# Professional-Technical Program Approval Request

**College:** Skagit Valley College  
**Program Title:** Geographic Information Systems  
**CIP:** 45.0702  
**EPC:** 194  
**Total Credits:** 24  
**Anticipated maximum enrollment:** 30  
**Anticipated yearly completions:** 15-20

Primary [X] *if so, initial [ ] or final [ ] documentation*  
Option [ ]  
Contract [ ]

If option, to which primary program ______  
If option, include curriculum guide for primary program.

Award at completion (type of degree or certificate) **Certificate**

Brief program description: The GIS certificate provides training in managing spatial datasets using ArcInfo software. Students will be prepared to collect spatial data using GPS devices, import data and manipulate datasets in order to make maps.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Plan Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Need</strong></td>
<td></td>
</tr>
<tr>
<td>1. Potential career progression, including job titles and employment opportunities including wage data. Need studies or indication of need from employers should support new and emerging occupations not covered by standard forecasts or data.</td>
<td>In recent years, remote sensing techniques are increasingly being used when managing natural resources. Datasets are getting cheaper and more institutions, agencies, companies, and not-for profit outfits are utilizing these techniques. In addition, at the 31st annual conference and professional development in Spokane, WA, June, 2015 for the North American Wildlife Technology Association it was clear that teaching remote sensing techniques are now an essential part of GIS skills. See attached for industries using GIS. Median wage: $17.00/hour ($12.73-22.76), $28,214-$50,561 annual wage (Source: payscale.com).</td>
</tr>
<tr>
<td>2. Initial assessment of opportunities for work-based learning/clinical sites (must be answered if applicable to program)</td>
<td>Not applicable for this certificate.</td>
</tr>
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Skagit Valley College – GIS PAR
<table>
<thead>
<tr>
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<th>Plan Description</th>
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</table>
| **3. **Collaboration with other colleges – Indicate which other colleges have similar programs and what potential conflicts may exist. **Provide evidence of attempts to collaborate with other colleges.** | The ENVC program has collaborated some with the Natural resources department at Spokane Community college regarding GIS curriculum.  
Whatcom CC does not offer GIS courses  
Everett CC’s GIS certificate has a social science emphasis compared to our natural resources emphasis. |
| **4. **Planning/advisory committee – Provide ADV form located at [http://www.sbctc.ctc.edu/college/_e-wkforceproftechprograms.aspx](http://www.sbctc.ctc.edu/college/_e-wkforceproftechprograms.aspx) and minutes of the related meeting(s) showing evidence that the committee has determined there is a commitment in the geographic area to employ individuals who have been served by the program.* | Please see attached ADV form. |
| **5. **Other supporting documentation | |

* If an active Joint Apprenticeship and Training Committee for the occupation exists in the region, at least one labor and one management member from that committee should be invited to serve on the advisory committee. The college shall contact the chairperson or secretary of the JATC and request representation for the specific occupation. In cases where representation is not provided by the JATC, a letter must be on file from the college to the JATC requesting representation for that occupation. JATCs may act as the advisory committee where it has been determined that both the college and the occupation could best be served. “Organized labor” representatives should be used whenever possible to ensure a balance of all points of view, and currency with issues relevant to the development of courses.
<table>
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<th>Plan Description</th>
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</table>
| **1. Attach program description, goals, and learning objectives.** | The Geographic Information Systems (GIS) classes are designed to provide students with software knowledge to manage information or attributes that have a geographic reference point attached. Different attributes and types of information can be displayed as maps. This allows analyzing data with respect to its spatial relationships. Geographic Information Systems are software and hardware that electronically manage these spatial data sets on virtual or real maps. Their use is revolutionizing spatial analysis in forestry, fish and wildlife, population studies, land-use planning, marketing, and other fields that involve the integration of information and geography. Advanced uses integrate GPS data management Landsat data, LIDAR, and NDVI (greenness) with mapping and displaying software. GIS software is used by real estate agents, city and county administrations, natural resource managers, fish and wildlife managers, sales analysts, utility companies, and environmental managers. Program Learning Objectives:  
  • Student obtain a basic understanding of concepts, components, structures, and functionalities of GIS  
  • Students will be able to use common GIS techniques to collect, analyze, process, and present spatial or geographic data.  
  • Be able to use Global Positioning System, remotely sensed data, and other online GIS data sources for spatial analysis and mapping – including projects.  
  • Have the knowledge and skills necessary for using commercially available GIS software and seeking entry level position in GIS related industries. |
| **2. Attach program/curriculum guide (list by course number, course title, credit and/or clock hours per course, and total credits).**  
*NOTE: May not be available for a new primary program at initial submission. Is required for final approval.* | Please see attached spreadsheet |
<table>
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<th>Plan Description</th>
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<tbody>
<tr>
<td>3. Attach course descriptions, goals, and learning outcomes as they will appear in the catalog (do not include course syllabi). NOTE: May not be available for a new primary program at initial submission. Is required for final approval.</td>
<td>Please see attached course descriptions.</td>
</tr>
<tr>
<td>4. Program goals are developed in conjunction with the planning/advisory committee. This joint development is reflected in the minutes of the committee.</td>
<td>Please see attached advisory minutes.</td>
</tr>
</tbody>
</table>

**Assurances**

By the signatures below, we attest to the fact that the following actions have occurred:

1. The program has been integrated with the strategic planning and budgeting plan of the college.
2. The curriculum of this program has gone through the institution's established approval process.
3. The college will maintain an advisory committee of industry representatives to help the institution keep the program current with employer needs.
4. A continuous improvement plan is in place for this program.

**Approvals:**

Chief Instructional Officer

[Signature]

Date 11/14/14

Workforce Education Director

[Signature]

Date 10/27/14

**Endorsements:**

Advisory Committee Representative

[Signature]

Date 10/28/14
PROFESSIONAL/TECHNICAL ADVISORY/PLANNING COMMITTEE

<table>
<thead>
<tr>
<th>Community/Technical College:</th>
<th>Skagit Valley College</th>
<th>Date Submitted:</th>
<th>October 31, 2014</th>
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<tr>
<td>Committee/Program Title:</td>
<td>Geographic Information Systems</td>
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Please indicate which type of committee this is:

- [x] Program advisory committee
- [ ] General advisory committee
- [ ] Ad hoc/planning committee
- [ ] Other (specify)

Meeting dates for previous year:

**June 10, 2014**

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<thead>
<tr>
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<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Brian Adams</td>
<td>Operations and Land Manager</td>
<td>Skagit County Parks and Recreation</td>
<td>Anacortes</td>
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<td>X</td>
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<td>Debbie Allen</td>
<td>Wastewater Treatment Supervisor</td>
<td>City of Sedro Woolley</td>
<td>Sedro Woolley</td>
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<td>X</td>
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<td>William Blake</td>
<td>Stormwater Supervisor - Public Works</td>
<td>City of Arlington</td>
<td>Arlington</td>
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<td>X</td>
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<td>Doug Couvelier</td>
<td>TFW Biologist</td>
<td>Upper Skagit Indian Tribe</td>
<td>Sedro Woolley</td>
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<td>X</td>
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<td>David Isaak</td>
<td>Owner</td>
<td>SixBlue Data</td>
<td>Arlington</td>
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<td></td>
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<td>Kai Ottesen</td>
<td>Farm Manager</td>
<td>Hedlin Farms</td>
<td>La Conner</td>
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<td>X</td>
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<td></td>
<td>Rick Rogers</td>
<td>Field Projects Coordinator</td>
<td>Stillaguamish Natural Resources</td>
<td>Arlington</td>
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</table>
SKAGIT VALLEY COLLEGE

Environmental Conservation Program

Advisory Committee Meeting Minutes
June 10, 2014

Members present: Brian Adams, Debbie Allen, Bill Blake, David Isaak, Rick Rogers

Staff Present: Claus Svendsen, Dept. Chair; Steven Glenn, faculty

✓ Meeting called to order by Bill Blake; introductions of all
✓ October minutes approved as written

Unfinished Business:

- **Lab certification** – As part of the BASEC approval, the Environmental Conservation Department will seek lab certification through Washington Department of Ecology. The committee reviewed the selected water quality parameters to make sure that they will be appropriate. There was committee consensus that the parameters outlined in the BASEC application to SBCTC were appropriate.

- Bill Blake wanted to have a discussion around **climate change and student preparedness**. Do they have the tools to be able to help with it? All committee members voiced that they are dealing with climate change planning for the future. Claus outlined that the ENVC curriculum deals with climate change for salmon, forest lands as well as rising sea levels. The restoration class also takes into account planting schemes for a changing environment.

- **Water/wastewater ATA and certificate** – select new textbook. Debbie Allen brought a couple of wastewater treatment books for consideration. Claus will work with Debbie over the summer to come up with new selections that will work better for the DE courses.

- Claus outlined that the BASEC degree was approved in March by the SBCTC. The proposal was briefly reviewed and all got a copy. Claus went over some of the changes outlined by the two external evaluators. SVC is committed to a fall quarter start. Currently, Claus is reviewing applications for the program.

- **Department update**: as part of the new BASEC degree, the ENVC department is planning on hiring two new full-time employees for 9 months (academic year). One department lab assistant & one program assistant.

- **SAGIE** – all courses have been developed with syllabi and Moodle site information. All the courses have been delivered once. There seems to be a growing increase in student interest for a fall quarter start. Claus will also work over the summer with “Growing Veterans” in Skagit County.
New Business:

- **Remote Sensing course.** There was a discussion around adding a remote sensing course to the GIS certificate, which would increase the credits from 19 to 24 credits. This would make the course eligible for financial aid. Claus outlined his vision for the remote sensing course. In addition, David Isaak went over a different kind of remote sensing using raspberry-pi-data-to-cosm technology. It is new inexpensive technology to measure environmental parameters in the field; Rick Rogers went over the kind of remote sensing he is working with at the Stillaguamish Tribe. It was decided that the content should be how to use different remote sensing techniques to interpret different environmental conditions. The committee agreed that it would be good to add the remote sensing course to the certificate. Rick agreed to start working on a course outline. The outline will review in the fall.

- Claus mentioned that SVC needs to communicate with SBCTC regarding the next steps such as the possible need for a separate advisory committee for BASEC. In addition, Claus will investigate next steps in the accreditation process with the Northwest Commission for Colleges and Universities.

- For the past 4 years, Claus has offered CESCL certification as community education, which most students are not able to tap into. There was general consensus that embedding the knowledge and skills into the current Environmental Conservation degree would be valuable for students. It would help them in job search if they are CESCL certified. Similarly with the new certification planned for low impact development (LID) certification. The logical place for the practical part of the certification would ENVC 130. Claus will work with Ecology to make the change.

Fall Advisory Committee meeting scheduled for October 28. Meet before or after dinner? There was consensus to meet before dinner.

Adjourned
## SKAGIT VALLEY COLLEGE

### GEOGRAPHIC INFORMATION SYSTEMS CERTIFICATE

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<td><strong>GIS 202</strong> Introduction to Remote Sensing</td>
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12/2/2014
CIP: 45.0702;  EPC: 194

GIS 101  Introduction to Geographic Information Systems  (5)
Principles and conceptual overview of GIS software, its use and applications in natural resource management with hands-on experience using Arcview. Computer and spreadsheet familiarity necessary.

GIS 102  Geographic Information Systems II  (5)
Continuation of GIS 101. GIS application in natural resource management. Includes data creation by digitizing, coordinating management, map projections and map aesthetics using ArcGIS software. Prerequisite: GIS 101.

GIS 105  Introduction to Global Positioning Systems (GPS)  (2)
Introduction to global positioning systems (GPS) and their use in natural resources and agriculture

GIS 106  Advanced Global Positioning Systems  (2)
Continuation of GIS 105. Global Positioning Systems (GPS) data management. Integration of GPS data into mapping software and displaying with Google Earth and ArcGIS. Prerequisite: GIS 105 or concurrent enrollment, or department chair approval.

GIS 202  Introduction to Remote Sensing  (5)
Principles and conceptual overview of remote sensing instruments and how data and images are used to monitor and evaluate the condition and distribution of the earth's surface features. Prerequisite: GIS 101.

GIS 203  Advanced GIS Project  (5)
Using ArcGIS, create individual GIS projects from inter-tidal marine habitat data or other pre-approved data sets. Covers formulating a research question for analysis, conducting background research, map development and layout, and presenting the results in a research paper. Prerequisite: GIS 102.
INDUSTRIES USING GIS

Aid and Development
- Humanitarian Aid
- Sustainable Development

Business
- Insurance
- Retail
- Manufacturing
- Real Estate
- Banking
- Marketing
- Media

Defense and Intelligence
- Military Operations
- Intelligence
- Installations and Environment
- The Geospatially Enabled Enterprise

Education
- Libraries and Museums
- Schools (K–12)
- Universities and Community Colleges

Government
- Federal, State, Local
- Resilient Communities
- Architecture, Engineering, and Construction (AEC)
- Economic Development
- Elections and Redistricting
- Facilities
- Land Administration
- Public Works
- Surveying
- Urban and Regional Planning

Health and Human Services
- Public Health
- Human Services
- Hospital and Health Systems
- Managed Care
- Academic Programs and Research

Mapping and Charting
- Aeronautical
- Cartographic
- Nautical
- Topographic

Natural Resources
- Agriculture
- Climate Change
- Conservation
- Environmental Management
- Forestry
- Mining
- Oceans
- Petroleum
- Water Resources

Public Safety
- Emergency Call Taking and Dispatch
- Emergency/Disaster Management
- Fire, Rescue, and EMS
- Homeland/National Security
- Law Enforcement
- Wildland Fire Management

Transportation
- Aviation
- Highways
- Logistics
- Railways
- Ports and Maritime
- Public Transit

Utilities and Communications
- Electric
- Gas
- Location-Based Services
- Pipeline
- Telecommunications
- Water/Wastewater

Wages for GIS technicians:

Median wage $17.00/hour ($12.73-22.76), $28,214-$50,561 annual wage
(Source payscale.com)