

Department of Undergraduate Education
Advanced Technology Education
National Science Foundation
DUE-ATE-NSF

Filed for Western Wisconsin Technical College
Filed Electronically

April 26,2005

Preliminary Filing
GIS Across the Curriculum

\$346,840

I wrote the narrative for this grant.
Rachel did the budget and filed it.

**02 INFORMATION ABOUT PRINCIPAL INVESTIGATORS/PROJECT DIRECTORS(PI/PD) and
co-PRINCIPAL INVESTIGATORS/co-PROJECT DIRECTORS**

Submit only ONE copy of this form for each PI/PD and co-PI/PD identified on the proposal. The form(s) should be attached to the original proposal as specified in GPG Section II.B. Submission of this information is voluntary and is not a precondition of award. This information will not be disclosed to external peer reviewers. **DO NOT INCLUDE THIS FORM WITH ANY OF THE OTHER COPIES OF YOUR PROPOSAL AS THIS MAY COMPROMISE THE CONFIDENTIALITY OF THE INFORMATION.**

PI/PD Name: Gene Mucciolo

Gender: Male Female

Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race: (Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

Disability Status: (Select one or more)
 Hearing Impairment
 Visual Impairment
 Mobility/Orthopedic Impairment
 Other
 None

Citizenship: (Choose one) U.S. Citizen Permanent Resident Other non-U.S. Citizen

Check here if you do not wish to provide any or all of the above information (excluding PI/PD name):

REQUIRED: Check here if you are currently serving (or have previously served) as a PI, co-PI or PD on any federally funded project

Ethnicity Definition:

Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

Race Definitions:

American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American. A person having origins in any of the black racial groups of Africa.

Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

WHY THIS INFORMATION IS BEING REQUESTED:

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of its proposed PIs/PDs. To gather information needed for this important task, the proposer should submit a single copy of this form for each identified PI/PD with each proposal. Submission of the requested information is voluntary and will not affect the organization's eligibility for an award. However, information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information received from others. Any individual not wishing to submit some or all the information should check the box provided for this purpose. (The exceptions are the PI/PD name and the information about prior Federal support, the last question above.)

Collection of this information is authorized by the NSF Act of 1950, as amended, 42 U.S.C. 1861, et seq. Demographic data allows NSF to gauge whether our programs and other opportunities in science and technology are fairly reaching and benefiting everyone regardless of demographic category; to ensure that those in under-represented groups have the same knowledge of and access to programs and other research and educational opportunities; and to assess involvement of international investigators in work supported by NSF. The information may be disclosed to government contractors, experts, volunteers and researchers to complete assigned work; and to other government agencies in order to coordinate and assess programs. The information may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records", 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records", 63 Federal Register 268 (January 5, 1998).

List of Suggested Reviewers or Reviewers Not To Include (optional)

SUGGESTED REVIEWERS:

Not Listed

REVIEWERS NOT TO INCLUDE:

Not Listed

SINGLE COPY DOCUMENTS

COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE <small>(if not in response to a program announcement/solicitation enter NSF 04-23)</small>					FOR NSF USE ONLY	
NSF 05-530			04/26/05		NSF PROPOSAL NUMBER	
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) <small>(Indicate the most specific unit known, i.e. program, division, etc.)</small>					0533789	
DUE - ATE-Projects						
DATE RECEIVED	NUMBER OF COPIES	DIVISION ASSIGNED	FUND CODE	DUNS# <small>(Data Universal Numbering System)</small>	FILE LOCATION	
				077624062		
EMPLOYER IDENTIFICATION NUMBER (EIN) OR TAXPAYER IDENTIFICATION NUMBER (TIN)		SHOW PREVIOUS AWARD NO. IF THIS IS <input type="checkbox"/> A RENEWAL <input type="checkbox"/> AN ACCOMPLISHMENT-BASED RENEWAL		IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> IF YES, LIST ACRONYM(S)		
396002842						
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE			ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE			
Western Wisconsin Technical College			Western Wisconsin Technical College 6th and Vine La Crosse, WI. 546020908			
AWARDEE ORGANIZATION CODE (IF KNOWN)						
0038406000						
NAME OF PERFORMING ORGANIZATION, IF DIFFERENT FROM ABOVE			ADDRESS OF PERFORMING ORGANIZATION, IF DIFFERENT, INCLUDING 9 DIGIT ZIP CODE			
PERFORMING ORGANIZATION CODE (IF KNOWN)						
IS AWARDEE ORGANIZATION (Check All That Apply) <small>(See GPG II.C For Definitions)</small>		<input type="checkbox"/> SMALL BUSINESS	<input type="checkbox"/> MINORITY BUSINESS	<input checked="" type="checkbox"/> IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE		
		<input type="checkbox"/> FOR-PROFIT ORGANIZATION	<input type="checkbox"/> WOMAN-OWNED BUSINESS			
TITLE OF PROPOSED PROJECT GIS Certificate at a Two-Year College						
REQUESTED AMOUNT	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE			
\$ 346,840	36 months	05/01/06				
CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW						
<input checked="" type="checkbox"/> BEGINNING INVESTIGATOR (GPG I.A)		<input type="checkbox"/> HUMAN SUBJECTS (GPG II.D.6)				
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C)		Exemption Subsection _____ or IRB App. Date _____				
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION (GPG I.B, II.C.1.d)		<input type="checkbox"/> INTERNATIONAL COOPERATIVE ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)				
<input type="checkbox"/> HISTORIC PLACES (GPG II.C.2.j)						
<input type="checkbox"/> SMALL GRANT FOR EXPLOR. RESEARCH (SGER) (GPG II.D.1)						
<input type="checkbox"/> VERTEBRATE ANIMALS (GPG II.D.5) IACUC App. Date _____		<input type="checkbox"/> HIGH RESOLUTION GRAPHICS/OTHER GRAPHICS WHERE EXACT COLOR REPRESENTATION IS REQUIRED FOR PROPER INTERPRETATION (GPG I.E.1)				
PI/PD DEPARTMENT			PI/PD POSTAL ADDRESS			
Economic Development and Extended Ed			6th and Vine			
PI/PD FAX NUMBER			La Crosse, WI 546020908			
			United States			
NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Electronic Mail Address		
PI/PD NAME						
Gene Mucciolo	BA	1976	608-785-9200	gis@wwtc.edu		
CO-PI/PD						
CO-PI/PD						
CO-PI/PD						
CO-PI/PD						

CERTIFICATION PAGE

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 04-23. Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Drug Free Work Place Certification

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant is providing the Drug Free Work Place Certification contained in Appendix C of the Grant Proposal Guide.

Debarment and Suspension Certification (If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency? Yes No

By electronically signing the NSF Proposal Cover Sheet, the Authorized Organizational Representative or Individual Applicant is providing the Debarment and Suspension Certification contained in Appendix D of the Grant Proposal Guide.

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE	DATE
NAME			
TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER	

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL, SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

NATIONAL SCIENCE FOUNDATION
Division of Undergraduate Education

NSF FORM 1295: PROJECT DATA FORM

The instructions and codes to be used in completing this form are provided in Appendix II.

1. Program-track to which the Proposal is submitted: ATE-Projects
2. Name of Principal Investigator/Project Director (as shown on the Cover Sheet):
Mucciolo, Gene
3. Name of submitting Institution (as shown on Cover Sheet):
Western Wisconsin Technical College
4. Other Institutions involved in the project's operation:

Project Data:

- A. Major Discipline Code: 99
- B. Academic Focus Level of Project: LO
- C. Highest Degree Code: A
- D. Category Code: K
- E. Business/Industry Participation Code: NA
- F. Audience Code: H F _____
- G. Institution Code: PUBL
- H. Strategic Area Code: IT
- I. Project Features: 3 4 5 6 _____

Estimated number in each of the following categories to be directly affected by the activities of the project during its operation:

- J. Undergraduate Students: 75
- K. Pre-college Students: 0
- L. College Faculty: 20
- M. Pre-college Teachers: 0
- N. Graduate Students: 0

Through the NSF ATE project, Western Wisconsin Technical College (WWTC), La Crosse, Wisconsin, will provide Geographic Information System (GIS) professional development to instructors at the College, K-12 instructors, and business people in the community. The GIS curriculum will be integrated into different programs at the College to create separate GIS certificates (12 credits) as part of the Associate Degree. The primary recipients of this project will be two-year faculty members, two-year college students, high school educators, and high school students.

What is the intellectual merit of the proposed activity?

GIS education has not been adequately incorporated into the Wisconsin two-year technical college system. The technical college in Eau Claire, Wisconsin, currently offers an Associate Degree in GIS technology – however, graduates are having a difficult time finding jobs because there are few companies who desire a GIS technician. Instead, companies are looking for graduates who have degrees in a specialized field, such as Mechanical Design, that also have a background in GIS related to mechanical design. WWTC plans to fill this gap by offering a GIS certificate in certain programs where GIS is emerging as a major part of that field.

The Principal Investigator for the project has extensive experience in GIS and GIS instruction. WWTC has completed two technology feasibility studies: the first survey on general technology needs of the region, the second study was specifically focused on the regional needs for GIS education.

This project has been in development for over five years. A GIS laboratory was constructed at the College in 2005. Many employers have partnered with the College in this concept, as well as the university, UW-La Crosse. The Wisconsin Technical College System has been a staunch supporter of WWTC taking this leadership role in the state.

What are the broader impacts of the proposed activity?

GIS is a technology that WWTC instructors will not receive through any other method than a grant providing professional development. GIS will not be integrated into the College's curriculum until these instructors have a knowledge base of GIS. Wisconsin has fallen very far behind in GIS technology, especially rural areas such as La Crosse.

This project represents an extensive partnership between the technical college, the university, regional businesses, K-12 schools, and government agencies. All have had a role in developing this project, and all want to be active participants in the project after funding.

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For font size and page formatting specifications, see GPG section II.C.

	Total No. of Pages	Page No.* (Optional)*
Cover Sheet for Proposal to the National Science Foundation		
Project Summary (not to exceed 1 page)	1	_____
Table of Contents	1	_____
Project Description (Including Results from Prior NSF Support) (not to exceed 15 pages) (Exceed only if allowed by a specific program announcement/solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)	6	_____
References Cited	_____	_____
Biographical Sketches (Not to exceed 2 pages each)	2	_____
Budget (Plus up to 3 pages of budget justification)	5	_____
Current and Pending Support	1	_____
Facilities, Equipment and Other Resources	1	_____
Special Information/Supplementary Documentation	0	_____
Appendix (List below.) (Include only if allowed by a specific program announcement/ solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)	_____	_____
Appendix Items:		

*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

Background

Established in 1912, Western Wisconsin Technical College (WWTC) is one of 16 Technical Colleges within the Wisconsin Technical College System. In addition to the main campus in La Crosse, there are six outlying campuses located in smaller cities in the district. All seven campuses are interconnected through a fully interactive distance education system.

The College District covers nearly 5,000 square miles of western Wisconsin's upper Mississippi River Valley, encompassing all or parts of 11 counties. Through a network of seven campuses, the College has an enrollment of approximately 8,000 credit students and 12,000 noncredit students annually.

The La Crosse community has traditionally turned to the technical college to spearhead new technology initiatives. In October, 2002, WWTC contracted with Mucciolo Enterprises (ME) to conduct a feasibility study for an education technology center focusing on geographic information systems (GIS). The study surveyed 461 federal government agencies, local county governments, local municipal governments and private businesses most likely to have use for GIS. The results of the study illustrated the need for an educational institution to take a leadership role in bringing GIS education to the community.

According to the study done by ME, the need is not for graduates of a concentrated GIS program in the Seven Rivers Region; rather, local industries need graduates that have GIS skills integrated with another program. This type of education is not offered anywhere in the region. Not only do current WWTC students need preparation in GIS technology, but incumbent workers in the area also need obtain continuous education in GIS.

Wisconsin has fallen behind the rest of the nation in GIS technology, with most government and city agencies unprepared to use GIS. Incumbent workers who have already received a degree in their field do not want to earn an additional two- or four-year degree just to gain knowledge in GIS applications for their job. If a certificate was available to them in GIS applications and related to their occupation, the evidence gathered through feasibility studies show that many employers and employees would be interested in GIS education.

Through this project, WWTC will partner with ESRI (Environmental Systems Research Institute), the La Crosse County's Zoning, Planning and Land Information Department, the Geography program at the University of Wisconsin-La Crosse, the 7 Rivers Region Technology Business Alliance, the USGS and local high schools. Of the 17 firms that responded to the partner survey in WWTC's GIS feasibility study, 100% were interested in partnering in a variety of different ways with the majority of donations in providing staff time. This assistance will be necessary when developing the GIS certificates for various programs.

Goals, Activities, and Deliverables

CenturyTel, a member of the 7 Rivers Region Technology Business Alliance, donated \$30,000 for the construction of a GIS laboratory at WWTC. An under-utilized area of the college was remodeled and a 16-station GIS laboratory was constructed. Construction of this laboratory began in July of 2004 and it was operational by October of that same year. WWTC purchased 13 Dell Precision 670 computers with 17" flat screen monitors. The lab has been equipped with a Hewlett Packard 4200dtn Laserjet printer and a Hewlett Packard 500 Designjet large-scale map printer. Also purchased for the lab were a PowerEdge 700 server and a Proxima DP 8500X ceiling mounted projector. Funding from this grant will be used to purchase one ArcIMS Web Server, one SQL Web Server, SQL server software, two laptops for mobile demonstrations and instruction, and four more PC's to bring the total functional work stations to 16.

Since its opening in October of 2004, WWTC has hosted an open house for the public, participated with the UW-La Crosse in hosting GIS Day events, held three faculty seminars on GIS potential and integration of GIS into existing curricula, and an introductory training session for faculty. During this time, the PI has been working with counties, local governments, the USGS, the Wisconsin Land Information Association, The Wisconsin Register of Deeds Association, the Wisconsin Property Listers Association, the Wisconsin Department of Transportation, and the Wisconsin Department of Natural Resources to make them aware of the GIS Center's potential for training and networking opportunities. Arrangements have also been made for the Center to participate in the Wisconsin ESRI Users Group (EWUG). The PI has also arranged for data sharing agreements with area public agencies now using GIS. As of spring 2005, the PI has begun exposing area businesses to the potential cost savings GIS offers, especially when partnering with the GIS Center and government agencies in their GIS efforts. ESRI, EWUG, and 15 Wisconsin counties have contributed map examples for display in the Center.

The public domain GIS and attribute data sets needed for the server in the GIS laboratory are currently available in several different locations. All of these agencies have access to T1 lines or greater. This data will be stored on the Power Edge 700 servers located in the GIS laboratory. One server hosts ARC Internet Map Server, and the other SQL Server and the ARC GIS software.

A GIS Advisory Committee will be formed. Members will include the PI, members of the 7 Rivers Region Technology Business Alliance, local business leaders, a UW-La Crosse professor who teaches GIS, a representative of La Crosse County's Zoning, Planning and Land Information Department, the USGS and WWTC instructors. This group will be charged with overseeing the progress of the GIS implementation at WWTC.

Goal 1	Activities
Develop college faculty knowledge of Geographic Information Systems to a level of proficiency.	<ul style="list-style-type: none"> ◆ Instructors will take a Concepts of GIS course. ◆ Instructors will attend a three-day on-site GIS workshop. Instructors will finish their education with a two-day on-site workshop on the integration of GIS into the classroom, curriculum development, and the resources available to instructors.
Deliverables	
<ul style="list-style-type: none"> ◆ Twenty college instructors will be proficient in GIS and will integrate GIS into their programs through their regular program classes and specific GIS courses. 	

Twenty instructors from different WWTC instructional programs will receive instruction in GIS. The instructors who have already volunteered for this professional development opportunity represent these associate degree programs: Mechanical Design, Agribusiness and Science Technology, Criminal Justice (Police Science), Marketing, Computer Network Specialist, Microcomputer Specialist, Heating, Electronics, Electrical Engineering Technology and Paramedics. The PI will coordinate the professional development schedule for WWTC instructors.

At the conclusion of the grant, the PI will continue to educate other WWTC instructors and local business individuals who are interested in GIS. Instructors who have worked with this NSF project will be mentors to the post-NSF project instructors.

Goal 2	Activities
Educate students in GIS and offer a certificate that would complement the student's associate degree.	<ul style="list-style-type: none"> ◆ Develop curricula for a 12-credit GIS certificate that includes nine credits of specialized GIS instruction and three credits generalized GIS overview courses. Incorporate GIS instruction into core program courses so that all students, not just the students who take the certificate courses, are introduced to GIS. Curricula will be developed using the Core Curriculum for Technical Programs (NSF - ATE Grant #9602348, Santa Barbara Community College) ◆ Design a one-hour introductory GIS class for presentation to classes that visit the GIS laboratory.
Deliverables	
<ul style="list-style-type: none"> ◆ One hundred and twenty-five (125) students will gain knowledge of GIS either through the integration of GIS into their associate degree core courses and/or by visiting the GIS laboratory for an introductory GIS session provided by the PI or Lab Assistant. ◆ Forty students will receive a GIS certificate in addition to their associate degree. ◆ The GIS laboratory will be available for all instructors and students. ◆ The PI or a laboratory assistant will be available for on-site assistance in GIS classes, instructor questions, student questions, GIS presentations and assisting the public with GIS queries. 	

The core GIS curriculum will be based on [A Core Curriculum for the 2-Year College](#), University of California-Santa Barbara (NSF ATE Grant #9602348).

Offer four 3-credit certificate courses, and two optional credit courses. Required Courses: <ol style="list-style-type: none"> 1. Geography and Coordinate Geometry 2. Introduction to ArcGIS 3. Intermediate ArcGIS 	<ul style="list-style-type: none"> ◆ Teach a revised Core Curriculum for the 2-year college by relating geographic, mathematical and technical concepts to everyday problems using common examples such as assessment and taxation, routing, marketing and homeland security.
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<p>4. Specialized GIS Workshop</p> <p>Optional Courses:</p> <p>5. Geodatabase Concepts (3 credits)</p> <p>6. ArcGIS Extensions (1 credit)</p>	<ul style="list-style-type: none"> ◆ Teach curricula for a 12-credit GIS certificate that includes nine credits of specialized GIS instruction and three credits generalized GIS overview courses. ◆ Offer a one-hour introductory GIS class for presentation to prospective incumbent workers and high school students that visit the GIS laboratory.
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Course Descriptions

All courses will be designed using local spatial and attribute data, and will consist of examples commonly experienced in everyday activities. Background information and examples of technical topics, for instance buffers, COGO, coordinate systems, projections, etc. will be explained in commonly used terminology and demonstrated using examples that the non-technical individual will be familiar with.

Course 1 (3 credits): Geography and Coordinate Geometry. This course covers fundamental Physical Geography concepts: Elements of Geography, scope of Physical Geography, Geography as an environmental science, future of Physical Geography, introduction to maps, location, distance, and direction on maps, map location and time zones, topographic maps and an introduction to remote sensing. A review of geometry and a workshop on the fundamentals of coordinate geometry will be included. The goal of this course is to help students understand the concepts of map projections, coordinate systems, map scale, and the concepts involving earth shape, size, rotation, revolution. Students will also gain an understanding of the importance of the mathematical sciences using coordinate geometry as the primary vehicle. Emphasis will be placed on local geography to facilitate the learning curve.

Course 2 (3 credits): Introduction to ArcGIS. This course covers the basic concepts of ArcGIS software including how to query a GIS database, manipulate tabular data, edit spatial and attribute data, and present data clearly and efficiently using maps and charts. Participants learn how to use ArcMap™, ArcCatalog™, and ArcToolbox™ and explore how these applications work together to provide a complete GIS software solution. Using data and examples particular to the local geographic region and everyday problems, students will learn how to display feature and tabular data, work with georeferenced spatial data, query and find features using spatial relationships, spatial and attribute data, associate tables with joins and relates, and produce maps, reports, and graphs.

Course 3 (3 credits): Intermediate ArcGIS. This course expands on the features presented in the Introduction to ArcGIS course with further exploration of ArcMap and ArcCatalog. Topics covered include geocoding, event tables, heads-up digitizing, converting data, editing spatial and attribute data, creating and using metadata, and advanced options for cartographic display for producing high-quality maps and reports.

Course 4 (3 credits): Specialized GIS Workshop. Using the skills gained in Courses 1 through 3, students will undertake a GIS project specific to a students' area of interest and geographical location. Students will be required to design a short-term project, acquire data and demonstrate proficiency in ArcGIS.

Course 5 (3 credits): Geodatabase Concepts. This course introduces students to geodatabase capabilities and advantages; storage options; geodatabase elements. Participants learn how to take advantage of existing ArcGIS data models along with data modeling tools. At the end of the course, participants will be able to create a geodatabase, import and export data, establish a spatial reference and edit data in the geodatabase. Participants will also have a starting point for learning the more advanced functionality of the geodatabase. The course will touch on the use of ArcSDE and the enterprise geodatabase.

Course 6 (1 credit): ArcGIS Extensions. This course presents an overview of ArcGIS extensions, and procedures on installing and activating extensions. Spatial Analyst, Geostatistical Analyst and 3D Analyst are emphasized. A short description of other extensions is also presented.

Because GIS is such an unknown technology in the La Crosse region, a major goal of this project is to expose students to GIS and get them interested in taking classes in GIS. This will be done through simple integration of GIS aspects into current programs. The electrical engineering instructor can take his whole class to the GIS laboratory for an introductory session, and then return later in the semester for other small GIS class projects. Students who have a strong interest in GIS can enroll in the GIS courses, but even the students who do not wish to enroll in the GIS classes will have at least been exposed to GIS, making them more attractive to employers through upgraded skills.

A GIS Curriculum Committee will be formed immediately following the completion of GIS training of the first ten instructors. This committee will help generate ideas for student workshops, courses, student projects, further professional development for instructors and other possibilities that will attract students to enroll in GIS classes. The Curriculum Committee will also work as a technical support group for those instructors who wish to use GIS in their classrooms. It will also be the responsibility of the Curriculum Committee to encourage other instructors to learn about GIS and utilize the laboratory.

The PI will design a marketing plan to make employers in the community aware that WWTC offers a GIS certificate. WWTC will be the only institution in the area that will offer short-term training to incumbent workers in GIS.

Goal 3	Activities
Develop K-12 instructors' and regional employers/employees knowledge of Geographic Information Systems to a level of proficiency.	<ul style="list-style-type: none"> ◆ K-12 instructors and regional employers/employees will be invited to participate in the same professional development offered to WWTC faculty through this project. K-12 instructors and local employers/employees will attend a three-day GIS workshop held at WWTC. K-12 instructors will be invited back to a two-day WWTC workshop on the integration of GIS into the classroom, curriculum development, and the resources available to instructors.
Deliverables	
<ul style="list-style-type: none"> ◆ Ten K-12 instructors will be proficient in Geographic Information Systems and will integrate GIS into their high school classes. ◆ Ten regional incumbent workers will be proficient in Geographic Information Systems so that they can better use the GIS systems currently available to them in their employment. 	

Letters will be sent to K-12 geography and science instructors in the La Crosse area inviting them to participate in free professional development offered by WWTC and NSF. According to ESRI, the workshops fulfill continuing education credits that K-12 instructors need to keep their license current. There will be room for five K-12 instructors per workshop series (ten total).

Preliminary information provided to elementary and secondary instructors concerning this project has been met with enthusiasm. The types of instructors who are interested in this project are technology education instructors in middle school, eighth grade science instructors, and high school earth science instructors. Not only are these instructors spread across the K-12 grades, the instructors who responded were from La Crosse, Onalaska and rural areas such as Holmen and Tomah. Unlike many other areas in the U.S., high schools and elementary schools in La Crosse are not moving ahead with GIS.

Employers and employees who are members of the 7 Rivers Region Technology Business Alliance will be contacted about the GIS workshops.

Goal 4	Activities
Increase the number of associate degree graduates who pursue baccalaureate degrees in GIS or minors in GIS.	<ul style="list-style-type: none"> ◆ Articulate the first nine credits of the GIS certificate to be transferable to the University of Wisconsin – La Crosse. ◆ Build partnerships with other four-year institutions to facilitate the transfer of credits to bachelor's degree programs in GIS.

Deliverables
<ul style="list-style-type: none">◆ Four students will transfer their GIS credits to the University of Wisconsin – La Crosse to be credited towards a minor in GIS.◆ Articulation agreements for graduates of associate degree programs with a GIS certificate to other Wisconsin universities.

The PI will research other four-year institutions in Minnesota, Iowa and Wisconsin who offer some type of degree in GIS. The PI will contact the schools to determine their interest in developing an articulation program with WWTC. This activity may take several years and will continue beyond the life of the grant.

Timetable

2006 Fall:

- ◆ Purchase additional equipment and software for GIS laboratory. Lab stations will be filled out: This equipment will consist of four more computers plus two web servers, two laptop computers for PI and assistant, two additional ArcGIS licenses and one more ArcIMS license.

2006 Winter:

- ◆ The first ten instructors will be selected for GIS professional development.
- ◆ Contact will be made to local schools and businesses to recruit K-12 instructors for GIS education.
- ◆ Data sets will be installed in the GIS laboratory servers.
- ◆ PI/Assistant provides introductory sessions on GIS to faculty and students.

2007 Spring:

- ◆ Ten WWTC instructors, as well as five K-12 instructors and five business individuals, will receive instruction in GIS software.
- ◆ The PI will develop marketing plan for GIS courses. The marketing plan will target students and incumbent workers.
- ◆ PI/Assistant provides introductory sessions on GIS to faculty and students.

2007 Summer:

- ◆ Ten WWTC instructors will complete one-week internships at local businesses and write curriculum for their individual program's three-credit specialized GIS class.

2007 Fall:

- ◆ PI/Assistant provides introductory sessions on GIS to faculty and students.
- ◆ Ten additional WWTC instructors, as well as five K-12 instructors and five business individuals, will be selected for GIS professional development.

2007 Winter:

- ◆ Those individuals selected during the fall will complete the GIS instruction.
- ◆ PI/Assistant provides introductory sessions on GIS to faculty and students.

2008 Spring:

- ◆ Ten WWTC instructors will complete one-week internships at local businesses and write curriculum for their individual program's three-credit specialized GIS class.
- ◆ PI/Assistant provides introductory sessions on GIS to faculty and students.

2007 Summer:

- ◆ Dissemination begins via conferences and ESRI publications.
- ◆ PI/Assistant provides introductory sessions on GIS to faculty and students.
- ◆ Final evaluation of project submitted.

Management Plan

The grant will be housed in the college's Economic Development and Extended Education Division. The PI will be responsible for the project activities and outcomes. The PI, with input from a GIS advisory committee, will be responsible for identifying project participants, providing training, evaluation and other activities. A GIS laboratory assistant will be hired to monitor student activities in the lab, see that the proper database materials are loaded for each scheduled class, represent the GIS lab at business expositions and give informational GIS presentations. As the project unfolds, a GIS Curriculum Committee will be established as a support and mentoring group for instructors. This management structure will allow the project to be a regular activity in the operating structure of the college and ensure its implementation and sustainability.

PI and Other Senior Personnel

The PI, Gene Mucciolo, will oversee the management of the project and will be the catalyst to move WWTC's GIS program forward. His many years of marketing experience will be invaluable in growing the program. Mucciolo will be responsible for overseeing the evaluation plan, all NSF reporting, and dissemination. The PI will also serve as the liaison between local K-12 schools and WWTC.

Other responsibilities of the PI will include:

- Coordinating short and long term plans
- Training of faculty
- Outreach – preparing marketing materials
- Coordinating/controlling technical support
- Keeping the program at cutting edge
- Promoting GIS at the college
- Coordinating workshops for faculty
- Serving on GIS advisory committee

Working as an independent business consultant since 1984, Mucciolo has designed and developed GIS applications, websites, and database applications. As a student of David Fletcher, who is now at Los Alamos Labs, he was responsible for the planning, development and implementation for geo-spatial and information technology systems for all Wisconsin Department of Transportation Districts. He has taken 11 continuing education courses with ESRI. As manager for Instructional Technology for Blackhawk Technical College, Janesville, Wisconsin, he developed internet-based GIS courses for the college and Weyerhaeuser Corporation. Mucciolo is Wisconsin Board of Vocational, Technical and Adult Education certified and has over 1000 classroom hours teaching information systems theory and application software. As Director of Land Information for Columbia County, Wisconsin, Mucciolo supervised the GIS surveying, property tax listing, and land records modernization programs. He authored Columbia County's "Five-Year Information Technology Strategic Plan," "The Land Records Modernization Plan," and "The Columbia County Information Technology Standards." He also created the county's ArcIMS web site along with over 50 business web sites.

Sustainability

The prospects of sustaining the project after the NSF funding has ended are strong. The GIS laboratory was constructed through WWTC capital dollars. Seed money is needed to fund professional development for instructors and the PI position for the first three years, after that the PI position will be funded by district dollars. Beyond the original instructors who received GIS professional development through the grant, the PI as well as instructors who received GIS training, will deliver professional development to other instructors. The GIS Curriculum Committee will publish an e-newsletter to provide instructors with ideas for integrating GIS into the classroom. Elementary and secondary instructors will be encouraged to attend GIS workshops offered by WWTC.

Dissemination Plan

WWTC will list the success of their project on the ESRI Higher Education web site: www.esri.com/higered. It will also present its model at the ESRI National Conference, the Wisconsin Land Use Information Association, the ESRI Users Group Annual Conference and the Seven Rivers Technology Expo. The University Consortium for GIS (www.ucgis.org) will also be informed of WWTC's project.

The WWTC GIS program will also develop and maintain a web site. WWTC will use ArcIMS to put educational modules on the website for anyone who wishes to access them.

Evaluation Plan

Ongoing internal review will evaluate the progress and success of the project. While the entire project will be evaluated, WWTC will be most interested to find out:

1. If the period of time allocated for instruction in GIS to instructors was adequate and if they left the professional development experience with enough knowledge to impart in the classroom;
2. If the students taking the GIS courses felt they were learning valuable information;
3. If local businesses found the new GIS certificate valuable; and
4. Whether or not graduates with a GIS certificate are considered more employable than those students who do not receive the GIS certificate.

REFERENCES CITED

EDUCATION: University of Southern California • Los Angeles, California
Postgraduate research in Public Administration
Completed 20 units towards Masters in Public Administration.

University of California • Los Angeles, California
Bachelors in East Asian Studies, 1976
Specialization in Geography and Languages
Member Scholastic Honors Program
Honorary Chancellor's Marshall

CONTINUING EDUCATION:

Environment Systems Research Institute Coursework:

- Building Geodatabases
- Introduction to ArcGIS II
- Introduction to ArcGIS I
- ArcIMS Administration
- Learning ArcIMS 9
- Introduction to ArcIMS
- Introduction to ArcView GIS
- Programming with Avenue
- Working with Arc/INFO COGO
- Intermediate Arc/INFO
- Introduction to Arc/INFO

Microsoft Registered Partner Coursework:

- Implementing a MS Windows 2000 Network Infrastructure
- Designing a Microsoft 2000 Directory Services
- Implementing and Administering MS Windows 2000 Directory Services
- Implementing MS Windows 2000 Professional and Server
- MS Windows 2000 Network and OS Essentials
- Supporting Windows NT 4.0 Server Enterprise Technology
- Supporting Windows NT 4.0 Core Technologies
- Administering Windows NT 4.0
- System Administration for Microsoft SQL Server 6.5
- Internetworking Microsoft TCP/IP

IBM Coursework:

- OS/2 Administration II
- OS/2 Administration I
- OS/2 – TCP Internetworking
- OS/2 Fundamentals

PROFESSIONAL EXPERIENCE:

Mucciolo Enterprises LLC, Pardeeville, WI
Consultant/Developer

06/84 to present

- Design and develop GIS applications, web sites, database applications.
- Developed internet-based Geographic Information Systems courses for BlackHawk Technical College and Weyerhaeuser Corporation.
- Developer – PC Energy software, authorized by the California Energy Commission for commercial energy audits.
- Web developer for over 50 business web sites.

- Develop software-training courses and provide instruction in commercial and custom application software and operating systems.
- Wisconsin Board of Vocational, Technical and Adult Education certification. 1000+ classroom hours in information systems theory and application software.
- Member, Wisconsin Land Information Association.

Columbia County, Portage, WI

8/98 to 6/04

Director of Land information

- Supervise the geographical information systems (GIS), surveying, property tax listing, and land records modernization areas for Columbia County.
- Coordinate the County's business and technology functions for all property assessment, property taxation, land surveying and legal document recording.
- Created the County's ArcIMS web site.
- Project Manager for 2002 county-wide Orthophotography project.
- Responsible for integrating technology with land records business functions.
- Designed and installed countywide Windows NT network connecting county buildings and City of Portage (fiber optics and T1 lines), Exchange server, web server, firewall and AS/400.
- Webmaster for "Irs.co.columbia.wi.us" and "www.ccedc.com".
- Authored County's "Five-Year Information Technology Strategic Plan", "The Land Records Modernization Plan", and "The Columbia County Information Technology Standards."

Blackhawk Technical College, Janesville, WI

1/98 to 7/98

Manager of Instructional Technology

- Direct college Information Technology, Research, Library and Media Departments and Technology Innovation Center.
- Chair, Technology Implementation Team and Media Resources Advisory Committee.
- Prepare and manage college-wide information technology budgets.
- Prepare technical specifications for equipment, software and cabling.
- Created GIS Short-Term Certificate program for college.
- Chief technical liaison between government, schools and private industry.

Wisconsin Department of Transportation, Madison, WI

5/89 to 12/97

District Information Technology Manager

- Responsible for the planning, development, implementation, coordination and support of all geo-spatial and information technology systems in the Transportation Districts.
- Supervise the planning, implementation, administration and maintenance of local area networks (OS/2, NT and HP-Unix).
- Responsible for Intranet and gateways to the DOT wide area network and the state network.
- Develop and monitor the information technology operating and equipment budgets.
- Application development in ARC/INFO, Arc View, Map Objects, ASP, Visual Basic.
- Member of statewide committee establishing Information Technology Standards.
- Awarded the Secretary of Transportation Exceptional Performance Award in 1990, 1991 and 1992.

City of Burbank Public Service Dept., Burbank, CA

5/76 to 5/84

Administrative Services Manager

- Supervise the administrative and data processing functions of the municipal electric and water utility.
- Responsible for the preparation of the \$100 million operating and capital improvement budgets.
- Administer utility power and water contracts.
- Prepare general improvement bond requests.
- Awarded the Mayor's Special Commendation for Exceptional Performance, 1979, 1980, 1981 and 1982.

SUMMARY PROPOSAL BUDGET

YEAR 1

ORGANIZATION Western Wisconsin Technical College				FOR NSF USE ONLY		
				PROPOSAL NO.	DURATION (months)	
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Gene Mucciolo				AWARD NO.	Proposed	Granted
					NSF Funded Person-months	
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				CAL	ACAD	SUMR
1. Gene Mucciolo - Instructor				9.00	0.00	0.00
2.						
3.						
4.						
5.						
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				9.00	0.00	0.00
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. (0) POST DOCTORAL ASSOCIATES				0.00	0.00	0.00
2. (1) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	9.00	0.00
3. (0) GRADUATE STUDENTS						
4. (0) UNDERGRADUATE STUDENTS						
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						
6. (0) OTHER						
TOTAL SALARIES AND WAGES (A + B)						75,000
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						29,750
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						104,750
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
1 ArcIMS Web Server				\$	4,500	
1 SQL Server Software					5,000	
1 SQL Web Server					4,500	
Others (See Budget Comments Page...)					13,600	
TOTAL EQUIPMENT						27,600
E. TRAVEL						
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						0
2. FOREIGN						0
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$ _____ 13,552						
2. TRAVEL _____ 0						
3. SUBSISTENCE _____ 0						
4. OTHER _____ 24,200						
TOTAL NUMBER OF PARTICIPANTS (10)						
TOTAL PARTICIPANT COSTS						37,752
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						2,300
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0
3. CONSULTANT SERVICES						0
4. COMPUTER SERVICES						0
5. SUBAWARDS						0
6. OTHER						750
TOTAL OTHER DIRECT COSTS						3,050
H. TOTAL DIRECT COSTS (A THROUGH G)						173,152
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)						
Overhead (Rate: 17.0000, Base: 82752)						
TOTAL INDIRECT COSTS (F&A)						14,068
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						187,220
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.j.)						0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$ 187,220 \$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$		
PI/PD NAME Gene Mucciolo				FOR NSF USE ONLY		
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION		
				Date Checked	Date Of Rate Sheet	Initials - ORG

1 *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

**** D- Equipment**

2 Laptops (Amount: \$ 4800)

4 Student Workstations (Amount: \$ 8800)

SUMMARY PROPOSAL BUDGET YEAR 2

ORGANIZATION Western Wisconsin Technical College				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Gene Mucciolo				AWARD NO.	Proposed	Granted	
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
	CAL	ACAD	SUMR				
1. Gene Mucciolo - Instructor	9.00	0.00	0.00	\$	45,000	\$	
2.							
3.							
4.							
5.							
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		0		
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)	9.00	0.00	0.00		45,000		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00		0		
2. (1) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		30,000		
3. (0) GRADUATE STUDENTS					0		
4. (0) UNDERGRADUATE STUDENTS					0		
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					0		
6. (0) OTHER					0		
TOTAL SALARIES AND WAGES (A + B)					75,000		
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					29,750		
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					104,750		
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT					0		
E. TRAVEL							
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)					0		
2. FOREIGN					0		
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS	\$	13,552					
2. TRAVEL		0					
3. SUBSISTENCE		0					
4. OTHER		24,200					
TOTAL NUMBER OF PARTICIPANTS (0)				TOTAL PARTICIPANT COSTS	37,752		
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES					2,300		
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					0		
3. CONSULTANT SERVICES					0		
4. COMPUTER SERVICES					0		
5. SUBAWARDS					0		
6. OTHER					750		
TOTAL OTHER DIRECT COSTS					3,050		
H. TOTAL DIRECT COSTS (A THROUGH G)					145,552		
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) Overhead (Rate: 17.0000, Base: 82752)							
TOTAL INDIRECT COSTS (F&A)					14,068		
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					159,620		
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.J.)					0		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				\$	159,620	\$	
M. COST SHARING PROPOSED LEVEL \$				0	AGREED LEVEL IF DIFFERENT \$		
PI/PD NAME Gene Mucciolo				FOR NSF USE ONLY			
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION			
				Date Checked	Date of Rate Sheet	Initials - ORG	

2 *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

SUMMARY PROPOSAL BUDGET

Cumulative

ORGANIZATION Western Wisconsin Technical College				FOR NSF USE ONLY				
				PROPOSAL NO.		DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Gene Mucciolo				AWARD NO.				
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months			Funds Requested By proposer	Funds granted by NSF (if different)
				CAL	ACAD	SUMR		
1. Gene Mucciolo - Instructor				18.00	0.00	0.00	\$ 90,000	\$
2.								
3.								
4.								
5.								
6. () OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00	0	
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)				18.00	0.00	0.00	90,000	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)								
1. (0) POST DOCTORAL ASSOCIATES				0.00	0.00	0.00	0	
2. (2) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	9.00	0.00	60,800	
3. (0) GRADUATE STUDENTS							0	
4. (0) UNDERGRADUATE STUDENTS							0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)							0	
6. (0) OTHER							0	
TOTAL SALARIES AND WAGES (A + B)							150,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							59,500	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							209,500	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)								
						\$ 27,600		
TOTAL EQUIPMENT							27,600	
E. TRAVEL								
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							0	
2. FOREIGN							0	
F. PARTICIPANT SUPPORT COSTS								
1. STIPENDS \$ _____ 27,104								
2. TRAVEL _____ 0								
3. SUBSISTENCE _____ 0								
4. OTHER _____ 48,400								
TOTAL NUMBER OF PARTICIPANTS (10) TOTAL PARTICIPANT COSTS							75,504	
G. OTHER DIRECT COSTS								
1. MATERIALS AND SUPPLIES							4,600	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							0	
3. CONSULTANT SERVICES							0	
4. COMPUTER SERVICES							0	
5. SUBAWARDS							0	
6. OTHER							1,500	
TOTAL OTHER DIRECT COSTS							6,100	
H. TOTAL DIRECT COSTS (A THROUGH G)							318,704	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)								
TOTAL INDIRECT COSTS (F&A)							28,136	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							346,840	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.)							0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$ 346,840	\$
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$				
PI/PD NAME Gene Mucciolo				FOR NSF USE ONLY				
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION				
				Date Checked	Date Of Rate Sheet	Initials - ORG		

C *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

BUDGET JUSTIFICATION

A. Senior Personnel:

PI for this project is Gene Mucciolo. His sole duty will be coordinating the activities of this project.

B. Other Personnel:

A GIS laboratory assistant will be hired to assist the PI with the grant activities.

C. Fringe Benefits:

Benefits associated with the salaries (at 33%) are \$29,750 for the first year and second year.

D. Equipment:

Equipment will be purchased the first year and will last throughout the length of the grant. The equipment was recommended by the consultant who completed the GIS Feasibility Study. Funding from this grant will be used to purchase one ArcIMS Web Server, one SQL Web Server, SQL server software, two laptops for mobile demonstrations and instruction, and four more PC's to bring the total functional work stations in WWTC's GIS lab to 16.

F. Participant Costs

In years one and two for the project, instructor stipends will be required. Instructors will be asked to take the GIS courses during non-contract days. The rate is 40 hours of instruction at \$28 per hour for twenty instructors (ten each year), plus fringe set at 21%. This amount is listed in the "Stipends" section.

The funding for instructor internships at local businesses during year one and two of the project is listed in the "Stipends" category. The rate is five days at \$200 per day for 20 instructors, plus fringe set at 21%.

G. Other Direct Costs:

Materials and supplies associated with the "GIS Across the Curriculum" project were set at \$2,300 for the first year and \$2,300 for the second year. The cost of marketing the new courses is included in this cost.

Consultant services for evaluating the project were added at \$750 per year of the grant.

I. Indirect Costs:

Overhead costs are set at 17% of the total project, excluding the cost of equipment.

Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.	
Investigator: Gene Mucciolo	Other agencies (including NSF) to which this proposal has been/will be submitted.
Support: <input checked="" type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$ 0 Total Award Period Covered: 01/01/00 - 01/01/00 Location of Project: Person-Months Per Year Committed to the Project. Cal: 0.00 Acad: 0.00 Sumr: 0.00	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$ Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$ Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$ Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:	
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> *Transfer of Support Project/Proposal Title:	
Source of Support: Total Award Amount: \$ Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project. Cal: Acad: Summ:	

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

FACILITIES, EQUIPMENT & OTHER RESOURCES

FACILITIES: Identify the facilities to be used at each performance site listed and, as appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Use "Other" to describe the facilities at any other performance sites listed and at sites for field studies. USE additional pages as necessary.

Laboratory:

Clinical:

Animal:

Computer:

Office:

Other:

MAJOR EQUIPMENT: List the most important items available for this project and, as appropriate identifying the location and pertinent capabilities of each.

OTHER RESOURCES: Provide any information describing the other resources available for the project. Identify support services such as consultant, secretarial, machine shop, and electronics shop, and the extent to which they will be available for the project. Include an explanation of any consortium/contractual arrangements with other organizations.

SUPPLEMENTARY DOCS
