



Substantive Change Proposal

Geographic Information Systems

**Napa Valley Community College District
2277 Napa-Vallejo Highway
Napa, CA 94558**

August 18, 2008

Erik Shearer, Co-chair Curriculum Committee (707 259-8978)
Sue Nelson, Vice President, Instruction (707 253-3100)
Judie Walter-Burke, Dean, Research, Planning & Development (707 253-3371)

**Napa Valley College
Geographic Information Systems Certificate Program**

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**Napa Valley College
Geographic Information Systems
Substantive Change Proposal**

A. Brief Description of and Rationale for Proposed Change

The Board of Trustees (BOT) of Napa Valley College approved the creation of the Geographic Information Systems (GIS) certificate program in December, 2007 through the regular curriculum approval process on recommendation from the Academic Senate. The 15-unit GIS Certificate program is designed for students entering the Geospatial Field or for Geospatial Professionals who need to improve their skills in the latest technology. The US Department of Labor has identified the Geospatial field as a high growth industry. The applications of this new technology are widespread and involve the fields of business, engineering, public safety, agriculture, environment and urban planning. The addition of the GIS certificate program to the NVC curriculum will provide students with the opportunity to:

- Learn state-of-the-art technologies and software in GIS and GPS.
- Learn practical approaches to implementing a GIS in a public or private setting.
- Develop the broad background and specific skills necessary for career advancement in this field.
- Meet and network with other professionals in the fields of GIS and GPS.

The GIS certificate will provide students with training that is responsive to the educational needs of students and employers in the Napa Valley and surrounding areas in accordance with the mission of our college.

B. Description Continued ~ Educational Purpose:

The educational goals for the Geographic Information Systems program are clearly spelled out in the certificate and course-level student learning outcomes. All objectives and SLOs were reviewed by the Academic Senate and BOT and were found to be appropriate to the mission and educational direction of Napa Valley College. The program-level outcomes were approved and published in the college catalog as follows:

Students successfully completing the GIS certificate will be able to:

1. Understand the properties of different map projections and be able to select appropriate projections for specific purposes.
2. Understand the nature of maps including map reading and map design.
3. Understand data structures, i.e., how data is collected and stored.
4. Solve specific problems through spatial analysis.
5. Identify types of control surveys and their applications in civil engineering and surveying.
6. Operate global positioning system equipment for navigation and survey grade location.
7. Prepare and post processed data for a GIS project.

Course-level student learning outcomes and objectives are clearly stated on the course outlines of record for each course in the program. Students must pass each course with a 60% or greater proficiency on all materials and examinations to receive credit. The credit / unit values for each course are appropriately based on the standard Carnegie unit adapted for our eighteen-week terms, with one unit of credit being granted for every fifty-four hours of successfully completed coursework. The SLOs, course objectives, and unit assignment of each course in this program were rigorously reviewed and vetted through the regular curriculum approval process and are in line with the general curriculum standards at NVC.

C. Planning Process

Relation to institution's stated mission:

The GIS certificate provides training that is responsive to the educational needs of students and employers in the Napa Valley and surrounding areas. This program supports the mission of the college by offering a high-quality program, based on local and regional need, which will train students in state-of-the-art software.

Assessment of Needs and Resources:

The US Department of Labor has identified the Geospatial field as a high growth industry. The applications of this new technology are widespread and involve the fields of business, engineering, public safety, agriculture, environment and urban planning. There is demonstrated local need, confirmed by job data and through the local advisory committee of related industry professionals, for workers trained in GIS for:

- County Public Works
- Precision Viticulture / Soils Mapping
- Development of Business Demographics Data and Mapping
- Forestry
- Facilities Planning
- Emergency Planning: Fire, Police, EMT

Initial research showed approximately 200 Geotechnical jobs in the Napa / Solano region that would require this training. The average entry-level salary for these positions is \$45,000. GIS technicians can expect an average base salary of \$60,000.

A steering committee composed of local professionals provided critical input and guidance during the creation of this program, including information about local resources for equipment, data, student recruitment and potential future jobs in the local market for students successfully completing this certificate.

Anticipated Effects on the Institution and Intended Improvements:

The GIS program will expand the range of curricular areas offered in the Science Math and Engineering division and extend the educational and career opportunities for

students interested in applied and career technical sciences. Additionally, program faculty are working with local high schools to create GIS training modules designed to create career pathways for younger students. This program is anticipated to generate a modest increase in enrollment. Otherwise, the program has little anticipated effect on the college bodies typically impacted by new programs, including:

- Counseling: Academic counseling for students in this program will not significantly increase work load for general counseling services.
- Student Services: The anticipated enrollment in this program will not have a significant impact on other student services such as Financial Aid, Learning Services, or Student Health Services.
- Curriculum Committee: This program only adds four new courses into the curriculum that will need to be reviewed and revised in the standard six-year cycle. This will not have significant impact on the workload of the curriculum committee.
- Program Evaluation and Planning: The GIS certificate program will need to be included into the PEP process, but represents only slight increase in the workload for the Program Evaluation and Planning committee and related senate and administrative bodies.

Description of Preparation for Change:

The program coordinator for the proposed GIS certificate program is Dr. Richard Della Valle, who has been a statewide leader in this area. A regional grant with Diablo Valley College and Napa Valley College was obtained and provided equipment and curriculum development. All curriculum development processes were followed. Four new GIS/GPS courses were developed over the last two years (attached). Employment research was conducted (see section on need). An advisory committee was developed:

Ann Johnson	ESRI	Christine Lewis	C3GIS
Michael Hall	ETC	Reg Parks	PVTS
Bill Cornils	CIH	Beth Pratt	SBDC

D. Evidence of Resources

The following section provides a detailed analysis of the resources already secured by the college.

Faculty / Administrators / Staff:

- .5 Faculty Load (PT)
- Support through Division Secretaries and Instructional Assistants

Equipment and Facilities

- Twenty-four station Computer Lab
- Dedicated Map Reading Room
- 48" Plotter

- High-speed Laser Printer
- Five Trimble Geo XH GPS units with Terrasync

Fiscal Resources

- Initial: Start-up equipment was initially purchased through grant and NVCCD general funds. The construction of the computer lab was funded through a Facilities Bond and through NVCCD general funds.
- Long-term: Equipment replacement and updates will be provided through instructional equipment funds and general college funds. These needs will be identified through the budget and planning process.

Monitoring Achievement

- Primary monitoring of student achievement will happen through Program Evaluation and Planning. This college-wide process will require the GIS certificate program to evaluate enrollment data, review and revise course outlines of record, and provide student learning outcome assessment data in the mandated assessment cycle. Assessment data will be used to revise course and certificate curriculum and SLOs, teaching methodologies and delivery methods, and course equipment and software as warranted. We plan to include this program for review in the 2010 – 11 cycle.

E. Evidence of Approvals

Approval for creating this program was required and granted from the following bodies:

- NVC Academic Senate Curriculum Committee
- NVC Academic Senate
- Chief Instructional Officer
- Board of Trustees

The curriculum review and approval process at Napa Valley College is handled through an online database management system with electronic approvals for all requisite parties including the Chief Instructional Officer. The attached Curriculum Packet, Curriculum Committee Minutes and BOT Minutes reflects this local approval process. Approval of the packet by the BOT incorporates approval by all requisite authorities.

Please see attached documents for evidence of these approvals.

F. Evidence of Fulfillment of Eligibility Requirements

The addition of this program is well within the mission of Napa Valley College and was created and approved through our stated curriculum development process. As such, it will not affect the eligibility status of Napa Valley College. The attached program and course descriptions, program and course-level student learning outcomes, and the mission statement of the college affirm this.

G. Evidence of Fulfillment of Accreditation Standards and Commission Policies

Fulfillment of ACCJC policies on Award of Credit and Substantive Change are clearly embedded in this report and in the attached CORs and pages from the 2008 – 2010 NVC Catalog.

October 21, 2008

Dr. Barbara Beno
President
ACCJC
10 Commercial Blvd., Suite 204
Novato, CA 94949

Dear Dr. Beno:

Thank you for approving Napa Valley College's substantive change proposal for our new EMS/Paramedic program. In response to your request for additional information to support our substantive change proposal for the GIS certificate, please review the attached information.

- Evidence of Fiscal Resources—additional information regarding the budget impact of the GIS certificate.
- Profile of incoming students and plan for supporting their preparation for the skill levels required in the coursework—additional explanation and review of recommended preparation for equivalent courses at other colleges.
- Attachment 1 – GIS in California Community Colleges
- Attachment 2 – COMS 100, Introduction to Computer Systems

If you have additional information or questions, please do not hesitate to contact Judie Walter-Burke, Dean, Research, Planning and Development or Sue Nelson, Vice President, Instruction.

Sincerely,

J. Christopher McCarthy, Ed.D
President/Superintendent

c: Sue Nelson
Judie Walter-Burke
Dr. Susan Clifford

Evidence of Fiscal Resources

In addition to the information provided in the GIS Substantive Change Proposal dated August 18, 2008, we offer the following information related to the budget for the certificate and the impact on the Geography program budget.

Napa Valley College has committed to providing the fiscal resources necessary for a high quality Geographic Information Systems (GIS) certificate program using unrestricted general funds. The certificate was developed by sequencing two newly developed courses (GEOG 130 and GEOG 131) with two courses (GEOG 120 and GEOG 121) that were already being taught. Only four sections (one section of each course) are taught each year. Thus, any additional cost minimally affects the geography budget. Funds to staff the geography courses, including the two additional GIS courses, are incorporated into the regular Office of Instruction budget. Courses are taught by the full-time geology/geography instructor and/or by adjunct instructors. There is no need for additional full-time staff at this time or in the foreseeable future. The computer lab that is being used for the GIS certificate is also used as a general campus computer lab, thus the costs of equipment, supplies and maintenance are spread among a number of budget centers. The replacement process for computers, printers and software in the GIS/general computer lab follows the same institutional procedures for replacement of all instructional equipment. Instructional equipment funds and/or general institutional funds will be used to replace the equipment as needed. Grant funds are regularly applied for by Napa Valley College, and if funding becomes available, these funds would supplement the cost of replacing the computers, printers and software.

Profile of incoming students and plan for supporting their preparation for the skill levels required in the coursework

The development of the GIS courses, and subsequently the certificate, was in response to industry need for incumbent workers, thus the profile of students taking these courses are most often working adults expanding their knowledge. Engineering students have also taken these courses to expand their knowledge. A review of GIS courses and certificate programs at local community colleges show that none of the entry-level courses (those equivalent to GIS 120) have prerequisites. Most colleges have an advisory/recommended preparation of a basic computer course varying from 1-3 units (attachment 1, page 4). In response to this, the faculty author of these courses has submitted a revision to the Napa Valley College Curriculum Committee. This revision adds a recommended preparation of COMS 100 Introduction of Computer Systems (attachment 2). GIS 121, 130 and 131 already have prerequisites of the previous GIS course.

Napa Valley College is conducting a major review of curriculum this year. One of the areas that will be assessed is whether success in each course is dependent upon communication or computation skills. The GIS courses will be included in this assessment. In the meantime, we provide tutoring in our math center and in our MESA center for students who need help with math skills.