# 2010 Student Technology Fee (STF) Proposal Form

**Title of Project:** Spatial Analysis Classroom  
**Department/Organization:** Geology Department  
**Name(s) of Project Applicant(s):**
- **Name:** Robert Mitchell  
  **MS 9080**  
  **Phone:** 3591
- **Name:** Douglas Clark  
  **MS 9080**  
  **Phone:** 7939
- **Name:** Pete Stelling  
  **MS 9080**  
  **Phone:** 4095
- **Name:** Russ Burmester  
  **MS 9080**  
  **Phone:** 3654

**Principal Contact person:**  
- **Name:** Robert Mitchell  
  **Phone:** 3591

**Amount Requested for Project:** $64,686  
**Contribution by Requesting Organization:** $11,727

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**Important notes:**

- Before completing this form, please read the Proposal Form Instructions on the STF website: [http://www.wwu.edu/stf/](http://www.wwu.edu/stf/)
- Beginning this year (2009-10), the Student Technology Fee Committee will no longer accept proposals for computer lab upgrades. Existing computer labs will now be upgraded on a rolling schedule, and the Student Technology Fee will continue to fund these upgrades. (The schedule for upgrading computer labs, when approved, will be posted on the STF website.)

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## I. Project Abstract

Give an overview of the existing environment, and summarize the items being requested. Briefly explain how the requested technology will:

- improve **student access** to technological resources, and/or
- enhance the **quality** of the student academic experiences through the use of technology, and/or
- increase the **integration** of technology into the curriculum.

**Objective**

In order to meet student demand, and to ensure that WWU Geology majors have experience in modern spatial analysis methods that are required of professional geologists, the Geology Department revised its curriculum to include Geographic Information System (GIS) technology in many courses. This proposal requests funds to ensure the sustainability of this reform by developing a new spatial analysis classroom with 25 modern workstations to effectively implement our GIS-based curriculum.
Integration of Technology
We recently initiated a GIS curriculum reform to integrate GIS applications throughout the curriculum because visualizing and interpreting digital spatial data is fundamental to the study of geology. The industry standard for the display and analysis of geospatial data is the GIS, specifically ESRI's ArcGIS, for which WWU has a license. Not only do we believe the use of a GIS improves learning of geologic concepts, but alumni and employers have repeatedly emphasized the importance of GIS as central tool in industry. Historically, WWU is the leader in training undergraduate and MS-level geologists in Washington State. As such, we have an extensive network of alumni working in industry and for government agencies that regularly provide us advice about our program. Alumnus John deLa Chapelle’s comment “GIS is a vital and necessary tool used in all geological branches of our profession” encapsulates alumni opinion and our GIS initiative. John deLa Chapelle is the Washington State Section Chair of the Association of Environmental & Engineering Geologists (AEG).

To advance our GIS initiative, the Geology Department submitted a proposal to the Wilder Foundation and secured funding for GIS training for the entire faculty. This external support has allowed us to establish the foundation for GIS reform, and includes a new course (GEOL 213- GIS in Geology) at its core. The fundamental GIS skills learned in GEOL 213 are now revisited and expanded by GIS projects in 10 upper-division courses. In order to maintain this new reform, we need an adequate, dedicated classroom environment that is suited to this technology. We anticipate that the convenience and utility of the spatial analysis classroom will promote further faculty usage and likely double the amount of courses that offer GIS applications, and hence student access to technology.

Existing Environment
Previously, we had access to Huxley College’s Spatial Analysis Lab (SAL), but as of 2009, the SAL is no longer available because of an increase in demand by Huxley courses. Nevertheless, sharing a lab would functionally prevent the full implementation of our GIS initiative. We need an accessible, reliably available space dedicated to Geology because our reform involves GIS-based projects in many geology courses. Having to schedule lab space in neighboring buildings at multiple times for numerous courses during the quarter is problematic for faculty and often untenable for students. Labs outside our building also restrict our ability to assist students with projects.

We currently teach GIS courses in a ATUS lab (AH 05). Aside from scheduling difficulties, ATUS labs do not have the full suite of GIS, Remote Sensing, GPS, 3-D visualization and spatial modeling software that is used in geology. Nor do they have the processing speed and screen size required to manage large graphic intensive and multi gigabyte data sets that typify GIS projects. Moreover, ATUS computers cannot be configured to meet the specific needs of each course, or modified during the quarter as faculty experiment with applications and GIS modules.

We propose to reconfigure an existing space (ES 230) in the Geology Department to serve as our new spatial analysis classroom (see attached floor plan). ES 230 is conveniently located within steps of the majority of our departmental classrooms. Thus, intermittent classroom transitions to the lab for GIS immersion will be smooth and time effective. Moreover, because of the proximity of ES 230 to faculty offices, faculty can readily address questions about assignments and software difficulties outside the classroom.
Student Access and Quality of Student Experiences
A new spatial analysis classroom in ES 230 with 25 modern workstations having ample processor speed, screen size, and memory (RAM) will:

- Enable Geology faculty to integrate GIS applications into course work and labs across our curriculum
- Provide a flexible and effective learning environment for students working with graphic-intensive geoprocessing
- Advance Geology undergraduates’ expertise and ability with computational applications in geoscience, enhancing both the value of their coursework and their eventual competitiveness in employment opportunities
- Improve out-of-classroom availability for student projects (a cornerstone of our program)
- Foster a constructive working atmosphere that promotes faculty-student interaction
- Simplify computer administration by establishing a consistent and integrated system that can be managed to meet the specific needs of each course, and modified more easily throughout the quarter.

II. Relationship to STF Objectives and Impact on Existing Academic Programs

Describe your proposed project in detail. Tell us how it will provide positive benefits to specific courses or instructional programs.

1. From a student perspective:
   a. How would this project provide additional student access to technological resources?

A modern, spatial analysis classroom will serve as a technological focal point in the Geology curriculum that will invite more innovative use by faculty and increase technology access to students.

As a result of GIS reform, Geology majors are now required to take GIS in Geology (GEOL 213) in their sophomore year. This important skill building class will be taught in the new lab and offered every quarter. Content-specific GIS exercises are now integrated in 10 upper division courses and will be taught in the lab on a floating schedule basis. We anticipate that the convenience and utility of the spatial analysis classroom will promote further faculty usage and likely double the amount of courses that offer GIS applications, and hence student access to technology.

An additional 15 geology courses currently employ software tools (other than GIS) in teaching elements of geospatial analysis, mathematical and geochemical modeling, signal processing, and statistical analysis. The spatial analysis classroom proposed here would invite more frequent and hands-on use of these software tools and encourage the use of additional computer applications further increasing student exposure and access to a range of technologies.
Nearly all geology courses have assignments that require computer use and lab time outside the scheduled class period. These requirements will increase as our GIS reform expands. A spatial analysis classroom with 25 workstations will improve out-of-classroom availability of computer resources for these projects.

b. How would this project broaden or enhance the quality of the student’s academic experience through the proposed technology?

Students want modern computers equipped with content-specific software accessible within the department. GIS applications are memory and graphic intensive and computationally demanding. Up-to-date, fast computers with large monitors will dramatically reduce class time wasted waiting for an application to open or an analysis to be process, and improve graphic visualization. Processing delays result in a reduction in content of and the degradation of student enthusiasm for the course material and technology. Moreover, geology students desire a central lab environment for both class and outside of class assignments to reduce time spent adapting to other environments or hunting for labs having the required software (see attached letters).

Students want faculty support beyond the classroom. Because of the proximity of ES230 to faculty offices, faculty can readily address questions about assignments and software difficulties outside the classroom. This support system will decrease student work frustration and improve completion rates which results in a positive learning experience. Currently, students are cut off from faculty support because they are required to work in other buildings.

Students want to learn and expect their education to be up-to-date and of high quality. GIS can improve learning of geologic concepts. The breadth and availability of digital spatial data allows students to use GIS to visualize, analyze and hence, retain the static and dynamic relationships of a range of complex geologic processes and landforms and structures. This practice not only develops critical thinking and knowledge retention, it engages students because they are motivated by real applications, especially if they are local and regionally based. From a pragmatic point-of-view, students also become more invested in their learning because they are using the same tools as professionals.

Students want assurance that their undergraduate investment will lead to employment opportunities. Students are aware that employers require GIS skills and rightly demand courses that utilize them so that they graduate with highly developed and marketable skills. Historically, WWU is the leader in training undergraduate and MS-level geologists in Washington State. As such, we have an extensive network of alumni working in industry and for government agencies that regularly provide us advice about our program. Alumnus John deLaChapelle’s comment “GIS is a vital and necessary tool used in all geological branches of our profession” encapsulates alumni opinion and our GIS initiative. John deLaChapelle is the Washington State Section Chair of the Association of Environmental & Engineering Geologists (AEG). AEG provides leadership, advocacy, and applied research in environmental and engineering geology on a local, national, and international level. Most AEG members work in the industry and government agencies.

c. How would this project integrate technology into coursework?

Our initiative to integrate GIS throughout the curriculum is driven by our historical commitment to weave technology into coursework. The Geology faculty have been
active in implementing geospatial software and numerical models for instructional purposes because they improve learning of fundamental concepts, advance quantitative and technical skills, and broaden approaches to confront geologic problems. We encourage students to explore actual data because deeper learning occurs when science is taught in context and is made relevant. GIS allows such exploration and is employed at multiple levels in our curriculum.

- **At the introductory level,** students visualize data using GIS. Faculty can demonstrate, or students may explore, existing databases of global topography, seafloor age, or earthquake distribution, to deepen understanding of plate tectonics. The power of the data visualization tools in GIS allows students to conceptualize the complex three-dimensional systems that typify most earth models.

- **At the intermediate level,** students visualize and interpret data using GIS. Government agencies and private entities are now storing their maps and spatial databases in GIS format. Hence, students learn how to navigate these reliable internet sources and download data directly into GIS for visualization and analysis. For example, students manipulate advanced LiDAR (Light Detection and Ranging) imagery to classify landforms and produce geomorphic maps.

- **At the advanced level,** students employ the computational and modeling elements of GIS in course-based research projects. Students critically evaluate advanced GIS tools such as the raster calculator to produce and interpret rainfall distributions at the pixel level in the Lake Whatcom watershed. And, students import GIS coverages into numerical models for assessing the effects of watershed characteristics on streamflow.

- **Students at the intermediate and advanced level also use other technologies to collect data for analysis in GIS. Students use state-of-the-art streamflow meters (FloMates), GPS devices, and survey equipment in surface processes courses. And, students are using our recently acquired ground-based portable LiDAR system, commonly known as terrestrial-laser scanner, for detailed geomorphic mapping. All these tools produce data that can be integrated into GIS in a symbiotic manner that greatly improves students’ ability to learn the spatial variability of geologic phenomena.**

- **An additional 15 geology courses currently include other specialized software tools (too many to list) in teaching elements of geospatial analysis, mathematical and geochemical modeling, signal processing, and statistical analysis. An up-to-date spatial analysis classroom would invite more frequent use of these software tools, and encourage the application of others.**

2. **From a faculty perspective,** explain how this project will enhance your ability to help students meet their educational goals.

   Our mandate to integrate GIS throughout our curriculum was motivated by our responsibility to make these technologies accessible to students to ensure they graduate with a highly developed and marketable skill set.

   A modern spatial analysis classroom in ES 230 would allow us to fully realize our GIS reform because it will promote faculty usage and student access. The classroom would likely double the amount of courses that currently integrate GIS exercises because is conveniently located within steps of the majority of our departmental classrooms. Thus,
intermittent classroom transitions to the lab for GIS immersion will be smooth and more time effective. The lack of a convenient and reliably available computer lab has been a setback for our reform because we currently have to arrange lab space in neighboring buildings, which is problematic for faculty and disruptive for students.

An additional outcome of our GIS reform is that faculty will progressively evolve their own competency with GIS. Hence, because of the proximity of ES 230 to faculty offices, faculty can readily address questions about assignments and software difficulties outside the classroom. This support system will decrease student work frustration and improve completion rates which results in a positive learning experience for the students and a rewarding teaching experience for faculty.

Another key benefit from a faculty perspective is that a lab within our department can be configured to meet the specific needs of each course, and modified more easily throughout the quarter as faculty experiment with applications and exercises.

3. Will other departments be involved with this project? If so, please describe.

No

4. Has any part of this project previously been funded by STF?

No ☒ Yes ☐ Please describe:

III. Utilization

1. Please list the anticipated number of times and duration per each use, per quarter, that the proposed technology will be used by students.

ES 230 would serve as a spatial analysis classroom for all of our geology majors; about 125. Currently we have four courses that are taught entirely in a computer lab; GEOL 213, 442, 447 & 448, and two that meet once per week in a lab; GEOL 316 and 472. Below are values based on 2008/2009 enrollments (hours/week)

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of courses:</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Reserved hrs/week:</td>
<td>8</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Number of students:</td>
<td>69</td>
<td>33</td>
<td>30</td>
</tr>
</tbody>
</table>

There is intermittent reserved use by 10 upper division courses that currently employ GIS projects and by 15 courses that currently use other specialized software tools. Below are estimates based on 2008/2009 (hours/quarter).

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasional use by courses:</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Reserved hrs/quarter</td>
<td>12</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Number of students:</td>
<td>93</td>
<td>119</td>
<td>115</td>
</tr>
</tbody>
</table>

These estimates are reserved hours only; they are many out-of-class hours required to complete projects. A modern spatial analysis classroom will also significantly increase (likely double) the use by courses. We anticipate sporadic use by students in our GEOL 211 labs for GIS experiences. We teach about 250 students per year in GEOL 211.
IV. Project Budget

This section details the estimated cost of the project. Include costs that will be covered—by your department or another source—for ongoing costs such as personnel or operating expenses.

To assist you in preparing your budget, please consult with relevant campus support departments (ATUS, Purchasing, Space Administration, etc.). For more information, see this page on our website: http://www.wwu.edu/stf/instructions.shtml

Please complete all of the following sections (attach Excel spreadsheet for any additional details).

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Item Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request from STF is 25 computers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dell Precision T3400 with 2.5 GHz Q9300 CPU, 4GB RAM, 160 GB SATA drive, 16x DVD drive, 256 MB nVidia adapter, U2410 1920x1200 24 inch monitor, and 5 year basic warranty (November retail less 25% anticipated quantity discount)</td>
<td>25</td>
<td>1800</td>
<td>45000</td>
</tr>
<tr>
<td>HP P4015X gray-scale duplex printer</td>
<td>1</td>
<td>1600</td>
<td>1600</td>
</tr>
<tr>
<td>HP 4700dtn color printer</td>
<td>1</td>
<td>2210</td>
<td>2210</td>
</tr>
<tr>
<td>Tax (8.5%)</td>
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<td></td>
<td>4149</td>
</tr>
<tr>
<td>STF Contribution</td>
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<td></td>
<td>52959</td>
</tr>
<tr>
<td>Geology Department Infrastructure Contribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer tables and chairs</td>
<td>24</td>
<td>350</td>
<td>8400</td>
</tr>
<tr>
<td>Instructor Station</td>
<td>1</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Projector</td>
<td>1</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Port Activation</td>
<td>11</td>
<td>128</td>
<td>1408</td>
</tr>
<tr>
<td>sub total</td>
<td></td>
<td></td>
<td>10808</td>
</tr>
<tr>
<td>Tax (8.5%)</td>
<td></td>
<td></td>
<td>919</td>
</tr>
<tr>
<td>Geology Contribution</td>
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<td></td>
<td>11727</td>
</tr>
<tr>
<td>Shipping (taxable)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total Tax (8.5%)</td>
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<td></td>
<td>5068</td>
</tr>
<tr>
<td>Project Total</td>
<td></td>
<td></td>
<td>64686</td>
</tr>
</tbody>
</table>

We recognize your proposed budget as an estimate. Final funding for successful projects will be established after thorough technical review; some costs may need adjusting due to price changes. The STF Committee may impose special conditions on a project; see the STF Program Description.
1. What funding is available from your department or other sources?

The Geology Department will pay to activate network ports to match the increased number of networked devices in ES 230, buy new tables and chairs and a projector to match the aspect ratio of the new monitors. These expenses will be paid out of Geology funds, as will maintenance of all such licenses. The Geology Department will cover additional shipping costs for infrastructure purchases.

2. Could this project be divided into discrete elements that could be funded separately?

No ☒ Yes ☐ Please summarize and prioritize project segments with cost estimate for each segment.

3. Are lab fees charged for any of the courses that will use this equipment?

No ☐ Yes ☒ If yes, please note: The total funding requested from the STF must reflect the amount collected from course fees for equipment replacement and/or equipment acquisition. All proposals asking for course fees will be reviewed by the Academic Budget Office.

Geology lab courses require a lab fee. Money collected is used for consumables, equipment repair, software purchase and maintenance and other items needed to support the labs and assignments in them. These fees are neither intended nor adequate for computer upgrades. There are no course fees for equipment acquisition or replacement.

V. Impact on Existing Resources

The proposal should address your project’s potential impact on existing resources. Special attention should be given to impact on data transmission networks (e.g., sources accessed, networking equipment, etc.), and personnel (e.g., staffing, administrative support, faculty support, etc.).

Any proposal that includes the replacement of computers should specifically address the feasibility and cost effectiveness of upgrading the computers rather than replacing the computers.

1. Describe how existing equipment is used. Contrast this to projected use if your project was funded.

ES 230 currently serves as a work space for students and houses an eclectic mix of outdated (2002) computers (9 PCs and 4 iMacs), a large digitizing table, and scanners; all purchased by funds from the Geology Department. The equipment in ES 230 will be moved to other areas within the department. The computers in ES 230 will replace older or less powerful computers dedicated to instruments in the department such as the x-ray diffractometer, photo microscope with digital camera, particle size analyzer, flatbed scanner, and several in the paleomagnetic lab.

Reconfiguring ES 230 in the Geology Department to serve as our new spatial analysis classroom (see attached floor plan) will allow us to realize our GIS reform. ES 230 is
conveniently located within steps of the majority of our departmental classrooms. Thus, intermittent classroom transitions to the lab for GIS immersion will be smooth and time effective. And, because of the proximity of ES 230 to faculty offices, faculty can readily address questions about assignments and software difficulties outside the classroom. Moreover, the computers can be configured to meet the specific needs of each course, and modified more easily throughout the quarter as faculty experiment with applications and exercises.

2. Is similar equipment or technology available elsewhere on campus—such as the Student Technology Center, Classroom Services, Video Services, Western Libraries, a college lab? If so, please describe why the existing equipment does not meet the needs outlined in this proposal.

Previously, we had access to Huxley College’s Spatial Analysis Lab (SAL), but as of 2009, the SAL is no longer available because of an increase in demand by Huxley courses. Nevertheless, sharing a lab would functionally prevent the full implementation of our GIS initiative. We need an accessible, reliably available space dedicated to Geology because our reform involves GIS-based projects in many geology courses. Having to schedule lab space in neighboring buildings at multiple times for numerous courses during the quarter is problematic for faculty and often untenable for students. Labs outside our building also restrict our ability to assist students with projects.

We currently teach GIS courses in a ATUS lab (AH 05). Aside from scheduling difficulties, ATUS labs do not have the full suite of GIS, Remote Sensing, GPS, 3-D visualization and spatial modeling software that is used in geology. Nor do they have the processing speed and screen size required to manage large graphic intensive and multi gigabyte data sets that typify GIS projects. Moreover, ATUS computers cannot be configured to meet the specific needs of each course, or modified during the quarter as faculty experiment with applications and GIS modules.

3. If this project involves the replacement of equipment:
   a. Describe the “before and after” configuration changes. A spreadsheet reflecting these changes may be attached.
      
      N/A

   b. Describe the costs and benefits of replacing vs. upgrading (if applicable).
      
      N/A

4. Will this equipment be available to students outside your department?

   Yes ✗ If the proposed technology will be used by students outside of your department, please describe how they would gain access, how the availability of the equipment will be publicized, the hours/week when the equipment will be available, and any costs that would apply.

   Students from the CS&T, Huxley College, and Anthropology that take our courses will have access to the lab.
5. Does this project involve the check-out of equipment to students?

No ☐ Yes ☒ If yes, please discuss whether or not the Student Technology Center could be assigned this task.

6. Does the department have adequate operating funds to provide ongoing maintenance and support?

No ☐ Yes ☒ Please describe.

Maintenance of the computers should be adequately covered for 5 years under warranty. Lab fees will be adequate to maintain software not covered by University license agreements. We expect that configuration of workstations and distribution of a common image will continue to be handled by CS&T support staff under Todd Epps.

7. Does the department have adequate personnel funds to provide ongoing staff support for this project?

No ☐ Yes ☒ Please describe.

Maintenance of the computers in ES 230 will continue to be supported by CS&T technical support staff.

VI. Space and Site Information

This section addresses any space alteration or site preparation necessary for the proposed project. Site alterations include painting, holes in walls, security systems, carpeting, construction, lighting changes, or conversion of a lab or office.

Special Note: If this project requires any site preparation, or if this project uses any space not currently under your department’s control, you must submit a draft proposal to Space Administration by November 25, 2009. Space Administration and Facilities Management will conduct a site survey and respond back to you concerning project feasibility, cost, and schedule. This information must be included in the final project proposal.

Proposals for projects that involve any site preparation will be considered only after the required site surveys by Space Administration and Facilities Management have been completed.

1. Location for installation of equipment or technology.

Environmental Studies Room 230 (ES 230)

2. Is site modification required?

No ☒ Yes ☐ If yes, please describe (electrical, air, painting, lighting, security, network access, etc.).

3. Will this project use space not currently assigned to your department or area?

No ☒ Yes ☐ Please describe.
VII. Project Schedule

This section describes your overall implementation schedule. Project awards will be announced by the end of spring quarter. It is anticipated that projects would be substantially completed by the end of the calendar year. If there is any site preparation involved, please align your project schedule with the schedule provided by Space Administration and Facilities Management.

Computers would be ordered in July, 2010; configured and installed by Fall quarter.

VIII. Constraints

This section should list any external or internal factors that could affect your project schedule, project objectives, or the project budget (e.g., if external approval is required for curricular changes, or if funding must be received by a certain date).

1. Please describe any constraints to this project.

None

IX. External Funding

This section must be completed for any projects over $100,000. For project budgets of this scale, the applicant should investigate opportunities for obtaining external funding for all or part of the proposed project.

1. Describe the external organization(s) able to provide funding in support of this project.

N/A

2. Describe the funding cycle for these requests (submission dates, projected award dates).

N/A

3. Indicate the amount of external funding that would be requested.

N/A

4. In cases where joint funding is requested, what will happen if the STF award is made and the external grant is not awarded?

N/A

5. Has a grant proposal already been submitted for all or part of the proposed STF project?

No
Appendix A: Letters from Geology Student GIS Users

To the STF Review Committee:

I am an undergraduate student in the Geology Department of WWU and am writing a letter concerning the Geology Department’s computer lab. I have gained extensive experience using GIS software through Huxley’s Geography Department while working towards a Minor in GIS and use their recently upgraded Spatial Analysis Lab. Because GIS is being further integrated into our curriculum, up-to-date computers are necessary to being able to fully utilize the software and learning experience. GIS is becoming more and more instrumental in all aspects of jobs involving geology, so it is necessary for students to have experience using ESRI’s GIS software.

A new computer lab is necessary so that ESRI software to be fully utilized. With new computers using state of the art processors and more RAM (over 2 GBs), work time will be greatly reduced. Running a simple process of converting soil polygons to a raster image in the computers in Huxley’s up-to-date Spatial Analysis Lab took 54 seconds, while the a current computer in the Geology Department’s computer lab take approximately 10 minutes. With this much wait time, advanced spatial computing is near impossible during a 50 minute class period. With faster computers, process time will be greatly reduced allowing instructors to be able to fully utilize the software and also be able to teach all the aspects of GIS that are necessary for geologic work to prepare us for jobs or further education in our respective fields. Large storage space is also necessary in our computers to be able to hold high resolution, large extent spatial data like LiDAR and other types of data (which can easily be multiple GBs in size).

New, larger monitors are also extremely important for GIS work. Having multiple side by side windows open next to each other lets a student be able to read written instructions or be running a database at the same time as they do work in ESRI’s GIS software. The current monitors do not allow enough room for having multiple windows open.

In conclusion, WWU’s Geology Department needs a comprehensive new computer lab to keep up with current software being used in geologic research and employment. To continue to expand GIS curriculum to more classes, new computers are absolutely necessary. With high quality computers, we will be able to do current and relevant spatial analysis in all fields of geology that would pertain to future jobs or continuing education.

Sincerely,

Benjamin Fox
foxb2@students.wwu.edu
To the STF Review Committee:

As a nearly-graduated Environmental Geology BS graduate (Fall 09) I have come to realize how important it is to have a good understanding of GIS to be a proficient geologist. On a weekly basis I find myself working with students and faculty on GIS problems, providing me with a great learning opportunity. I have come to realize how important GIS is as a fundamental tool for geologists in the working world. With the skills I have learned here at WWU I have improved my marketability to employers and feel that I would get a job just because of my GIS skills.

Implementing GIS into geology courses is currently not reasonable with the current computer lab in ES230. The current lab was last updated in 2002 and these computers are not capable of proficiently running many of the programs used in geology courses. I have watched many students, including myself, become very frustrated because the computers are so slow that they freeze while performing common tasks. As coursework requiring a school computer has increased students have had to find other places to work, with ES230 only having 9 outmoded PCs. Students need to be able to work with current data and technology so that they are prepared for the working world. With a new lab there would not only be enough computers for each student but those computers would have the capacity to efficiently run the programs that students work with.

I have spent the last 2 years working in the Huxley Spatial Analyst Lab (SAL) obtaining a GIS minor and have watched the change that came with the STF update of the computers in that lab. Not only did class enrollment increase for Huxley GIS courses, but students’ morale improved tremendously while working with ArcGIS and other data visualization programs.

Currently, geology courses that require GIS are taught in Arntzen Hall 05 or ES230 in the geology department. The computers in these labs are not capable of efficiently running many of the programs used in these courses. The department faculty has already received training in ArcGIS in an attempt to incorporate GIS into their coursework. Having knowledge of GIS I have seen countless opportunities were GIS is not used in lecture or coursework. With the proposed computer lab the implementation of GIS into coursework can be realized. Not only would this improve student comprehension of course material but offer valuable experience with crucial tools used in our profession. A working knowledge of GIS, data visualization and signal processing programs has become a requirement for post-graduate employment in geology.

With comprehensive and high-resolution spatial data becoming available for more areas, the need to use GIS to manipulate these data has become a requirement for geologists. By utilizing new technology and the current training of department faculty in GIS, geology students will gain both valuable experience and knowledge of GIS and other programs utilized in geology. This experience will allow students to graduate with the skills and experience required to be competitive in today’s job market.

Sincerely,

Graham Clark
clarkg4@students.wwu.edu
Appendix B: Proposed ES230 Spatial Analysis Classroom