: [Make every vote count](#)



Manage the processes required to run an election. Manage elections and ballots, train and supervise staff, provide voter services and outreach. Be in compliance with relevant laws.

Where do I start?

- A student's self-guided exploration of GIS:
<https://esriurl.com/studentGISIntro>
- Experience GIS for Urban Planning:
<https://esriurl.com/cteUrbanPlanning>
- Experience GIS for Wildfire Management:
<https://esriurl.com/cteWildfire>
- Experience GIS for Conservation:
<https://esriurl.com/cteConservation>



Sources

For Salaries and Outlooks

- GIS technician
 - Salary info from [ZipRecruiter](#), Sept. 2025
 - Job growth from [US Bureau of Labor Statistics](#)
- Entry-level GIS analyst
 - Salary info from [ZipRecruiter](#), Sept. 2025
 - Job growth from [Zippia](#) and [Research.com](#), Sept. 2025
- GIS Specialist
 - Salary info from [ZipRecruiter](#), Sept. 2025
 - Job growth from [Zippia](#), Sept. 2025
- Remote sensing analyst
 - Salary info from [ZipRecruiter](#), Sept. 2025
 - Job growth from [GISDegree.org](#), Sept. 2025
- Qualifications and responsibilities for all four from [GISDegree.com](#)

Sources

For Other Salaries and Outlooks

- Bureau of Labor Statistics (bls.gov)
- ZipRecruiter (ziprecruiter.com)
- Indeed (indeed.com)
- Glassdoor (glassdoor.com)
- Salary.com (salary.com)
- International Association of Fire Chiefs ([Wildland Fire Operations Specialist](#))