

<p>VISION LEADERSHIP COMMUNITY</p> 	<p>PPPM <i>Planning, Public Policy and Management</i></p>	<p>Mobile GIS Professor Marc Schlossberg schlossb@uoregon.edu 128 Hendricks Hall PPPM 4/508 - Spring 2009 M/W 12:00-1:50</p>
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Purpose of the Course

The purpose of this course is to introduce students to mobile GIS through the use of ArcPad and Personal Digital Assistants (PDAs). Mobile GIS refers to the ability to collect spatial data in the field directly into a GIS environment using handheld computers. Applications of this technology could range from collecting data about bird observations (perhaps with the aid of GPS) to identifying aspects of the pedestrian environment that enhance or impede pedestrian comfort.

Students will learn how to use the technology and how to create customized and easy to use data entry forms on the PDAs.

Course Approach

This is the first time I'm teaching this course and am attempting to translate my own research and project experience into a course format, so there is likely to be some learning along the way in terms of how to deliver material in a useful and productive way. To enhance our learning environment it is important that we learn together and support one another in this journey. Working with each other is highly encouraged in the lab and in fact reinforces my teaching goals – teaching someone else something you've learned helps reinforce your own knowledge. So it helps me and it should help you.

Most of the class will be playing around on the computer, trouble-shooting problems, and figuring out how to apply this tool to solve problems. Our time in the lab will be fairly fluid, combining some directed assignments with some open experimental time for you. I anticipate new discoveries being made during class, so we'll also figure out how to share such insights with all. On occasion I will make a presentation or pull the class together for a teaching moment.

I anticipate this class to be a lot of fun and I hope we turn every bump into a good learning experience and I hope we have a lot of "a-ha" moments throughout the term.

Structure of the Course

The course will be divided into three parts:

1. **Technology:**

The first third of the course will cover four pieces of new technology:

- a. **ArcPad software:** this is the GIS software that you use in the field
- b. **ArcPad Studio** (or ArcPad Application Builder): this is the software you use to create custom data entry forms to be used in the field
- c. **ArcGIS:** standard GIS software, but we'll explore the tools to connect with ArcPad
- d. **Personal Digital Assistants** (PDA): you will be loaned a PDA to use for your own field data collection

2. **Project Development:**

The second third of the term will focus on developing a project proposal. While it may sound simple, you will need to develop a project idea that is constrained in scope and geography, and constrained by the need to answer your research/project question with a series of closed ended questions in ArcPad.

3. **Project Implementation:**

The final third of the term will revolve around you carrying out your data collection, analysis, and presentation.

Course Assessment

	<u>Undergraduate Students</u>	<u>Graduate Students</u>
Lab Assignments	30%	25%
Project Proposal	10%	10%
Project Tool and Description	25%	25%
Project Report (including CD?)	35%	20%
Project Poster	Not required	20%

Lab: Regular Stuff

Some labs also have assignments at the end of them that revolve around documenting what you've done. Instructions for assignments are at the end of each lab. Unless otherwise specified, the assignments are due at the beginning of the subsequent class.

Lab: Introduction to ArcPad

Print out Screenshot after completing park editing assignment (page 42 from the ESRI lab manual downloadable from Blackboard). Put your name on sheet, and turn it in. This is just proof of doing the work.

Lab: "Customizing ArcPad" ESRI Campus course

You will be registered for this on-line course and be given instructions on how to access it by your instructor. The course normally costs \$25, but is free for any UO student. There are many courses like this from ESRI that you can also take for free if you want additional self-paced learning opportunities. After going through the lab, print out the completed exam. Your grade will be an average between the grade you received on the exam and 100%, assuming you turn in the assignment on time. Some of the exam questions are based on the training video, so you should watch it as well.

Lab: Walkability Part 1

Come up with 5-10 measures of a walkable environment at the streetscape scale. You do not need to use existing research about what makes a walkable environment, but you are also welcome to if you want. If you want to come up with measures on your own, simply envision yourself walking down a street and imagine five to ten things about that environment that you would use to judge as to whether it is a good or poor to place to walk. Think of these items as being applicable to an entire city as well. Once you have identified these attributes, there is a template form on Blackboard in the "Documents" area to fill out (if you have a better format in mind, you can create your own).

Lab: Walkability Part 2

Using ArcPad Studio, create an ArcPad data entry form based on the walkability variables you identified from the previous walkability lab. You will be taking this form out into the field on a PDA and collecting actual walkability data with it.

Lab: Walkability Part 3

Using the form you created previously, transfer the form and the shapefiles to your PDA and collect walkability data on at least 15 street segments (blocks) in the field. Once the data is collected:



- transfer the files back to the PC and ArcGIS
- make up to three map images of your choice and save the images as JPG files (or TIFF if you prefer)
- write a report (up to 3 pages, formatted as you wish) that includes a background to your tool and approach to walkability, a reflection on the measures you used versus how appropriate/useful they actually were
- Include screenshots and variable description (see sample on Blackboard) within the body of your paper.

Term Project Proposal

Somewhere between a paragraph and two pages, submit your proposed term project idea. Include as many specific data collection questions as you can even if you are still unsure whether they will remain in your final tool. (It’s better to brainstorm now and delete/revise later.)

Project Tool and Description

Turn in a more formal document that lays out your project, including background and purpose of your proposed work, a listing of your variables, screenshots of the data entry form(s), and discussion about what you hope to be able to do with the data once it is collected. Be sure to include an explanation as to why the data needs to be collected in the field rather than through some other remote process. Three pages maximum, formatted as you wish.

Project Report

Your final report can be formatted as you wish and can be as long or short as you wish as long as you adequately include the relevant information below. Concise writing is appreciated, as is depth of thought. The project report should include the following sections:

- Introduction
- Background to the issue
- Methodology
- Analysis and limitations of study
- Conclusions
- Implications
- Next steps
- Appendix: screenshots of each data entry screen as well as metadata about each data entry question

Project Presentation

This is optional for undergraduate students, but highly encouraged for those who want the experience. Final presentations will be a poster presentation with invited outside guests. You will have 3 minutes to describe your work, then there will be free poster browsing time.

Basic Project Report Grading Rubric

	<i>1=not present 2=needs extensive revision 3=satisfactory 4=strong 5=outstanding</i>				
Insights and ideas	1	2	3	4	5
Addresses target audience (not the instructor)	1	2	3	4	5
Organization and use of prescribed formats	1	2	3	4	5
Proper documentation of tools	1	2	3	4	5
Grammar and writing mechanics	1	2	3	4	5
Comments:					
Final Grade ____					



Basic Poster Presentation Grading Rubric

<i>1=not present 2=needs extensive revision 3=satisfactory 4=strong 5=outstanding</i>					
Overall professionalism	1	2	3	4	5
Addresses target audience (not the instructor)	1	2	3	4	5
Organization of presentation	1	2	3	4	5
Proper focus	1	2	3	4	5
Visual aesthetics	1	2	3	4	5
Comments:					
Final Grade _____					

A Potential Option That I was Thinking Would Be Useful, but May Be Too Much

In addition to the hard copy of the report, you need to turn in a CD that contains:

- A customized web page that includes your name, project name, a graphic, and other title page aesthetics and information
- Links on this web page to:
 - your report
 - your screenshots
 - your data variables
 - your maps
 - and possibly do a Google Map Mash-Up
- Those links can be to PDF documents or to HTML documents also located on your CD
- An automatic loading feature for the CD that loads your web page

Course Schedule

Class date	Topic	Assignment
3/30	Discussion: Welcome Hands on: Lab 1: Introduction to ArcPad (ESRI)	Print out Screenshot from lab after completing park (page 42), put your name on sheet, and turn it in. Due April 2,.
4/1	Discussion: Field data Collection & Participatory GIS Hands on: Data structures	
4/6	Discussion: Walkability Hands on: Lab 2: ArcPad Form Creation Wizard	“Customizing ArcPad” ESRI Campus course (print out completed exam). Due April 9 th .
4/8	Discussion: Defining the data questions Hands on: Lab 3: Exploring ArcPad Studio	Walkability Part 1: Come up with 5-10 measures of a walkable or bikeable environment at the streetscape scale. Use form on Blackboard. Due April 14 th .
4/13	Discussion: Workflow & Check In Hands-On: Lab 4: Walkability Form	Walkability Part 2: Create walkability ArcPad data entry form. Due April 16 24 th .
4/15	Discussion: PDA, ArcGIS ArcPad Toolbar, and Geodatabase synchronizing Hands-On: The PDA (& Lab 4 continued)	Walkability Part 3: Collect walkability data on the PDA, make images of maps, and include a reflection on the measures used versus how appropriate/useful they were. Include screenshots and variable description



		(see sample on Blackboard). Due April 28 th .
4/20	Hands-On: Lab 5: XML, Tree View, & Visual Basic	
4/22	Prepare PDAs for community workshop	Bring PDAs to class!
4/25	Extra Learning Opportunity	Participate in half day community based walkability audit in Bethel
4/27	Discussion: Term Projects	<u>Term Project Proposal</u> due today.
4/29	Catch up and clean up of loose ends - The CSAT Tool? More visual basic	
5/4	Develop project data instrument	
5/6	Develop project data instrument	
5/11	Discussion: Project Documentation & Marketing	<u>Project Tool and Description</u> due today
5/13	TBD	Collect & Analyze data until done
5/17???	Extra Learning Opportunity	Participate in full day community based walkability audit in Bethel
5/18	? Hands-On: Getting Data onto Google Map	
5/20	? Hands-On: Making a Poster	
5/25	? Hands-On: Making a Web Page	
5/27	? Hands-On: Making a Compact Disc	
6/1		Work on Report/Presentation until done
6/3		Work on Report/Presentation until done
June ??	Final Exam Period, 8-10am (8-11am?)	Projects, Presentations, & Party Due

Notes on Assignments

Any assignment not turned in on time will lose points as follows:

- Assignments are due at the beginning of class
- 5 points off if turned in later on the same day (even during class)
- 10 points off for each calendar day after the due date. This includes weekend days.
- If you know you will turn in something late, it is helpful to inform the instructor. It may not reduce the amount of points lost due to being late, but the courtesy can influence how assignments and you are evaluated over the long term.
- If you ask me if it is ok to turn something in late and I say “OK”, you will still lose points per the specifications above.
- If you turn in an assignment that is on its surface unprofessional, you will receive a maximum 50% on the assignment, unless you turn in a cleaned up copy within 1 day of the due date – then you receive a maximum grade of 75% (100% minus a 15% unprofessional tax plus a one day late penalty). Primary examples of blatant unprofessionalism include: papers with toner problems (faded text or poor color quality), text with hand-written edits, or other basic formatting and communication that you would never turn into a job supervisor (this includes spelling your instructor’s name incorrectly). If you are printing out an assignment just before class and the toner runs out or the paper jams, that is your problem and not mine. If you cannot get a good quality assignment turned in on time, then you will lose points. If you have questions, please ask.
- You may re-use paper that is blank on one side for all assignments except the final report.
- Unless otherwise specified, please turn in hard copies of your work. **Do not email assignments.**



Other class notes (please read)

- ⚠ Cell phones WILL NOT BE TOLERATED in class and using one may result in its confiscation if it disturbs the class. If you need to make a call, excuse yourself from class, walk far enough away from class as to not disturb us, then return to class quietly. In general though, if your personal messages cannot wait until after class, then the rest of us would prefer you just not come to class at all.
- ⚠ Checking e-mail during lab time is fine, but don't expect sympathy from the instructor if you are struggling with a lab or assignment if you choose to spend part of your time e-mailing or web surfing on non-class related items. Also, when in lab and the instructor is making an announcement or presenting material to the class as a whole, please stop using the computer and pay attention. We can freeze your machine remotely (or watch what you are doing and project it to the rest of the class) if we need to. We prefer, however, to assume you will act responsibly and with respect and will thus pay attention during class.
- ⚠ Cheating is unacceptable and will result in a failing grade in this course and may result in your expulsion from the University. This includes plagiarism and ***I have had students fail and be expelled from cheating in my class.*** I am not on a mission to find cheaters, but I have no tolerance for it once it is discovered. For more information on plagiarism, see <http://libweb.uoregon.edu/guides/plagiarism/students/>.
- ⚠ If you want to improve your writing skills, please take advantage of the instructors at Academic Learning Services. You are here at the University to improve your skills and learning to write effectively may be one of the most important skills you can obtain while a student. Some people think that working with ALS is somehow embarrassing, however the reality is that students who take advantage of what this campus has to offer are the truly brilliant and resourceful ones.

