Managing a GIS/GPS Certificate Program

Presenters:
James M. Ellis  Mike B. Quinn
Binita Sinha  Ted Wieden

CalGIS 2007
Presentation Highlights

- Background and Nature
- Course and Program offerings
- Resources
- Profile of students
- Challenges
- Solutions
- Future direction
Background and Nature:

- CANS Collaboration in late 1990s
- The Perkins VTEA Grant 2003
- Ongoing Advisory Committee
- Area Labor Market survey
Area Labor Market Survey

Results of Survey

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent of Positive Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hirings</td>
<td>100</td>
</tr>
<tr>
<td>New Openings</td>
<td>50</td>
</tr>
<tr>
<td>Need for trained Staff</td>
<td>80</td>
</tr>
<tr>
<td>Prospects of Future Growth</td>
<td>90</td>
</tr>
</tbody>
</table>
Programs

- Certificate of Completion – 15 Units
- Certificate of Achievement – 31 Units
- AS Degree – 60 Units.

Program Focus:
- Integrating Disciplines
- Interdisciplinary Collaborations on Community Projects
- Internship and Cooperative education.
Resources

• Hardware
  – 31 Dell Pentium Desktops
  – HP Large Format Plotter
  – HP Laser Printer
  – Calcomp Large Format Digitizer
  – 30 Magellan 310 GPS receivers
  – 30 Garmin eTrex GPS receivers
  – 25 Leica GS20 Mapping Grade GPS receivers
  – 10 Leica WoRCS Belts
  – 3 Trimble GeoExplorer 3

• Software
  – ESRI ArcInfo 9.x and extensions
  – Leica Erdas Imagine Professional
  – Leica GPS Data Pro
  – Trimble PathFinder Office
Course Offerings

**CORE Courses**
- Introduction to GIS
- Advanced GIS
- Introduction to GPS
- Advanced GPS
- Introduction to Remote Sensing
- Maps and Cartography

**Electives**
- Area 1 – Computer and Information Technology
- Area 2 – Application Focus Area
Introduction to GIS

- Covers GIS concepts, techniques and methodologies. Lab activities are used to reinforce lecture concepts.
Advanced GIS

• Advanced analytical techniques of geographic information systems—spatial analyses, 3D analyses, integration with GPS and remote sensing.
Intro GPS

• Covers – principles of GPS, operational characteristics, limitations, potential errors and applications.

• Activities with GPS receivers are required.
Advanced GPS

• Advanced topics - data dictionaries, differential GPS and integration with GIS.

• Prepares students for additional studies in specific applications of GPS
Introduction to Remote Sensing

- Covers the basic principles of remote sensing techniques
- Explains how remotely sensed data is interpreted and integrated with the geographic information systems.
Remote Sensing

- Many types of imagery loaded into GIS
  - Satellite, aerial photography, DEM

- Data resides on the server

- Available to anyone at DVC
1999, 15-meter satellite image with DEM in GIS
2003 Satellite Imagery with 2000 1’ orthophotography in GIS
Majority Filter applied to classification to minimize “salt & pepper” appearance and prepare for conversion to GIS vector file by reducing number of polygons.
Supervised Classification

Identify landuse classes

Learn color scheme and labeling
Maps and Cartography

- Covers the basic principles of mapping and representation of spatial data.

- Recommended that students take this class after completing the other core courses.
Mapping crime data
Visualization

- Planning
- Entertainment
- Education
Student Projects - Objectives

- Real-world data
- Implement technology
- Problem-solving/ Decision-making
- Develop presentation skills
- Time management
- Build portfolio
Profile of Students

- Mostly working adults
- Seeking a career-change
- Fewer transfer students
- Post-Graduate students
- Highly motivated
- High retention rate
- High success rate
Challenges

- For Students:
  - Multiple Commitments
  - Commute
  - Duration of Courses
  - High Tech/ No Prerequisites
  - Widely varying levels of preparation

- For Program:
  - High cost of maintenance
  - Keeping up with current trends
  - Articulation with other educational institutes
  - Marketing and advertising
Solution

• Distance Learning - ProfCast
Distance Learning

ProfCast (podcast) allows audio-visuals delivery
WebCT Page

Online Course Content Delivery System

Facilitates file-transfer and on-line evaluation

Table of Contents

1. Geog162_Spring2007_Syllabus_Schedule_1.pdf
2. Maps and Cartography Internet Resources1_Hotlinks.pdf
3. Lab 2_Map Design Template.pdf
4. Lecture 4_Data Classification.m4a
5. Lecture 5_Scale and Generalization.m4a
6. Lecture 6_Statistics.m4a
7. Lecture 7_Choropleth_Maps.m4a
8. Lecture 8_Isarithmic (Volume) Maps.m4a
Goals and Objectives of a Certificate Program and AS Degree

• To provide a comprehensive curriculum in order to prepare students for a career in GIS-related businesses and agencies.

• To provide further training opportunities for individuals currently employed with GIS-related businesses and agencies.
Future Directions

• Maintain and keep the curriculum current
• Offer short-term courses for continuing education credits.
• Increase partnership with local public and private sectors
• Offer courses online.