

**Project Description and Application:
GIS in the Classroom: Redistricting as a Politics Laboratory**

We are requesting ACS Technology Fellowship funds to support the purchase of two Tablet PC computers to be used in a special GIS course on the redistricting process that we will teach in the Spring, 2006 term. Each of these Toshiba Tecra M4 units is currently priced at roughly \$2,000. Our joint request is therefore \$4,000.

Background

With the assistance of the ACS, we have taught this course two times before. The results of those course offerings are available at: <http://itl.wlu.edu/gis/>. In prior iterations of the course, we dealt with earlier versions of the ArcView GIS package as well as state of the art redistricting technology provided by a grant from Autobound (which was used by the Commonwealth of Virginia in the 2000 redistricting).

The information on our website (<http://itl.wlu.edu/gis/>) demonstrates the great success we had each time we taught the course. We trained students in GIS and redistricting technology, instructed them with regard to the complexities of voting rights law and electoral behavior, oversaw their independent research on redistricting history in Virginia and assisted them in the creation of redistricting plans that rivaled (and we dare say improved upon) those drafted by the Virginia legislature. As part of this course, we had several guest speakers including members of the state legislature, technical specialists from the division of legislative services and electoral reform advocates..

The greatest difficulty we encountered was technological. In the (2000) first administration of the course, we were forced literally to change servers during the course because the size of the datasets was so enormous that the server could not handle multiple users drawing upon the data simultaneously. Even though we were able to move to a dedicated server, students were nonetheless confined to working in one lab, with limited access to their work stations.

In 2002, we overcame that hurdle by securing access to several desktop workstations that we assigned to each student. While this greatly enhanced the speed with which students were able to work, they still had limited access to their machines due to security concerns. Since the machines had to be dedicated only to the class projects, they had to be kept in a small, locked lab area that was accessible only through a classroom. Accordingly, during the day, their entrance and egress were limited by class hours.

In this administration we will be able to overcome these prior constraints by virtue of our securing thirteen Toshiba Tecra M4 Tablet PC computers that we will assign to the students. Not only will this model computer offer students mobility, robust graphics and data processing power, and DVD-R data backup capabilities, but the tablet technology will enable to students to manage their readings and class notes in new and advantageous ways. For example, students will be able to take handwritten notes directly onto Professor Rush's in-class PowerPoint presentations and other lecture materials, provided through a

shared network space that will also house readings, assignments, and other course material. Using Microsoft Office OneNote, students can organize and annotate virtually everything they do for the course, from notes and research to the GIS work itself, on this tablet PC.

While we are thrilled to be able to offer this functionality to the students, we are still in need of two additional computers. The university recently purchased thirteen Tablet PC's, which are currently being used in a pilot project to test their use by a variety of academic and administrative users. Our plan is to limit enrollment in this course to twelve and give each student a Tablet PC to use for the duration of the term. The thirteenth computer will be used by Blackburn for his use as lab instructor during the term. One of the two additional units will allow Professor Rush to use one for lecture and his own GIS work in preparation for and during the Spring Term. The second will be held in reserve for the eventuality that a student will drop or otherwise damage his tablet, necessitating a hot swap while that unit is repaired.

The New Version of the Course

In the course, we will anticipate the 2010 round of redistricting. Students will work in groups to redraw the districts for the Virginia Senate and House of Delegates. They will also write a paper in which they research and summarize the last two rounds of Virginia redistricting history. We will have the student plans and datasets publicly available for other ACS institutions as well as the state legislature and press to see.

The class will be a clear demonstration the power of technology—as well as its democratizing impact (see Blackburn and Rush, “Politics,” in Diana Sinton and Jennifer Lund, eds., *A Place for GIS in the Liberal Arts*. Forthcoming, ESRI Press). If 12 Freshmen from different states with little knowledge of Virginia politics can draw effective districting plans for the Commonwealth of Virginia, it will demonstrate that the redistricting process can indeed be freed of the political machinations that currently make it contentious, counterproductive and the object of public cynicism and scholarly criticism.

Course Syllabus

The course will be an intensive, 36-hour introduction to ArcGis 9 and the law and politics of redistricting. It nicely complements other courses taught in the politics department and law school by Rush on Election Law, Constitutional Law, and Applied Statistics. Lecture topics will include:

- The constitutional and mathematical background of reapportionment
- Redistricting Law and the One Person, One Vote Principle
- Virginia Redistricting Law and History
- The Voting Rights Act and Racial Gerrymandering
- District Cartography and Traditional Districting Principles

- Partisan Gerrymandering and Incumbency
- Alternative Electoral Systems

Guest Speakers (tentative) will include:

- Kent Stigall, GIS Specialist, Virginia Division of Legislative Services
- Bruce Cain, Robson Professor of Political Science, Univ. of California, Berkeley, Director of the Institute for Governmental Studies, UC Berkeley and Special Master for the Arizona Redistricting Commission in 2001
- Richard Cranwell, former Speaker, Virginia House of Delegates

Course Assessment, Student Projects and Deliverables for ACS

The principal basis for course assessment will be the ease with which we are able to conduct the course using the notebooks and the advanced versions of the GIS technology.

Students will be graded on the quality of their redistricting plans, datasets and research papers which will be presented in the last week of class. These will be made available on a publicly accessible website