DELTA STATE UNIVERSITY: ACADEMIC ANNUAL REPORT

I. Unit Title: Center for Interdisciplinary Geospatial Information Technologies

School or College: Arts and Sciences

Unit Administrator: Talbot Brooks

II. Educational Program Learning Outcome Assessment Plan

Learner Outcomes identified for the current year.

While an LOA plan is not explicitly required for minors, the following framework for learning objectives has been developed. These objectives and their related assessments are designed to promote information literacy and to teach students problem solving, critical thinking, and written and oral technical communication.

1. Students will learn the theoretical bases of GIS and successfully apply them to GIS and related project work.
2. Students will learn to use GIS as a tool to gain knowledge and information and to solve problems in their primary fields of study. GE 1
3. Students will learn the components and capabilities of GIS and implement them beyond computer software and hardware operations. GE 1
4. Students will learn the GIS development cycle.
5. Students will learn advanced geospatial techniques including, spatial statistics, computer programming, database management, and spatial analysis. GE 3, 4
6. Students will gain an understanding of how GIS operates in the corporate and public sectors. GE 4, 6, 9
7. Students will gain an understanding of current and future GIS and related technological developments.
8. Students will gain practical experience in the application of GIS and related technological expertise. GE 4
9. Students will learn communication techniques appropriate to GIS and technical environments, especially report writing, presentation skills, and interpersonal communication. GE 2

Overarching success of students enrolled in this program will be assessed through GIS II and the capstone course. Students must pass these courses with a grade of C or better to earn the minor/certificate. The specific outcome assessment plan is illustrated in Table 3.
Table 1. Outcome assessment for capstone GIS certificate program (GIS 490/590)

<table>
<thead>
<tr>
<th>Specific performance objectives that students are expected to master</th>
<th>Assessment of performance objectives</th>
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<tr>
<td>1. At least 50% of the grade in the course (GIS II) should depend on writing, including prepared essays, speeches, or in-class essay examinations GE 2</td>
<td>Complete well-organized research project and summarize that research project in a written report and a coherent oral presentation</td>
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<tr>
<td>2. Identify and gather information for use in a geographic information system (GIS) GE 1</td>
<td>Create an indexed table of GIS data resources for use in the course project</td>
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<td>3. The syllabus should include a minimum of two substantial writing or speaking tasks beyond in-class essay exams</td>
<td>Complete well-written out-of-class assignments that require the articulation of GIS design, use, and implementation</td>
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<tr>
<td>4. Ability to plan the creation of a geographic information system GE 1, 4, 7</td>
<td>Prepare a 15-page proposal to create and implement a geographic information system following NSF proposal format guidelines</td>
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<tr>
<td>5. Ability to create a geographic information system GE 1, 4, 7</td>
<td>Implement the proposed GIS in requirement #4, above</td>
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<tr>
<td>6. Use a GIS to perform spatial queries, solve real-world GIS-based problems, and ensure data accuracy GE 1, 3, 4</td>
<td>Use the implemented GIS to solve real problems as demonstrated through an internship</td>
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Scoring of each assessment will be based on the following

a. Scoring Articulation to General Studies Performance Objectives
   • Quality of information gathered (depth/breadth of research) to address a research problem
   • Quality of interpretation and evaluation of evidence
   • Writing -- appropriate grammar, syntax, punctuation, and use of conventions for citations
   • Writing -- organization
   • Writing -- synthesis and evaluation of information

b. Scoring Articulation to Goals and Course Performance Objectives
   • Formulation of a geographic problem
   • Knowledge of spatial and human factors as displayed in literature review, research and analysis
   • Knowledge of patterns and characteristics as displayed in literature review, research and analysis
• Knowledge of location and relationships as displayed in literature review, research and analysis
• Knowledge of geographic principles as displayed in literature review, research and analysis
• Cartographic skills
• Data gathering skills (e.g., field methods, archival research)

For the balance of the program, we plan to primarily assess both program and course objectives through a combination of written and practical examinations conducted in the classroom. Further assessment will be conducted by Center faculty through careful evaluation of final presentations made at the conclusion of the Capstone GIS Course and a combination of surveys and interviews to be conducted at the 2- and 5-year post-graduation mark. The latter will include tracking the placement and salaries of program graduates whenever possible by the Interdisciplinary GIS Center. These results will be made available, absent personally identifying information, in subsequent program evaluations.

The Center is a relatively new entity on campus and as of yet, none of its students have reached the 2-year post graduation mark. However, 9 students completed the minor/certificate course of study last year and ALL were gainfully employed prior to their graduation.

II. Division/Department Goals for the Current Year

(This is a report on progress towards goals for the current year. These are operational goals for the unit that are NOT tied directly to student learning outcomes which are reported in the table above. An example might be implementation of a development campaign in conjunction with the DSU Foundation to raise monies for faculty research and travel)

1. Move to the new Center in Kethley and successfully set up all labs and experimental technologies (e.g., the Theater of the Mind). (SP 4)
2. Increase student enrollment to 200 SCH’s during the coming academic year. (SP 2)
3. Capture at least $125,000 of soft-money funding beyond the existing Hearin Foundation grant. (SP 4 & 5)
4. Move 2 online courses from the current University of Mississippi based software program to DSU’s Blackboard system and fund and hire 2 visiting professors to assist with online teaching (QEP #2, SP 1)
5. Begin a broader student recruitment program that targets regional students with high school GPA’s of at least 3.2 and ACT scores of at least 26. (SP 2)

IV. Data and information for department: (include narrative of programmatic scope; data)

V. Personnel:

Noteworthy activities and accomplishments: (In addition to an overview or mention of specific achievements/awards, you could also reference appendices that include Faculty Activity Reports)
Center awarded “Special Achievement in GIS” by ESRI in August 2006
Center Director, Talbot Brooks, named by GPS World “One of the 50 Professionals to Watch” in May 2007

New position(s) requested, with justification:

Ms. Roshandra Collier’s position as student intern will transition into a GIS Program Manager position. Her duties will include GIS project management and academic unit administration. This change is needed due to increasing enrollment and the number of projects being handled by the Center.

Recommended change of status

Dr. Jeff Dugay will replace Dr. Carlyle Meek as Assistant Director
Dr. Robert Austin will join the faculty as a 1-year visiting professor
Mr. Pete Gomez will join the faculty as a 1-year visiting professor
Dr. Henk VonReissen will join the faculty as an adjunct professor

VI. Degree Program Addition/Deletions and/or Major Curriculum Changes:

None
Talbot J. Brooks  
1714 Bellavista Dr.  
Cleveland, MS 38732  
H: (662) 846-9014 W: (662) 846-4520 C: (662) 402-3772

Summary of Qualifications:
- 20 years experience designing, bidding, negotiating, and implementing complete GIS solutions for municipal, state, and private entities
- National leader in GIS education and well established within the national GIS user community
- Contract negotiation and bidding for $1M+ projects
- 20 years experience designing and implementing GIS/IT/technical solutions
- 14 years senior/project management experience
- 20 years research, development, and publication experience with GIS, remote sensing, computer modeling and allied technologies
- Specialization in implementation planning and project management (skilled with MS Project and ESRI PLTS)
- Extensive experience with ArcGIS 9.x and 8.x, ArcINFO, ArcView 3.x, ArcIMS, ArcSDE, ESRI Map Server, Imagine, Idrisi, financial management software, CISCO products (e.g. routers, switches, eHealth), SQL Server, Oracle, Windows, Solaris, Tru64, Linux, HPUX, FORTRAN, Visual Basic, Avenue, Visio, AutoCAD, MS and Corel Office and more.

Recent Significant Professional Accomplishments
- Chair, GITA Education Committee (2007-2008), National Board of Directors 2006-2009.
- Member FGDC/URISA Addressing Standards Project Working Group
- Chair, Technical User’s Group, Mississippi Coordinating Council for Remote Sensing and GIS
- Board of Directors, MS Delta Technology Council
- Director for geospatial operations for the 13 October 2004 U.S. Presidential Debate and created USNG map set for Obama Inauguration
- Designed and implemented municipal GIS for Queen Creek and Maricopa, Arizona
- Senior technical advisor for OnPoint Systems and inventor of content-on-location delivery using GPS technology
- Hurricane Katrina GIT Operations Director, Mississippi Emergency Management Agency, Jackson Emergency Operations Center
- Chief Information Officer, Scythe and Spade Co. and inventor of GIS-based agricultural real estate management system
- Developed first 1-year professional master’s degree program for the spatial sciences
- Best Speaker Award GITA Annual Conference 29 (2006)
- Member US Dept of Labor “Geospatial Thought Leaders” Roundtable
- ESRI “Special Achievement Award in GIS” recipient (2006)
- Named one of the industry’s “Top 50 to Watch” by GPS World (May 2007)
Current Significant Projects
- Cooperative research and development agreement with the US Geologic Survey for development and implementation of the US National Grid
- Developed and implemented 911 mapping systems for 16 counties in Mississippi
- Developed US National Grid street mapping and atlas standards for the Florida Division of Emergency Management
- Development and implementation of a GIS for hazard mitigation and planning in Bolivar County, Mississippi
- Development of an interactive, mobile GIS solution for law enforcement during tactical situations

Professional Employment Experience:

January 2005 – present. Director, Center for Interdisciplinary Geospatial Information Technologies, Delta State University, Cleveland, MS

Responsibilities:

1. Oversee $1.2 M grant establishing a center for geospatial technology development and transfer, education, and outreach
2. Create a rural-outsourcing/cooperative education program that combines education and training with job needs in rural Mississippi and help bring technical project work back to the United States
3. Create significant degree tracks and courses in geospatial information technologies
4. Design and implement spatial technologies for municipal and agricultural management in Mississippi
5. Foster the development and growth of a community of experts for geospatial information technologies


Responsibilities:

1. Senior GIT professional responsible for more than 1 million dollars of computing assets and 11 employees
2. GIS administration for SQL Server/ArcSDE and ArcIMS server systems
3. Contract negotiation and bidding. Captured approximately $1.5M in cooperative research and development projects with regional governments and agencies.
4. Complete GIS rollout for the Town of Queen Creek, Arizona Tourism and Sports Authority, ASU Dept. of Public Safety, and Entellus Engineering using combinations of RDBMS, ArcGIS, ArcIMS, ArcSDE, and ArcExplorer.
5. Actively promote transfer of GIS and allied technology research endeavors to the community
6. Provide GIS/computer technical expertise to the community through leadership within local and regional user’s groups and dissemination of technology through planning sessions, workshops, professional meetings, colloquia, and other avenues

7. Instructor for intermediate and advanced GIS courses. Course content specializing in the planning and rollout of GIS, spatial databases, and GIS product development

8. Developed Master’s of Applied Science in GIS program of study and undergraduate GIS certificate program for ASU Geography


Responsibilities:
1. Manage field research teams
2. Assist with technical management and research/development for agricultural, GIS, remote sensing, and environmental physics experiments
3. Research and publish about the effects of global climate change on crops using results gained through advanced remote sensing, GIS, and allied technology techniques
4. Development of an ecosystem plant growth model (ecosys)
5. Presentation of crop management techniques derived using GIS, remote sensing, and allied technologies to local/state/federal government
6. Developed unique instrumentation for measuring photosynthesis

Societies and Organizations:
- MS Institutes for Higher Learning Geospatial Council (vice-Chairman)
- Memphis Area Geographic Information Council
- Geospatial Information and Technology Association (co-Chair, Education Committee)
- Urban and Regional Information Systems Association
- Faculty sponsor for Gamma Theta Upsilon, the Geography Honor Society
- Association of American Geographers

Academic History:
- 1991, A.S., Biology, with Honors, Rochester Institute of Technology, Rochester, NY
- 1993, BS, Biology, Rochester Institute of Technology, Rochester, NY
- 1998, MS, Arizona State University, Tempe, AZ

Other Relevant Training:
- ESRI Courses: Introduction to ArcGIS I, Introduction to ArcGIS II, Creating and Managing Geodatabases, ArcSDE Administration for SQL Server (advanced course), Scripting with Python, Introduction to Programming ArcObjects with VBA
- SANS Institute: Securing Windows 2000 Professional
- Introduction to Imagine, Leica Geosystems
Publications:


**Thesis:**

**Selected Speaking Engagements:**


“Hurricane Katrina and GIS”. Invited keynote lecture, NY GIS Conference 2006, Lake Placid, NY.

“Implementing the US National Grid”. Special seminar with Tom Terry, USMC. National States Geographic Information Council Annual Meeting 2006, Little Rock, AR
“GIS and Disaster/Emergency Response”. Invited pre-conference seminar. Geospatial Information and Technology Association Annual Conference 29 2006 (April), Tampa Bay, FL (Best Speaker Award)

“GIS and Hurricanes Katrina and Rita”. Invited presentation for the Memphis Area Geographic Information Council 2005 (November) Annual Meeting, Memphis, TN

“Making the Saddest Maps in America: the first 240 hours of Hurricane Katrina”. Invited Keynote presentation for the Urban and Regional Information Systems Association (URISA) 2005 (October) Annual Meeting, Kansas City, MO

GIS X01: “Management of Geospatial Information Technologies”. Invited seminar, March 2005 GITA Annual Conference, Denver, CO.

“GIS in the classroom”. Presented to the National Geographic Society’s Arizona Geographic Alliance, April 2003, Tempe, AZ

“Use of GIS for crime analysis”. Presented to Arizona Women’s Law Enforcement Executive Group, November, 2002, Tempe, AZ

“Structural and Morphological Adaptations of Plant Canopies to Environment”. Invited laboratory seminar given on March 1998 at the U.S. Water Conservation Laboratory, Phoenix, AZ
Subramanian Swaminathan

CURRENT POSITION:

Education & Projects Coordinator, December 2005 – Present
Kethley Hall 146, DSU Box 3325
Center for Interdisciplinary Geospatial Information Technologies
Delta State University, Cleveland MS-38733
Email: sswaminathan@deltastate.edu
Ph: 662 846 4522

Serve as Instructor for courses in Geographic Information Systems, Cartography and Applied geospatial technologies at DSU. Organize technical GIS workshops for geospatial training and promotional talks/exhibits on GIS for students and the public.
Administer and manage geodatabases in ArcSDE/SQL Server environment. Develop geospatially-enabled websites within content management systems and publish web-mapping applications through ArcGIS Server with a focus on emergency response, disaster management, demographic analysis, remote data maintenance.
Administrative responsibilities include training and managing a team of staff & student GIS technicians during implementation of geospatial industry standards compliant grants and sponsored projects.

EDUCATION
Doctoral Student, Geography (31 Credits) Arizona State University, May 2004 – Dec 2005

Master of Science, Computer Science. Arizona State University, May 2004
  Thesis Title: An Integrated Approach for Face Recognition using Wavelet Transform and Eigenspace Methods

Bachelor of Engineering, Computer Science University of Madras, India, May 2001

GEOGRAPHY COURSEWORK (at ASU Geography)

Interactive and Animated Cartography, Geographic Visualization, Urban Climate, Advanced Research Methods in Geography, Urban Geography, Physical Geography, Contemporary Geographic Thought, Human Geography and Independent research.

ACADEMIC COURSES TAUGHT AT DELTA STATE UNIVERSITY

Computerized Mapping/Cartography – GIS 200/500 every spring, summer and fall semester from fall 2006 to fall 2009

Introduction to GIS – GIS 202/502 – co-teach this class with Talbot Brooks every spring, summer and fall from spring 2006. This class is taught on-campus and online.
GIS for the Internet and Spatial Databases – GIS 480 – Spring 2008 and expect to continue to offer this class every spring semester in the future.

Business Geographics – GIS 451 – Online every semester since spring 2006

GIS Capstone – GIS 490/590 – co-teach this GIS Internship class with Talbot Brooks every semester.

Serve as a co-instructor for a number of online GIS and REM classes such as Remote Sensing, Remote sensing of water, Digital Image Processing, Aerial Photographic Interpretation and Community Growth.

GRANTS AND SCHOLARSHIPS

Delta State University GIT Center

- GIS Technical lead on U.S. National Grid Project sponsored by U.S. Geological Survey (USGS) under cooperative agreement number 07ERAG0083 – developed web mapping application software tools and completed geospatial data development, to implement the U.S. National Grid and create nation-wide U.S. National Grid 1,000-m polygon layers.

- GIS Project Manager in the development of county wide street base map projects for Phase II Wireless E-911 implementation in Mississippi counties of Attala, Bolivar, Sunflower, Union, Leflore, Lamar, Leake, Washington & Carroll.

- Geodatabase Designer and GIS System Architect for an Enterprise GIS at the Yazoo-Mississippi Levee District Board at Clarksdale, MS (2008-09) and Three Rivers Planning and Development district at Pontotoc, MS (2008-2009). Tasks include recommending spatial data organization to meet project needs and distilling client needs into application requirements and successfully scope and budget all steps for project implementation.

Teaching Assistant, GIS - fall 2005
Introduction to Geographic Information Systems, Arizona State University

Research Assistant, GIS - fall 2004 - spring 2005
Department of Geography, Arizona State University

Research assistant responsibilities included:
1. Conducted research on developing Decision Support Systems for sustainable development in the arid southwestern United States

2. Designed and maintained Enterprise level Spatial Database systems using ArcSDE and MS SQL Server for the rapidly urbanizing town of Queen Creek, AZ.
3. Designed GIS database systems (ArcSDE) for agribusiness management, served as database administrator for customized GIS web portal development. Developed custom tools to enable easy data access and editing for employees on the field.

Research Assistant, Computer Science August 2002 – May 2003

The Distributed Media and Arts Project, Funded by Institute of Studies in Arts and Department of Computer Science & Engineering, Arizona State University.

PROFESSIONAL MEMBERSHIPS
Geospatial Information & Technology Association (GITA) 2004-Present
Association of American Geographers (AAG) 2005
Gamma Theta Upsilon (G.T.U) Lifetime Member International Geographical Honor Society
Institute of Electrical and Electronics Engineers (IEEE). 2002, 2003
Institute of Electrical and Electronics Engineers Computer Society 2003

SERVICE
1. Faculty Senate Representative (1 of 4) in the University Budget Committee – 2009-2010
2. Chair of the Faculty Senate Technology Committee – 2009-2010
3. Member of International Student Admissions Taskforce -2009-2010
4. Serve as a Senator in the Delta State University Faculty Senate – 2008-2010
5. Volunteer at the GIS Desk at the Mississippi State Emergency Operations Center at Pearl, Mississippi – Hurricane Gustav, 2008
6. Volunteer at the Bolivar County Emergency Operations Center at Cleveland, Mississippi – Provide mapping support during adverse weather, after-disaster assistance and search & rescue operations.

INVITED PRESENTATIONS
Presented the keynote address at the Fifth Annual Mid-Tennessee GIS Conference 2006 held at Nashville, TN

Presented at the Annual Mississippi E-911 Coordinators Conference 2006 held at Tunica, MS

TECHNICAL SKILLS
GIS Software (ESRI):

Open Source Website Content Management Systems: Typo3

Programming Languages: C#, Microsoft VB for Applications

Programming Environments: ESRI ArcObjects, ESRI Web ADF, Microsoft ASP .Net 2.0, .Net 3.5,
ArcGIS API for FLEX 1.2

*Programming IDE’s:* MS Visual Studio 2005 & 2008, Flex Builder 3

*Database management systems:* Microsoft SQL Server 2000/2005

*Multimedia:* FLASH 8, Adobe Photoshop, Adobe Illustrator

*Mathematical Applications:* Matlab 6.5

*GPS:* NavCom’s Starfire Receiver, Garmin’s Rino 530 & 130

**GIS SOFTWARE CERTIFICATES**

Cartography in ArcGIS – *October 2009*

ArcGIS Server Enterprise Configuration and Tuning for MS SQL Server – *August 2009*

Working with Geometric Networks for Utilities – *July 2009*

System Architecture Design Strategies – *March 2009*

Introduction to Programming ArcObjects – *June 2008*

Data Management in the Multiuser Geodatabase – *December 2007*

Introduction to the Multiuser Geodatabase – *November 2007*

Developing Applications with ArcGIS Server using the Microsoft .NET – *May 2007*

Introduction to ArcGIS Server – *May 2007*

Introduction to Geoprocessing Scripts Using Python – *August 2006*

Introduction to ArcGIS II – *February 2006*