

Online Graduate Certificate Program in Geographic Information systems (GIS)

Required Coursework (12 Units) through Blackboard:

1. EES 211: Fundamentals of GIS (Z. Wang, Coordinator) 3 units
2. EES 212: Geospatial Technologies (X. Yang) 3 units
3. EES 214: Advanced Spatial Analysis (X. Yang) 3 units
4. EES 216: GIS Practicum (K. Moffitt) 3 units

Enrollment Requirements:

- ❑ **Must hold a bachelor's degree in any area** from an accredited institution of higher education, GPA must be at least 3.0.
- ❑ **Non-traditional students:** professionals from the private and public sectors, educators, government workers and officials, etc.
- ❑ **Traditional students:** wishes to acquire GIS training to meet the current or future job requirements.

Admission:

- Through CGE, DGS, CMS and the Program Coordinator

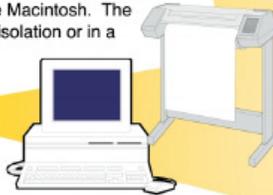
Five Components of GIS

A Geographic Information System (GIS) links locational (spatial) and database (tabular) information and enables a person to visualize patterns, relationships, and trends. This process gives an entirely new perspective to data analysis that cannot be seen in a table or list format. The five components of a GIS are listed below.

HARDWARE

The hardware is the computer and peripherals on which the GIS operates. Today, this could be a centralized computer server running the UNIX or Windows NT operating systems, a desktop PC, or an Apple Macintosh. The computer may operate in isolation or in a networked configuration.

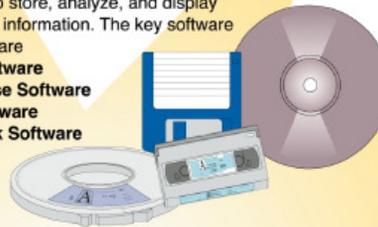
- Computers
- Networks
- Peripheral Devices
 - Printers
 - Plotters
 - Digitizers



SOFTWARE

GIS software provides the functions and tools users need to store, analyze, and display geographical information. The key software components are

- GIS Software
- Database Software
- OS Software
- Network Software



DATA

One of the most important component of GIS is the data. It is absolutely essential that data be accurate. The following are different data types:

- Vector Data
- Raster Data
- Image Data
- Attribute Data



GIS

PEOPLE

GIS technology is clearly of limited value without people to manage the system and to develop plans for applying it. Users of GIS range from highly qualified technical specialists to planners, foresters, and market analysts who use GIS to help with their everyday work.

- Administrators
- Managers
- GIS Technicians
- Application Experts
- End Users
- Consumers



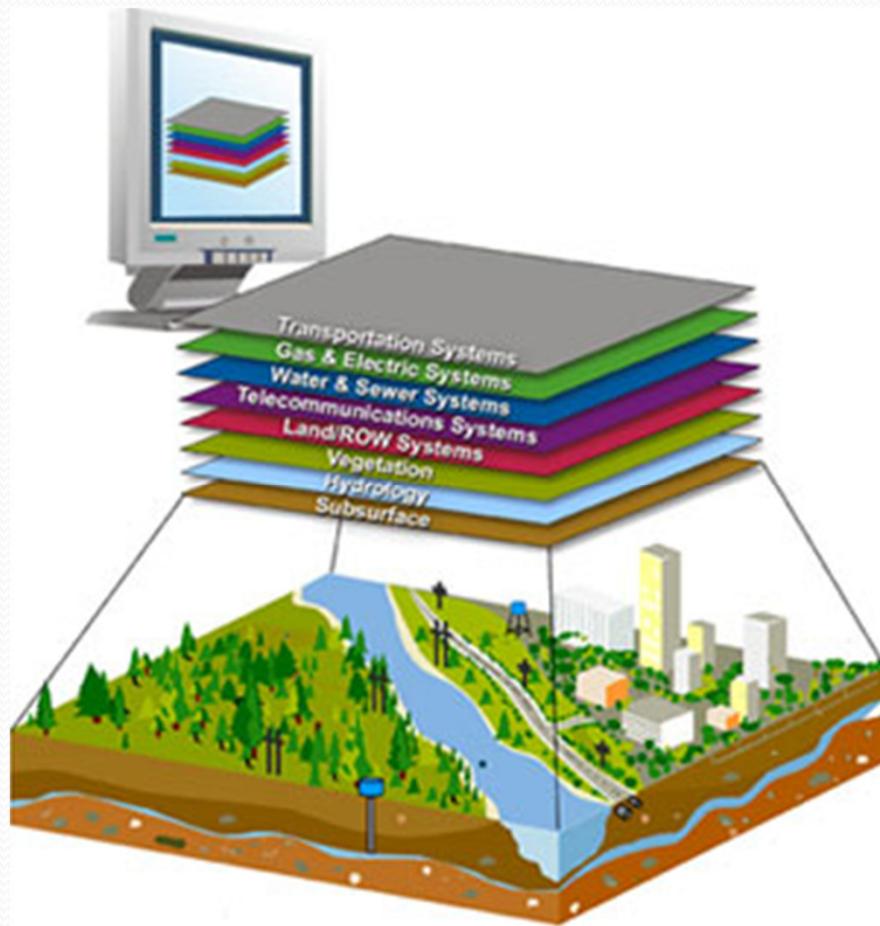
METHODS

Methods are well designed plans and application-specific business rules describing how technology is applied. This includes the following:

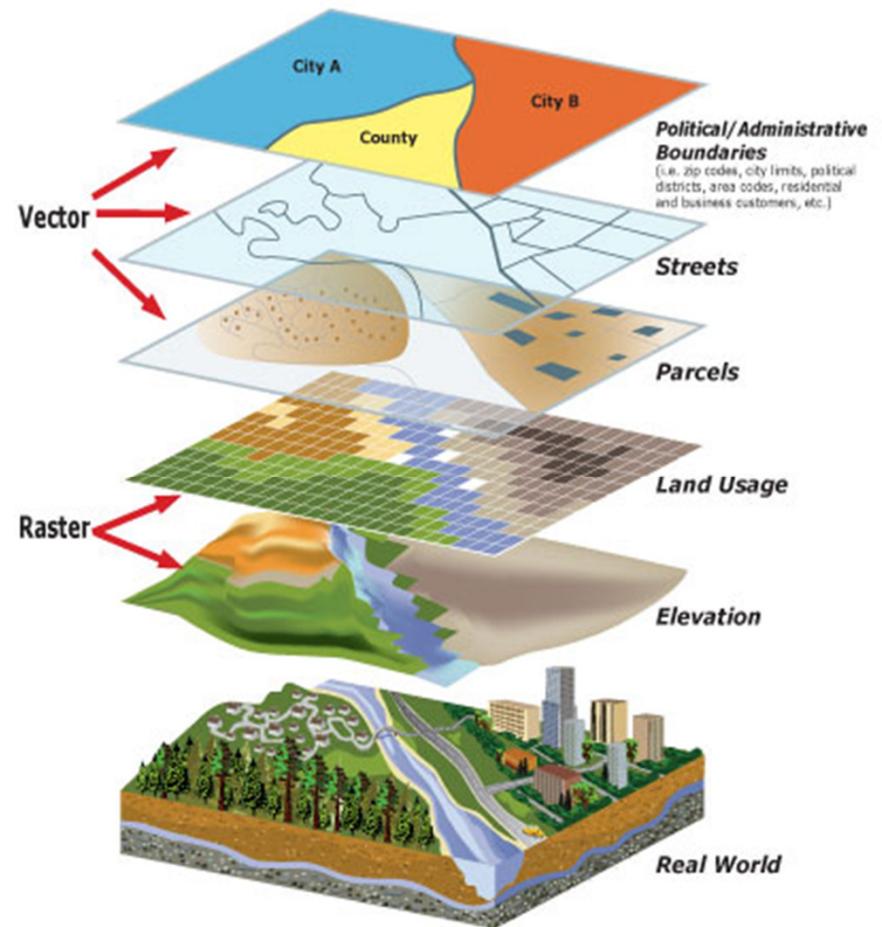
- Guidelines
- Specifications
- Standards
- Procedures



Examples



Information Integration



Research, Application and Management

Remote Sensing and GPS

Integrated Solutions for GIS

Satellite & Aerial Imagery

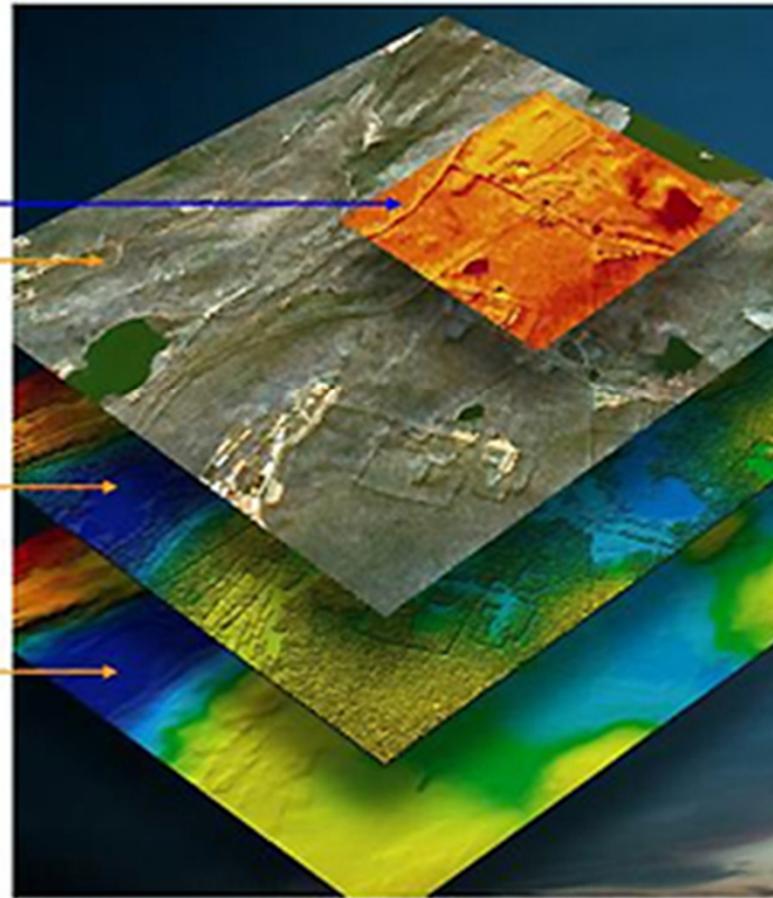
- 3D Terrain Modeling
- Stereo Imagery
- Multi & Hyper-Spectral
- Ortho-Imagery
- Film
- Digital (DSS or ADS)
- Thermal

Digital Surface Model

GIS Implementation

Derived Products

Bare Earth DEM/DTM



Industries

Business

- Banking and Financial Services
- Facilities Management
- Insurance
- Media and Press
- Real Estate
- Retail

Defense and Intelligence

- Defense and Force Health Protection
- Enterprise GIS
- Geospatial Intelligence
- Installations and Environment
- Military Operations (C4ISR)

Education

- Libraries and Museums
- Schools (K-12)
- Universities and Community Colleges

Government

- Federal, State, Local, Gov 2.0
- Architecture, Engineering and Construction (AEC)
- Economic Development
- Elections and Redistricting
- Land Administration
- Public Works
- Surveying
- Urban and Regional Planning

Health and Human Services

- Public Health
- Human Services
- Hospital and Health Systems
- Managed Care
- Academic Programs and Research

Mapping and Charting

- Aeronautical
- Cartographic
- Nautical
- Topographic

Natural Resources

- Agriculture
- Climate Change
- Conservation
- Environmental Management
- Forestry
- Marine and Coast
- Mining
- Oceans
- Petroleum
- Water Resources

Public Safety

- Computer-Aided Dispatch
- Emergency/Disaster Management
- Fire, Rescue, and EMS
- Homeland Security
- Law Enforcement
- Wildland Fire Management

Transportation

- Aviation
- Highways
- Logistics
- Railways
- Ports and Maritime
- Public Transit

Utilities and Communications

- Electric
- Gas
- Location-Based Services
- Pipeline
- Telecommunications
- Water/Wastewater



Market Research

- CGE contracted with Fong Strategy, Inc. Academic marketing research firm. Report delivered in Sept 2010. We asked:
 - Demand for GIS Certificate – Needed Skill Sets.
 - Critical mass for online format.
 - California State University, Fresno name recognition, brand equity, competition.
 - Potential market sectors and audiences.

Demand & Competition

- Estimated 83,000 jobs, growing to 100,000/annual in Hydrology Geo Science.
- Estimated 148,200 jobs, growing to 176,100/annual in GIS Professional Occupations (US Bureau of Labor and Statistics, Occupational Outlook Handbook).
- Major West Coast Competitor USC (face-to-face, cost \$1,360/u). Notable: Penn State, Arizona & Michigan State.
- Online format expands geographic reach of target market, with “greater potential for sustainability” (p. 9).
- Consultant recommendation: Leverage the uniqueness of hydrology specialty (forthcoming PSM). GIS is not limited to hydrology, which could narrowly position GIS (a caution).

Marketing

- CGE currently in negotiation with enrollment management firm, Hobsons EMT Connect.
 - Recruitment
 - Interest tracking by content type
 - Cross marketing programs
- Integrated website construction, vanity URL, linking GIS to PSM (using Robin Button for both).
- Digital Communication
 - Email marketing – Database >400 contacts & prof orgs.
 - Banner ads for prof. orgs & targeted sites
 - Google AdWords
 - LinkedIn advertising (>4,200 members with relevant groups)