

CURRICULUM VITA

1. HUGH ALEXANDER DEVINE JR.

2. Date of Birth: August 19, 1948

3. Address and Phone:

Business: Center for Earth Observation
North Carolina State University
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5118 Jordan Hall
Raleigh, NC 27695-7106
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Title/Rank: Professor, Parks, Recreation, and Tourism Management
Associate Director for GIS, Center for Earth Observation
Associated Full Professor, Forestry and Environmental Resources
Associated Full Professor, Landscape Architecture

4. Formal Education:

Degree: B.S.

Major: Forest Resource Management

Minor:

College/University: The Pennsylvania State University, University Park, PA

Year: 1970

Degree: M.S.

Major: Forest Recreation

Minor: Operations Research

College/University: The Pennsylvania State University, University Park, PA

Year: 1972

Degree: Ph.D.

Major: Operations Research/Forest Resources

Minor: Resource Economics

College/University: The Pennsylvania State University, University Park, PA

Year: 1975

Title of Dissertation: A Simulation Study of the Cades Cove Visitor Vehicle Flow

Post Doctoral Study: Forest Biometrics

College/University: University of Georgia, Athens, GA

Year: 1975-1977

Topic: National Forest Planning Methodologies

5. Professional Experience:

2006-Present	Faculty Representative, LITRE Executive Council, North Carolina State University, Raleigh, NC – Plan and execute University Technology Assisted Learning Initiatives
2004-Present	Chair, University Graduate Program in GIS, North Carolina State University, Raleigh, NC - Administer University Graduate Program in Geographic Information Science
1993-Present	Associate Director for GIS, Center for Earth Observation (formerly Computer Graphics Center), Research and Administration, North Carolina State University, Raleigh, NC – Direct and Fund the Center Research and Teaching Programs
1994-1996	Principal Investigator, Educational Technology Project, Special Assignment from NCSU Provost and Council of Deans – Teaching and Research
1986-Present	Professor, North Carolina State University, Raleigh, NC – Teaching and Research
1983-1993	Director, GIS Research Program, North Carolina State University, Raleigh, NC – Teaching and Research
1981-1986	Associate Professor, Full Graduate Faculty Status, North Carolina State University, Raleigh, NC – Teaching and Research
1977-1981	Assistant Professor, Associate Graduate Faculty Status, North Carolina State University, Raleigh, NC – Teaching and Research
1975-1977	Post Doctoral Fellow, School of Forest Resources, University of Georgia, Athens, GA – Research
1972-1975	Research Associate, National Park Management, School of Forest Resources, The Pennsylvania State University, University Park, PA – Research
Consulting:	
2005-2008	RENCI Program University of NC
2000-2008	Senior GIS Consultant National Park Service
1996-2000	GIS Consultation, Forestland Investment Group, Chapel Hill, NC
1993-1996	Assistance with Meeting GIS Benchmark for U.S. Forest Service GIS Procurement Bid, EDS Corporation, St. Louis, MO
1988-1990	Evaluation of National Forest GIS Efforts, U.S. General Accounting Office, Washington, D.C.

1986-1988	Spatial and Economic Analysis of Forest, Timber Damage from Ozone, U.S. EPA, Research Triangle Park, NC
1980-1988	Spatial Analysis of North Carolina White Tail Deer Population, Wake County Wildlife Association, Raleigh, NC
1978-1987	Economic Analyses of Air Pollution Impact, U.S. EPA, Research Triangle Park, NC
1987	New Procedure for Air Pollution Gradient Mapping for Forest Damage, Kilkelly Environmental Associates, Raleigh, NC
1987	State Park Master Plan Review Panel, Department of Natural Resources and Community Development, State of North Carolina, Raleigh, NC
1983	Spatial Analyses of Fusiform Rust Infection, International Paper Company, Research Triangle Park, NC
1975-1977	Spatial and Economic Analysis of Statewide Recreation Provision, Department of Natural Resources, State of Georgia, Atlanta, GA

6. Recent Professional Service and Involvement

Organizational Memberships:

- University Consortium for Geographic Information Science
- North Carolina Advisory Group on GIS
- UNC Representative to the NC GIS Coordinating Council
- National Park Service GIS Council
- American Society of Photogrammetry and Remote Sensing
- The Institute of Management Science
- Society of American Foresters
- Sigma Xi
- National Recreation and Park Society
- North Carolina Park and Recreation Society
- Society of Park and Recreation Educators
- Forest Resource Systems Institute - Board of Directors
- NC Friends of State Parks
- Urban and Regional Information Systems Association

Selected Workshops Directed or Presented (1992-Present)

- ArcGIS for National Park Land Managers, 2004
- Integrating GPS and GIS Technology into Forestry Practices, 1999-2001
- GIS for K-12 Environmental Science, 1997-2006
- ArcView GIS for National Park Management, 1996 – 2001, Raleigh, NC (2),

Madison, WS, Olympia, WA, other locations. Materials and Notes for this course also offered via the WWW.

Introductory GIS, North Carolina Society of Surveyors Institute, 1993-1998, Raleigh, NC

GIS for National Park Managers, National Park Service Superintendents Training, 1995, Raleigh, NC

GIS for National Park Managers, National Park Service Superintendents Training, 1994, Albuquerque, NM

An Introduction to GIS for National Park Management, National Park Service GIS Training Course - North Carolina Central University, 1993, Durham, NC

GIS for Forest Recreation Management, SERR Symposium, Invited Tutorial, 1992, Asheville, NC

GIS for National Park Management, National Park Service Regional Directors Meeting, 1992, Philadelphia, PA

Major Speaking Engagements

“GIS in Statewide Community Planning”, 2007 NC NEMO Workshop, Raleigh, NC

“University Research in GIS”, 2007 NC GIS Conference, Winston Salem, NC

“Next Generation Enterprise GIS Design for National Parks Management”, 2007 Northeast Region GIS Annual Meeting, Sandy Hook, NJ.

“Enterprise GIS for Protected Area Management”, 2006 Enterprise GIS Conference, National Park Service, Denver, CO

“Advances in GIS for International Forestry”, 2006 CAMCORE Conference, Raleigh, NC

“An Enterprise GIS Model for Natural Resource Management with GIS”, 2006 Northeast Region NPS GIS Meeting, Sandy Hook, NJ

“Monitoring and Updating Fire Related GIS Datasets, 2006 Northeast Region Natural Resource Inventorying and Monitoring Meeting, Philadelphia, PA

“Mapping Hurricane Damage with an Automated GIS Feature Extraction Tool”, 2006 SOFOR GIS Meeting, Asheville, NC

“A Geodatabase Model for Park Resource Management”, 2006 Northeast Region NPS GIS Meeting, Sandy Hook, NJ

“A Model Data Management System for Natural Resource Information”, 2006 Northeast Region Natural Resource Inventorying and Monitoring Meeting, Philadelphia, PA

“Updating Spatial Datasets Using Geographic Information Systems and Remote Sensing Techniques” 2005 UCGIS National Assembly, Jackson, WY (with Justin Shedd)

“A Enterprise GIS System for National Park Service Resource Management”, 2005 National NPS GIS Meeting, Denver CO

“A New Approach to Fire Fuel Data Management” 2005 NC GIS Conference, Winston Salem, NC, (with Angela Hubbs)

“A GIS Procedure for Analysis of Septic Failures and Their Impact on Water Quality”, 2005 NC GIS Conference, Winston Salem, NC, (with John Taylor)

“An Enterprise GIS Design for Northeastern National Parks”, 2005 Northeast Region GIS Annual Meeting, State College, PA.

“International Student GIS Graduate Education”, 2005 NC GIS Conference, Winston Salem, NC

“LITRE: Learning in a Technology Rich Environment”, 2003 NC State University EDTECH Forum, Raleigh, NC (Featured Speaker)

“New Technologies for GIS Databases in Natural Resources”, 2003 Natural Resource Data Managers Workshop, Fort Collins, CO.

“Data Models for NPS Natural Resource Inventories”, 2003 Natural Resource Data Managers Workshop, Fort Collins, CO.

“Natural Resource Data Management Planning for National Parks”, 2003 Northeast Region Natural Resource Inventorying and Monitoring Workshop, Kingston, RI (Featured Speaker)

“Accessing Natural Resource Data Through a GIS Model”, 2003 Northeast Region GIS Annual Meeting, State College, PA.

“GIS Partnerships”, 2003 GIS Partnerships in Teaching and Learning Conference, Raleigh, NC.

“Remote Sensing of Hemlock Woolly Adelgid Spread”, 2004 ESIP Federation Conference, Asheville, NC (Featured Speaker with Frank Koch)

“A GIS Procedure for Stream Valley Typing”, 2004 ESIP Federation Conference, Asheville, NC (Featured Speaker with Wendy Reid)

“K-12 Education with GIS” 2004 ESIP Federation Conference, Asheville, NC (Featured Speaker with Luann Dahlman)

"GIS in Landscape Assessment", 2003 LABASH, (Featured Speaker)

"An Environmental Water Quality Data Visualization System for Private Ground Water Supplies", 2003 Water Resources Research Institute Annual Conference, Raleigh, NC (Co-presenter)

"LITRE: the Draft", 2002 University Campus Forum, Raleigh, NC (Co-organized the Meeting and presented the Opening Address)

"GIS in National Park Natural Resource Management", 2002 NPS National Natural Resource Training Program, Ventura CA (Featured Speaker)

"Interactive Movies as a Learning Tool In GIS", 2002 UNC System Distance Education and Technology Exposition, Raleigh, NC

"Integrating Cultural Resource Databases with Geography", 2002 National Park Service Cultural Resources Workshop, New Orleans, LA (Keynote Speaker)

"Digital Data Collection for Updating Environmental GIS- Handheld Technology for Fieldwork", 2002 ESRI International Users Conference, San Diego (Co-presenter)

"A GIS based Water Quality Data Management System", 2002 Water Quality Research Group Workshop, Raleigh, NC (Featured Speaker)

"New learning Technologies using Multimedia Education Tools", 2002 NC State University Learning Technology Service Workshop, Raleigh, NC (Featured Speaker)

"Viewlet Movies and Audio Reproduction for Enhanced GIS Learning", 2002 NC State University Multimedia Users Group, Raleigh, NC (Featured Speaker)

"Cultural Resource Inventories and GIS", 2002 National Park Service Northeast Region Cultural Resources Meeting, Philadelphia, PA (Keynote Speaker)

"GIS in Resource Inventorying and Monitoring", 2002 NE Region NPS GIS Coordinators Meeting, Reston, VA (Featured Speaker)

"Research Libraries for the Future", 2002 NCSU Libraries for the Future Workshop

"GIS in Teaching K-12 Environmental Science", NC Environmental Education Conference, Raleigh, NC, 2001 (Featured Speaker)

"GIS in K-12 Instruction", NC GIS Conference, Winston-Salem, NC 2001 (Program Chair)

"Internet Based GIS Delivery," NPS GIS Task Force, Redlands, CA, 2001

"GIS in Resource Inventorizing and Monitoring", NE Region NPS Resource Management Coordinators, Narragansett, RI, 2001

"New GIS Technologies for Park Resource Management", Northeast Region NPS GIS Coordinators Meeting, Williamsburg, VA, 2001

"GIS in Teaching K-12 Environmental Science", NC Environmental Education Conference, Raleigh, NC, 2000 (Featured Speaker)

"New GIS Technologies for Park Resource Management", Northeast Region NPS GIS Coordinators Meeting, Gettysburg, PA, 2000

"GIS in National Park Natural Resource Management", NPS National Natural Resource Training Program, Ventura CA 2000 (Featured Speaker)

"Planning Guidelines for NPS GIS Implementation", National NPS GIS Coordinators Meeting, Kona, HI, 2000

"NC State Program in GIS-Based Regional Planning," Presentation to the NC State University Graduate School Board of Visitors, Raleigh, NC, 1999

"Training GIS Professionals," 1999 NC GIS Conference, Winston Salem, NC, 1999 (Invited Address)

"GIS in Teaching K-12 Environmental Science," NC Environmental Education Conference, Raleigh, NC, 1999 (Featured Speaker)

"A Comprehensive GIS Data System for Supporting Sustainable Growth in NC," 1999 NC GIS Conference, Winston Salem, NC, 1999

"Learning Through the Web: Distance Education Experiences in Park and Recreation Courses at NC State University," National Park and Recreation Educator's Teaching Workshop, Myrtle Beach, NC, 1999

"New GIS Technologies for Park Resource Management," Northeast Region NPS GIS Coordinators Meeting, Fredericksburg, VA, 1999

"GIS in National Park Natural Resource Management," NPS National Natural Resource Training Program, Gatlinburg, TN 1999 (Featured Speaker)

"A Comprehensive GIS Data System for Supporting Sustainable Growth in NC", 1999 NC Regional Planning Conference, Raleigh, NC, 1999

"New GIS Technologies for Park Resource Management", National NPS GIS Coordinators Meeting, Bar Harbor, ME, 1999

"GIS in a Major University IT Environment," ACM Computer Services Management Symposium, St. Louis, MO, 1998 (Keynote Address)

"GIS in National Park Natural Resource Management", NPS National Natural Resource Training Program, Luray, VA, 1998 (Featured Speaker)

"NC State Program in GIS-Based Regional Planning," Presentation to the NC State University Board of Trustees, Raleigh, NC, 1998

"New GIS Technologies for Park Resource Management", National NPS GIS Coordinators Meeting, Washington, DC, 1998

"GIS in National Park Management," NPS Northeast Region Resource Management Conference, Long Branch, NJ, 1997 (Invited Address)

"GIS for the Masses: NCSU's Approach to Providing Campus-Wide Access to GIS," Second International Symposium on GIS in Higher Education, Columbia, MD, 1996

"Natural Resources Education with Multimedia: Experiences from the North Carolina State University Project," Second Biennial Conference on University Education in Natural Resources, State College, PA, 1996

"The Student-Directed, Information-Rich (SDIR) Education Project, 1994-96," North Carolina Library Association College and University Section Fall Workshop, Charlotte, NC, Oct. 18, 1996 (Featured Address)

"GIS in Local Park Planning," NC/SC Park and Recreation Conference, Winston-Salem, NC, 1996 (Invited Address)

"Educational Technology in the College of Forest Resources," College of Forest Resources Faculty Meeting, Raleigh, NC, 1996 (Featured Address)

"Distance Learning and Educational Technology," Kickoff NCSU Board of Visitors Meeting, Raleigh, NC, 1996 (Featured Address)

"Enhanced Classroom Instruction with Educational Technology," NCSU Chancellor's Retreat, Research Triangle Park, NC, 1996 (Featured Address)

"GIS in Cultural Resource Management", National Park Service Cultural Resource Management Symposium, Williamsburg, VA, 1995 (Keynote Address)

"GIS for National Park Management," National Park Service Superintendents Conference, Long Branch, NJ, 1995 (Featured Address)

"Student-Directed, Information-Rich Learning," CNI New Learning Communities Conference, Indianapolis, IN, 1995 (Award Address)

"Campus-wide Access to Geographic Information Systems to Support Student Learning," Computers on Campus National Conference, Houston, TX, 1995

"SDIR: Student-Driven Information-Rich Education Project; Report to the Deans Council," NCSU, 1995 (Invited Address)

"Student-Directed, Information-Rich Undergraduate Education: A New Instructional Model," UNC/CAUSE/CNI Southeast Regional Conference, Greensboro, NC, 1995 (Invited Address)

"An Introduction to GIS", Association of Research Librarians Annual Conference, Raleigh, NC, 1994 (Invited Address)

"Introductory GIS", North Carolina Society of Surveyors Institute, Raleigh, NC, 1994 - 1995 (Keynote address)

"Boundary Blur in Vegetation Mapping", International Symposium on Error in GIS and Remote Sensing, Williamsburg, VA, 1994 (Invited Address)

"A Procedure for Locating Underground Storage Tanks in Gaston County", North Carolina GIS Conference, Raleigh, NC, 1993 (invited address).

"GIS in Forest Products Management with a Visit to Distance Learning", IBM Process Plant Management Conference, Tampa, FL, 1992, (keynote address).

"GIS Implementation Issues for Federal Agencies That Manage Environmental Resources", GISDEX '92, Washington, DC, 1992, (invited panel organizer).

"Multimedia and Distance Learning: A New Age for Recreation and Park Communications and Training", North Carolina Recreation and Park Society Conference, Pinehurst, NC, 1992 (invited address).

"GIS for Mosquito and Vector Control", North Carolina Mosquito and Vector Control Association Annual Conference, Winston Salem, NC, 1992, (invited address).

"GIS to Support Cultural Resource Management: A Case Study at Colonial National Historical Park", Seventh Conference on Research and Resource Management in Parks and on Public Lands, George Wright Society, Jacksonville, FL, 1992 (invited address)

"Distance Education in Forestry", Society of American Foresters National Convention, Richmond, VA, 1992 (invited address).

"GIS in Forest Recreation Management", USFS Recreation Management Short Course, Clemson, SC, 1992, (keynote address).

"GIS Applications to Urban Recreation Research and Management", NRPA Research Symposium, Baltimore, MD, 1991

"GIS Research at NCSU." Southeastern ARC/INFO Regional User's Group Conference, Charlotte, NC, 1991 (invited address)

"Computer Mapping for Data Analysis and Display", NCSU INFOTEK Computer Symposium, Raleigh, NC, 1991 (invited address)

"GIS Research in the College of Forest Resources", UNC Imaging Science and Engineering Symposium, Raleigh, NC, 1991 (invited address)

"Spatial Feasibility of Forest Land Optimization Models with GIS", Systems Analysis in Forest Resources Symposium, Charleston, SC, 1991.

"GIS Data Transfer and Translation", NC GIS Conference, Raleigh, NC, 1991 (invited address)

"Quick Start in GIS", NC GIS Conference, Raleigh, NC, 1991 (invited address)

"GIS Education at NCSU", NC GIS Conference, Raleigh, NC, 1991 (invited address)

"A CAD and GIS Procedure to Identify Erosion Rates on the Outer Banks of North Carolina", Second National Conference on Civil Engineering Applications of Remote Sensing and GIS, Washington, DC, 1991

"Institutionalizing GIS in a Park", Second National Conference on GIS in the National Park Service, Denver, CO, 1991 (featured address with C. Rafkind)

"Potentials of GIS for City and County Public Recreation Management", Computer Applications for Local Government Recreation Programs Workshop, North Carolina State University Recreation Resources Service, Raleigh, NC, 1990 (invited address).

"GIS and CAD Education for Natural Resource Managers at North Carolina State University", North Carolina ESRI User's Group Meeting, Raleigh, NC, 1990 (invited address).

"A GIS for County Level Natural Resource Planning", North Carolina Association of County Commissioners, Asheville, NC, 1990 (invited address).

"GIS in International Forestry", International Forestry Short Course, College of Forest Resources, North Carolina State University, Raleigh, NC, 1990 (invited address).

"Forest Recreation Applications of GIS", Society of American Foresters National Meeting, Washington, DC, 1990 (invited address).

"Alternatives to Large System GIS for National Parks", Southeastern Region National Park Service GIS Training Workshop, Atlanta, GA, 1990 (featured address).

"An Introduction to GIS." American Association of Civil Engineers Technical

Conference, Raleigh, NC, 1990 (featured address).

"Mapping with MicroCAD: The NCSU Experience", The Fifth International Forum on Micro-based CAD, North Carolina State University Industrial Extension Service, Research Triangle Park, NC, 1989 (invited address).

"GIS at the Richmond National Battlefield." Ninth Southeastern Recreation Research Symposium, Asheville, NC, 1988.

"Recreation Allocations with FORPLAN." Ninth Southeastern Recreation Research Symposium, Asheville, NC, 1988.

"Sensitivity Analysis of Recreation in FORPLAN Models." Third National Systems Analysis Workshop, Society of American Foresters, Monterey, CA, 1988.

"Microcomputers in Forestry - a Five Year Perspective." Fifth Annual Meeting of the Forest Resources Systems Institute, Knoxville, TN, 1988 (keynote address).

"Microcomputer GIS." Canadian Pulp and Paper Association, Quebec City, Quebec, Canada, 1988 (featured address).

"A Low Cost GIS Alternative for Park Management." National Park Service GIS Workshop, Luray, VA, 1988 (invited).

"GIS - How It Works." Society of American Foresters Regional Technical Conference, Baton Rouge, LA, 1988 (featured address).

Awards and Honors:

Recipient – College of Natural Resources Service Award 2003

Recipient – ESRI GIS Special Achievement Award 2001

Recipient – University Libraries Faculty Award, 2000-2001

Mentored Janet Ferguson - University Outstanding Teaching Assistant Award, 2001

Mentored Allyson Jason – PRTM Outstanding Graduate Student Award, 2001

Mentored Charlynn Smith – CNR Outstanding Service Award, 2001

Mentored Debra Savage – University Outstanding Teaching Assistant Award, 2000

Charlynn Smith's (M.S. advisee) thesis selected as best in the U.S. by the National Recreation and Park Association, 1999

Andrew Martin's (mentored undergraduate) research paper received the G. Herbert Stout Award for best undergraduate project at the 1999 Regional GIS Conference

Ann Marie Queen's (M.S. advisee) thesis received the G. Herbert Stout Award for best graduate paper at the 1999 Regional GIS Conference

Nominee, NCSU Libraries Faculty Library Award, 1998,

Recognition Award for Outstanding Service to the National Park Service, 1996

Initial Dean's Award for Outstanding Service to the College of Forest Resources, 1996

National Park Service Outstanding Science Project Award, 1995

SDIR Project selected as one of the 10 Best Educational Technology Projects in

the US, 1995
Selected for NSF Educational Technology In-Step Graduate Fellowship, 1995
Board of Directors, Forest Resource Systems Institute, 1989-1993
Best Science Presentation, George Wright Society, National Park Service, 1992
Multidisciplinary National GIS Application Award, NPS, 1991
Best Presentation National GIS Application Award, NPS, 1991
Peer Review Associate Editor, The Compiler
Peer Review GIS technology, The Journal of Forestry
Peer Review Forest Recreation, Southeastern Forest Experiment Station, USDA
Forest Service
Agricultural Research Service National Recognition, 1990
Wake County Wildlife Club Research Award, 1990
Xi Sigma Pi (National Forestry Honorary Society)
Rho Phi Lambda (National Recreation Honorary Society)
Phi Kappa Phi (Scholarship Honorary Society)
Gamma Sigma Delta (Agriculture Honorary Society)
Sigma Xi (National Science Honorary Society)
Promising New Ph.D. in Operations Research, 1978
Two University Innovative Teaching Awards
Two University Computer Aided Teaching Awards

7. Research and Scholarly Activities

Research – My research program focuses on the application of Geographic Information Science to natural resource issues and currently operates at about \$1,000,000 per year in grant monies.

A major portion of that program is the operation of the GIS Technical Support Center for the National Park Service through which we oversee the research and training activities of that group. I am a founding member and current Chair of the NC State University Graduate Geographic Information Science Faculty. We have over 20 academic departments involved with that program and offer over 20 graduate courses in that program (www.gis.ncsu.edu). My university teaching includes multiple undergraduate and graduate courses in Geographic Information Science and natural resource management, including two courses that are offered entirely through the web.

In addition, I have an on-going research program in the development and appropriate deployment of educational technology in university teaching and learning.

Publications

Books and Book Chapters:

Millinor, William, Hugh Devine, and Elizabeth Eastman. 2008 (in press). [Creating a Crosswalk of Vegetation Types and Fire Fuel Models for the National Park Service.](#) Elsevier Inc., Houston TX

Devine, Hugh A., Perver Korca-Baran, Peter Budde, William Millinor, Elizabeth Eastman, and William Shroyer. 2004. [Introduction to ArcGIS for Land Management Agencies.](#) Raleigh, NC: North Carolina State University (<http://www.nps.gov/gis/outreach/arcgis8x.html>).

Millinor, William, William Slocumb, Hugh Devine, and Mark Smith. 2003. *GIS for Fire Specialists, The NPS Course*. Raleigh, NC: North Carolina State University (http://www.nps.gov/gis/av8_fire).

Sams, Cheryl, William Slocumb and Hugh Devine. 2004. Appomattox Court House National Historical Park: Linking Cultural Resource Databases through GIS in Mapping the Future of America's National Parks. ESRI Press, Redlands, CA.

Sams, Cheryl, William Slocumb and Hugh Devine. 2004. Hopewell Furnace National Historic Site: Linking Cultural Resource Databases through GIS in Mapping the Future of America's National Parks. ESRI Press, Redlands, CA.

Peer Reviewed:

Pradhan, S., M. T. Hoover, R. Austin, H. A. Devine, 2007. Potential Nitrogen Contributions from On-site Wastewater Treatment Systems to North Carolina's River Basins and Sub-basins. NCARS, North Carolina State University, Technical Bulletin 324

Wang, Zhengming M., Hugh A. Devine, and W. D. Wayne Zhang, 2007. Using GIS-Assisted Water Quality Model to Analyze Potential Risk Areas of Lead Leaching in Raleigh's Water Distribution Systems. 2007 Conference Proceedings WQTC, Charlotte, NC 2007.

Wang, Zhengming M., and Hugh A. Devine, 2007. A Spatial /Temporal Approach to Analyze the Potential Sources of Lead Corrosion in Drinking Water. 27th ESRI International User Conference, San Diego, CA.

Shedd, Justin M. and H. A. Devine, 2005. The Use of Remote Sensing to Update Fuel Load and Vegetation Datasets After a Natural Disaster. EASTFIRE Conference, George Mason University, Fairfax, VA.

Devine, Hugh .A., P. K. Baran, and Linda C. Sewall 2005. An Environmental Water Quality Data Visualization System for Private Ground Water Supplies. Final Peer Reviewed Report

Pradhan, S., M. T. Hoover, R. Austin, H. A. Devine, 2003. Potential nitrogen loading from septic systems to North Carolina's river basins. <http://agronomy.agr.state.nc.us/sssnc/proc03.pdf>. Soil Science Society of North Carolina, Raleigh, NC.

Stubbs, Harriett S., Hugh Devine, and Rita Hagevik. (2002) . Thinking Spatially GIS Curricula K-16 and Professional Development for Educators. Submitted and accepted. In Proceedings of a conference, International Organization of Science Technology Educators. August 2002. Foz do Iguacu, Brazil.

Mitchell, J.F. and H.A. Devine, 1996, "GIS as the Basis for an Urban Forestry

Plan," in the Proceedings of the First Southern Forest GIS Symposium, Society of American Foresters, Washington, DC, pp:183-197.

Argentati, Carolyn & Hugh Devine, Hal Meeks, 1996, "The Student-Directed, Information-Rich (SDIR) Undergraduate Education Project," *CONNECT*, 26:7-9.

Argentati, Carolyn D. & Hugh Devine, Hal Meeks, 1996, "The SDIR Undergraduate Education Project," *NCSU Libraries FOCUS*, 16(2):12-13.

Devine, H.A. and J.L. Styron, 1994, "Boundary Blur in Vegetation Mapping," in the Proceedings of the First Annual Conference in GIS Accuracy Assessment, ASPRS, Falls Church, VA, pp:158-167.

Johnson, J.L., Fels, J.E., Rafkind, R.D., and Devine, H.A., 1993, "Data Base Mapping and Management at Colonial NHP", *Park Science*, Winter 1993:28.

Devine, H.A., McCaffray, E.B., Turner, K., 1993, "Vegetation Mapping and GIS for the Cape Hatteras National Seashore", *Barrier Island Ecology of the Mid-Atlantic Coast: A Symposium*, Technical Report NPS/SERCAHA/NRTR-93/04, National Park Service, Southeast Regional Office, Atlanta, GA pp 179-188

Fels, J.E., McManus, J.M., Rafkind, R.D., and Devine, H.A., 1993, "Designing Better Maps Using Geographic Information Systems", *Park Science*, Fall 1993:35-36.

Rafkind, R.D., Devine, H.A., Karish, J.F., Dienna, P. L., 1993, "What We've Learned About GIS: One Park's Experience in the World of GIS", *The George Wright Forum*, Volume 10, No. 3, pp:4-10.

Devine, H.A., Overton, M.F., and Fisher, J.S., 1992. "A GIS Procedure to Monitor Coastline Erosion the Outer Banks of North Carolina", *Technical Papers of the 1992 American Society of Photogrammetry and Remote Sensing National Convention and Resource Technology 92*, ASPRS, Falls Church, VA, Vol 5:207-214.

Becker, R.T. and Devine, H.A., 1992. "Raster-to-Vector Conversion of Scanned Documents for Resource Management", *Technical Papers of the 1992 American Society of Photogrammetry and Remote Sensing National Convention and Recourse Technology 92*, ASPRS, Falls Church, VA, Vol 3:105-114.

Smutko, L.S., Danielson, L.E., McManus, J.M., and Devine, H.A., 1992, "Use of Geographic Information System Technology in Delineating Wellhead Protection Areas", *National Symposium on the Availability of Ground-Water Resources*, American Water Resources Association, Huntsville, AL, pp.198-203.

Fels, J.E. and Devine, H.A., 1991. "FMS/AC as a GIS System Within AUTOCAD", *The Compiler*, Vol. 9, No. 3, pp. 3.

Kuo, J.R. and Devine, H.A., 1991 , "An Automated Procedure for Urban

Recreation Planning", Proceedings of the 1990 Southeastern Recreation Research Conference, SEFES, USDA Forest Service, Asheville, NC, General Technical Report SE-67:pp. 37-52.

Devine, H.A. and Rafkind C.F., 1991. "A New Approach to GIS Design and Implementation", Technical Papers of the 1991 American Society of Photogrammetry and Remote Sensing National Convention, ASPRS, Falls Church, VA, Vol 4:51-61.

Fels, J.E. and Devine, H.A., 1991. "Interactive Viewshed Mapping Using Shaded Surface Displays: A Community Planning Approach", Technical Papers of the 1991 American Society of Photogrammetry and Remote Sensing National Convention, ASPRS, Falls Church, VA, Vol 4:111-122.

Tucker, D.F. and Devine, H. A., 1991. "Integration of GIS into Natural Resources Education", Technical Papers of the 1991 American Society of Photogrammetry and Remote Sensing National Convention, ASPRS, Falls Church, VA, Vol 4:314-324.

Devine, H.A., McCaffray, E.B., Turner, K., 1991, "Vegetation Mapping and GIS for the Cape Hatteras National Seashore", Proceedings of the 1986 Conference on Science in the National Parks, U.S. National Park Service, Washington, D.C., Vol. 8:30-40.

Birchford, S., Smolen, M.D., Danielson, L.E., and Devine, H.A., 1991, "Development of a Water Quality Database and Associated Strategies for County-Level Environmental Management", Proceedings of Application of Geographic Information Systems, Simulation Models, and Knowledge-based Systems for Landuse Management, Virginia Polytechnic and State University, Blacksburg, VA pp. 277-286.

Tucker, D.F. and Devine, H.A., 1990, "Wilderness Opportunity Costs Revisited", Proceedings of the 1989 Southeastern Recreation Research Conference, SEFES USDA Forest Service, Asheville, NC, pp. 37-48.

Devine, H.A., 1990, "A GIS Plan for the Colonial National Historic Park", Report submitted to the Colonial National Historic Park, Yorktown, VA. 58 pages. (National Prototype)

Devine, H.A., 1990, "GIS in the 90's", The Compiler, Vol. 8, No. 3, pp. 5-16.

Devine, H.A., 1990, "Computer Mapping Systems in Forest Management", The Compiler, Vol. 8, No. 3 pp. 2-4.

Styron, J.B., Devine, H.A., and Charles D. Rafkind, 1990, "A Methodology Using Automated Techniques for Map Accuracy Assessment and Polygon Boundary Blur Examination", Proceeding of Resource Technology 90, American Society for Photogrammetry and Remote Sensing, Falls Church VA, pp. 774.

Hanning, R. B. and Devine, H.A., 1990, "GIS in Natural Resource Planning, A

Case Study: Gaston County, North Carolina", Proceedings of Resource Technology 90, American Society for Photogrammetry and Remote Sensing, Falls Church, VA, pp. 773.

Tucker, D.F., Whitman, R.L., and Devine, H.A., 1990, "Spatial and Temporal Dimensions of Water Quality at Indiana Dunes National Lakeshore", Proceedings of LIS/GIS 1990, American Society for Photogrammetry and Remote Sensing, Washington, D.C.: pp. 256-264.

Botkin, M.R. and Devine, H.A., 1989, "Outdoor Recreation Allocation in a FORPLAN Model", Journal of Forestry, Vol. 87, No. 10, pp. 31-37.

Devine, H.A. and Field. R.F., 1988, "A Benefit Cost Procedure for GIS Evaluations", Proceedings of the Second National GIS Conference, American Society of Photogrammetry and Remote Sensing, Falls Church, VA, Vol. 3, pp. 79-83.

Devine, H.A., McDonough, K.B., and Walton, T.M., 1988, "Trials and Tribulations in Constructing a GIS Data Base for Forest Service Planning", Proceedings of the Second National GIS Conference, American Society of Photogrammetry and Remote Sensing, Falls Church, VA, Vol 3, pp. 73-78.

Botkin, M.R. and Devine, H.A., 1988, "National Forest Land-Use Planning and Outdoor Recreation Management Implications", Proceedings of the 1986 Southeastern Recreation Research Symposium, SEFES USDA Forest Service, Asheville, NC, pp. 115-126.

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National Park Service – Research and Development of an Expanded Geographic Information System for National Park Service Cultural Resources Data Integration and Interagency Environmental Review, Final Report (December 2009)

National Park Service – Geographic Information System Research and Development for the Northeast Region of the National Park Service, Final Report (December 2009)

National Park Service – Phase 2 GIS Database Development for the Overmountain Victory National Historic Trail, Final Report (October 2009)

National Park Service – GIS Database Development and Archive for the Northeast Region Inventory and Monitoring Program, Final Report (September

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National Park Service – Review of Selected Natural Resource Research Data for the Northeast Region Inventory and Monitoring Program, Final Report (June 2009)

National Park Service – Decision Support Systems for the Northeast and National Capital Region Fire Programs, Annual Report (April 2009)

USGS – Vegetation Map and Data Systems Web Pages (8 Parks), Final Report (May, 2007)

National Park Service – Natural Resource Database Development and Archive for Selected Parks (10) , Final Report (June, 2007)

National Park Service – Fire Fuel Mapping for Acadia, New River, and Fire Island National Parks, Final Report (June, 2007)

National Park Service - Northeast Region NPS Program for GIS FY 2006, Final Report (September, 2006)

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National Park Service – Preliminary Development of a Natural Resources Data Base to Support General management Planning at Valley Forge National Historical Park, Final Report (December 11, 2003)

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National Park Service - National NPS Program for GIS FY2003, Final Report

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National Park Service – Wildfire Management Planning Procedures using GIS, Final Report

National Park Service – Digital Image Database Development for Fort Lee, Final Report

National Park Service – New Procedures for Digital Vegetation Mapping: Valley Forge National Park, Final Report

National Park Service – Preliminary Database design for Natural Resource Inventory and Monitoring: Valley Forge National Park, Final Report

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National Park Service - Development of Vegetation and Digital Image Databases for Appomattox Court House National Historical Park, Unpublished final technical report FY 2002

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"GIS Applications in the Chesapeake and Allegheny Clusters on the National Park Service", George Wright Society 2000, Valley Forge, PA, 2000

"Mapping Our Natural and Cultural Resources for Effective Management", 1999 NCPRS Conference, Winston Salem, NC, 1999

"A Comprehensive GIS Data System for Public Participation in Regional Planning in North Carolina: The Research Triangle prototype", NC Regional Planning Association, Raleigh, NC, 1999

Other Publications:

GIS PhD Curriculum Proposal, NC State University, Raleigh, NC, 2007

Authored the Successful University Application for The University Consortium For Geographic Information Science (<http://www.gis.ncsu.edu/ucgis/>)

ArcView Training Manual for National Park Service Fire GIS Workbook, co-authored

Draft National Strategic Plan for GIS in The National Park Service, co-authored

National Planning Guidelines for National Park Service GIS Implementation, co-authored

Revised Introductory ArcView Training Manual for National Park Service GIS (Internet Based), co-authored

Funded Research Projects (1992 - present):

Year	Amount	Title	Sponsoring Agency
2007-2011	\$425,985	Geographic Information System Research and Development for the Northeast Region	NPS
2007-2011	\$510,491	Decision Support System for the Northeast and National Capital Region Fire Programs	NPS
2009-2010	\$35,338	Vegetation Map Accuracy Assessment for Gauley River National Recreation Area	NPS
2008-2010	\$60,500	Natural Resource Data Management and Database Development for the Mid-Atlantic Network of the Northeast Region	NPS
2007-2010	\$271,988	Review of Selected Natural Resource Research Data For the Northeast Region Inventory and Monitoring Program	NPS
2006-2010	\$58,591	GIS Database Development for the Overmountain Victory National Historic Trail	NPS

Year	Amount	Title	Sponsoring Agency
2009	\$20,464	Spatial Database Development for Wake County Advocates for Health in Action Access and Environment Workgroup	WakeMed Health & Hospitals
2007-2009	\$66,330	Watershed Condition Assessments For George Washington Birthplace National Monument and Thomas Stone National Historic Site	NPS
2005-2009	\$94,000	Northeast Region Cultural Resources Database Design and Development	NPS
2004-2009	\$167,877	GIS Database Development and Archive for the Northeast Region Inventory & Monitoring Program	NPS
2007-2008	\$80,000	A GIS Based Web Map System for Public Access to Basinwide Water Quality Plans and Associated Information	NC Division of Water Quality (DENR) (Prime- EPA)
2007-2008	\$28,000	Analysis of Forest Cover in Greensboro and Guilford County, NC	Greensboro, NC (Prime – State of NC)
2006-2008	\$20,614	Research and Design of a Draft Data Standard for Trails GIS Data in the Piedmont-South Coast Atlantic CESU	NPS
2003-2008	\$458,500	GIS Data Management System Design and Implementation for the Northeast Region Inventory and Monitoring Program	NPS
2003-2008	\$49,560	GIS Spatial Analysis for Forest Health Monitoring	USFS
2006-2007	\$79,943	Weather and Geographic Information Support Services	UNC-Chapel Hill
2005-2007	\$125,000	Development of a New GIS Methodology and Data Structure for Wildfire Planning in the Eastern U.S.	NPS
2003-2007	\$~50,000	Tracking the Source of Enteric Pathogens in Surface Waters (\$450,000)	USDA

Year	Amount	Title	Sponsoring Agency
2003-2007	\$181,385	Water Quality Impacts of Alternative Build-out Scenarios for Brunswick County, North Carolina	NC Division of Water Quality (DENR)
2003-2007	\$50,047	Fire Fuel Mapping for Acadia, New River, and Fire Island	NPS
2003-2007	\$54,000	Vegetation Map Accuracy Assessment for New River Gorge National River and Bluestone National Scenic River	NPS
2002-2007	\$467,143	GIS Technical Support for the Chesapeake and Allegheny Cluster Parks	NPS
2001-2007	\$70,000	Linking Cultural Resource Data to GIS in Selected National Parks	NPS
2005-2006	\$35,000	Natural Resource Synthesis for George Washington Birthplace National Monument	NPS
2005-2006	\$18,000	Blue Ridge Parkway Wetlands Spatial Data Development and Analysis	NPS
2005-2006	\$21,158	National Geographic Information Systems Technical Support Center - Interagency Trails Data Standards Pilot Study	NPS
2000-2006	\$64,000	An Environmental Water Quality Data Visualization System for Private Ground Water Supplies	NCSU WRRRI
2000-2005	\$20,000	Vegetation and Digital Image Databases for Appomattox Court House National Historical Park	NPS
2001-2004	\$325,692	Geospatial Vegetation Data Development for Selected National Parks	NPS
1999-2004	\$60,000	New Vegetation Inventory Procedures: Valley Forge National Military Park	NPS
2001-2003	\$20,000	Use of GIS for Predicting Valley and Stream Types and Riparian Area Characteristics	USDS FS

Year	Amount	Title	Sponsoring Agency
1999-2003	\$27,621	GIS Analysis of Potential National Park Sites in the Chesapeake Bay Region	NPS
1999-2003	\$20,000	National Water Quality Data Conversion Study: National Park Service	NPS
1994-2003	\$10,000	Administration Support for Southeastern CPSU Research	NPS
2000-2002	\$230,638	Pre-Suppression Fire Planning Through GIS	NC DFS
1994-2002	\$380,000	National GIS Technical Support Center	NPS
1993-2002	\$749,500	GIS Technical Support Center for Chesapeake & Allegheny Systems Support Offices for the NPS	NPS
2000-2001	\$6,700	Low-Cost Video Conferencing for GIS Instruction	NCSU DELTA
2000-2001	\$20,000	Building a Database of Local Government Geodata Resources	NCSU-Extension
2000-2001	\$61,952	National Park Service Enterprise Information System	NPS
1998-2001	\$270,000	A Comprehensive GIS Data System for Supporting Sustainable Growth in NC	NCSU
1997-2001	\$89,500	Urban Forestry Management System	NCSU
1997-2001	\$39,500	Environmental Education Based on GIS-Sci-Link Program	NC-DENR
1996-2001	\$82,000	Hoffman Forest GIS	NCSU – Forestry Foundation
1997-2000	\$206,000	Use of GIS to Improve Pre-Suppression Fire Planning	NC-DFS
1995-2000	\$100,000	GIS portion of the InStep Educational Technology Grant	NSF
1998	\$50,000	Multidisciplinary Curricula in GIS at NC State	NCSU
1997	\$65,000	Mid-Atlantic Region Environmental Assessment	USDA-FS

Year	Amount	Title	Sponsoring Agency
1996	\$14,000	GIS for Urban Park Management	Cary, NC
1996	\$46,000	Educational Technology Development in GIS	NCSU
1996	\$1,000	GIS for Greenway Planning	Triangle Greenways Council
1996	\$10,000	GIS Database for George Washington Memorial Parkway	NPS
1995	\$198,000	NPS Natural Resource Bibliographic Database for the Eastern US	NPS
1994-1995	\$260,000	SDIR Educational Technology Project	NCSU
1994	\$8,000	An Urban vegetation Classification Procedure	Cary, NC
1993-1994	\$180,000	A Combined GIS Water Surface Model for the Delaware Water Gap National Recreation Area	NPS
1993	\$10,000	An Urban Vegetation Classification Procedure	Cary, NC
1993	\$9,000	Enhancement of the Cape Hatteras National Seashore GIS	NPS
1993	\$34,000	GIS Data Base Analysis Procedures: Colonial National Park	NPS
1993	\$5,000	Administrative Support for Southeastern CPSU Research	NPS
1992	\$5,000	A Plan for GIS Support for the National Park Service	NPS
1992	\$51,000	Expansion of the Cultural Resource Data Base for Gettysburg National Military Park	NPS
1992	\$6,000	Cartographic Design for GIS Maps	NPS
1992	\$9,000	GIS Data Base Expansion for Colonial National Historical Park	NPS
1992	\$5,000	GIS Instruction Via Distance Learning	NPS
1992	\$6,500	A GIS Implementation Plan for Petersburg National Battlefield	NPS

Year	Amount	Title	Sponsoring Agency
1992	\$3,000	Innovative Teaching Award	NCSU

8. Institutional Involvements

Courses Taught by Semester (since 1992):

Semester/Year	Course Number	Course Name
Spring/2010	NR 533 NR 595	Application Issues In GIS Advanced Spatial Analytics
Fall/2009	NR 533 AA 591	Application Issues In GIS Special Topics in Advanced Analytics
Summer/2009	NR 535	Computer Cartography
Spring/2009	NR 533 NR 535	Application Issues In GIS Computer Cartography
Spring/2008	NR 533	Application Issues In GIS
Fall/2007	NR 533	Application Issues In GIS
Summer/2007	NR 610	Special Topics in Natural Resources (GIS)
Spring/2007	NR 610	Special Topics in Natural Resources (GIS)
Fall/2006	NR 533	Application Issues In GIS
Spring/2006	PRT 462 NR 531 NR 535 NR 610v	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Fall/2005	PRT 462 NR 531 NR 535 NR 610v	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Spring/2005	PRT 462 NR 531 NR 535 NR 610v	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Fall/2004	PRT 462 NR 531 NR 535	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Spring/2004	NR 531 NR 535	Intro. to GIS (graduate) Computer Cartography

Semester/Year	Course Number	Course Name
Fall/2003	NR 531 NR 535	Intro. to GIS (graduate) Computer Cartography
Spring/2003	PRT 462 NR 531 NR 535 NR 693 NR 695	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Fall/2002	PRT 462 NR 531 NR 535 NR 693 NR 695	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Spring/2002	PRT 462 NR 531 NR 535 NR 690 NR 695 NR 699 NR 685 PRT 699 PRT 890 PRT 895 PRT 890	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Fall/2001	PRT 462 NR 531 NR 595 NR 690 NR 695 NR 699 PRT 699 PRT 890 PRT 895 PRT 890	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography
Spring/2001	PRT 462 PRT 595v PRT 595w PRT 595x PRT 610 PRT 699	Intro. to GIS (undergraduate) Intro. to GIS (graduate) Computer Cartography

Semester/Year	Course Number	Course Name
Fall/2000	PRT 462 PRT 563 PRT 595a PRT 595v PRT 610 PRT 699	Intro. to GIS (undergraduate) Technical Issues in GIS Computer Cartography Intro. to GIS (graduate)
Spring/2000	PRT 462 PRT 595x PRT 595v PRT 610 PRT 699	Intro. to GIS (undergraduate) Computer Cartography Intro. to GIS (graduate)
Fall/1999	PRT 462 PRT 563 PRT 595a PRT 610 PRT 699	Intro. to GIS (undergraduate) Technical Issues in GIS Computer Cartography
Spring/1999	PRT 462 PRT 491D PRT 562 PRT 591 PRT 595 PRT 692 PRT 699	Intro to GIS (undergraduate) Principles of GIS Intro. to GIS (graduate)
Fall/1998	PRT 462 PRT 491 PRT 563 PRT 591 PRT 692 PRT 699	Intro. to GIS (undergraduate) Technical Issues in GIS
Spring/1998	PRT 462 PRT 562 PRT 591 PRT 692 PRT 699	Intro. to GIS (undergraduate) Principles of GIS
Fall/1997	PRT 462 PRT 491 PRT 563 PRT 591 PRT 692 PRT 699	Intro. to GIS (undergraduate) Technical Issues in GIS

Semester/Year	Course Number	Course Name
Spring/1996	PRT 491D PRT 562 PRT 591 PRT 692 PRT 699	Intro to GIS (undergraduate) Principles of GIS Intro to GIS (graduate) Special Topics in GIS
Fall/1996	NR 100 FOR 405 PRT 491	Natural Resource Issues (SDIR course) Forest Management (GIS Module) Intro to Desktop Mapping (new SDIR GIS course)
Summer/1996	PRT 591	Independent Study (GIS Applications)
Spring 1996	FOR 406 PRT 591	Forest Planning (GIS Module) GIS Basics
Fall/1995	NR 100 FOR 405	Natural Resource Issues (SDIR course) Forest Management (GIS Module)
Summer/1995	PRT 591	Independent Study (GIS Applications)
Spring/1995	FOR 406	Forest Planning (GIS Module)
Fall/1994	NR 100 FOR 405	Natural Resource Issues (SDIR course) Forest Management (GIS Module)
Summer/1994	PRT 591	Independent Study (GIS Applications)
Spring/1994	PRT 562 PRT 664 FOR 406	Introduction to GIS Special Studies in GIS Forest Planning (GIS Module)
Fall/1993	PRT 562 PRT 563 PRT 696	Introduction to GIS Advanced Tech. In GIS Graduate Seminar
Summer/1993	PRT 591	Independent Study (GIS Applications)
Spring/1993	PRT 562 PRT 664 FOR 406	Introduction to GIS Special Studies in GIS Forest Planning (GIS Module)
Fall/1992	PRT 696 PRT 563 FOR 405 FOR 401	Graduate Seminar Advanced Tech. in GIS Forest Management(GIS Module) Forest Hydrology(GIS Module)
Summer/1992	PRT 591	Independent Study (Advanced GIS)

Semester/Year	Course Number	Course Name
Spring/1992	PRT 562 PRT 691 PRT 591 PRT 663	Introduction to GIS Advanced Forest Hydrology (GIS Module) Independent Study (GIS Applications) GIS Application Issues