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## **I. COURSE DESCRIPTION AND OBJECTIVES**

Many neighborhood and community groups, local units of government, and research organizations implement Geographic Information Systems (GIS) in a wide range of tasks related to research, planning, and management in urban areas. In this class, you will have the opportunity to participate in a “real world” application of your knowledge and skills in GIS technology in a collaborative urban geographic research project.

The content of the course will include hypothesis of initial research questions; acquisition and utilization of data used in urban analysis (including manual data collection and database creation); data manipulation and analytical techniques unique to urban GIS; and geographic data visualization. The course requires you to be able to clearly present data and information to our partner through a variety of methods, such as maps, figures, and both written and oral presentation.

Throughout the semester, you will gain an understanding of some of the social and political issues that emerge in urban GIS; help to inform public policy discussion and implementation; experience collaborative research; and use your technical skills to benefit a community partner. You will also learn how to plan, prepare, and carry out a project for a partner – on a deadline!

For this semester, our partner will be St. Paul City Councilmember Rebecca Noecker and her staff (<https://www.stpaul.gov/departments/city-council/ward-2-councilmember-noecker>); we will provide research on the St. Paul 3K effort, which is a city-wide effort to ensure equitable access to affordable, high-quality preschool for all 3- and 4-year-olds in St. Paul. We will also be working closely with the nonprofit organization Think Small (<https://www.thinksmall.org/>), which provides services, resources, and advocacy for early childhood education in Minnesota. Finally, we will also receive support from the Community Development Department of the Federal Reserve Bank of Minneapolis (<https://www.minneapolisfed.org/community/community-development>). As part of its mission, the Community Development department conducts outreach to learn about the most pressing issues for communities in the Ninth Federal Reserve District; they have supported the work of our Urban GIS class for many years now. Our work this semester has strong ties to the work done by the Urban GIS class for the past two years in partnership with the Northside Achievement Zone in Minneapolis.

There are two broad objectives for this course. The first is to extend student knowledge and technical abilities in GIS. We will do this through lectures and demos that address the concepts and principles of GIS analysis and through structured lab exercises that stress technical skill development. The second and parallel objective is to work cooperatively with our partners to research and document the

spatial patterns of high-quality early childhood programs, the areas of greatest need, and barriers to access; to develop sustainable GIS databases; to provide recommendations about data and methodology; and to produce a final digital StoryMap that will help inform the development and implementation of the St. Paul 3K idea.

We will spend the first few weeks of the semester acquiring background knowledge on the project and St. Paul 3K idea through readings, discussion, a visit to Councilmember Noecker's office, and a guest speaker from the Federal Reserve's Community Development department. We will spend time communicating with representatives of our partner organizations (including a class visit from the Director of Innovation at Think Small) and drafting research plans. Upon completion of the planning process, we will spend the rest of the term engaged in the project – acquiring and analyzing relevant data, and producing maps and other visualizations to answer our research questions. The last weeks will be spent on production of our StoryMap. At mid-semester we will meet with our partner organizations to update them on our progress, and at the end of the semester we will make a formal presentation of our findings to representatives from our partner organizations, community members, agency officials, and other policy leaders at the Federal Reserve Bank in downtown Minneapolis. Keep in mind that our work and final products will be distributed and utilized widely, from our partners to the general public!

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## II. MATERIALS

There are no required texts for this course. You will reference the ESRI ArcGIS help manuals on-line and in the GIS Lab. Other assigned readings will be posted on our Moodle site.

It is *strongly* recommended that you use a flash drive to back up your work. Remember that privacy agreements are extremely important for some of the datasets we will be using (such as the Metropolitan Council's regional parcel database).

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## III. COURSE EXPECTATIONS & GRADING

**Attendance** – This course is *very* much a self-directed and cooperative course. You are expected to be able to use your knowledge and skills in GIS technology to achieve the goals of the project. It will be up to each of you to maintain a high level of commitment to the project. If one student fails to meet their responsibilities, the entire project suffers. In addition, much of our class time will be devoted to group collaboration and work on the project, so it is in your best interest to be present!

**Grading** – You will be graded on the fulfillment of your responsibilities in the course and your contribution to the final project. You are expected to participate in all facets of the project, from acquiring information to analyzing data to communicating your findings.

- **Lab Assignments** – You will complete three lab exercises to enhance your skills and to support your work on the project.
- **Other Assignments** – As an interactive, project-based course there will be additional assignments (e.g. group research plan, project status updates, section overview) over the course of the semester that relate specifically to our project. You will have sufficient notice and description of these assignments.
- **Final StoryMap** – For your contribution to the final digital product, you will be graded on the quality of your analysis and the overall content of your section, as well as quality of presentation. You will also be expected to contribute to the comprehensive final digital product

through an additional role, such as editing, writing an executive summary, compiling an appendix, etc.

- **Journals** – For this course you are required to submit three journal entries reflecting on your experiences in the class in general and our collaborative project specifically. The content of the journal entries will not be graded. It is our hope that you will honestly consider the progress of the group project and your individual learning, as well as the course overall, and use the journal entries as a tool for exploring the challenges and rewards of group projects and collaborative partnerships.

### Grading scale

Lab assignments (3 total)	= 95 pts.	(19%)
Group research plan	= 30 pts.	(6%)
Project status updates (2 @ 10 pts. each)	= 20 pts.	(4%)
Section overview	= 30 pts.	(6%)
Final StoryMap section	= 180 pts.	(36%)
Additional StoryMap role	= 60 pts.	(12%)
Journal (3 entries @ 5 pts. each)	= 15 pts.	(3%)
Reflection essay	= 20 pts.	(4%)
Participation/attendance	= 50 pts.	(10%)
TOTAL	= 500 pts.	

**Extensions** – There are no incompletes or extensions given for the course, because we have a deadline for presentation and dissemination of our work! Thus, deadlines are *not* flexible. Late lab assignments will be accepted for partial credit only.

**Academic Honesty** – Academic honesty and integrity are expected at all times. All sources used in preparing your work must be cited; *this includes data sources on your maps*. If you have questions about Macalester's academic integrity policy, please refer to the *Student Handbook* (<http://www.macalester.edu/studentaffairs/studenthandbook/>).

**Course website** – The course syllabus, readings, and other information can be found on our Moodle site. Selected course information and links to past projects are also available on the geography department website at <http://www.macalester.edu/academics/geography/courses/coursepages/geography365/>.

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## IV. LAB POLICIES

Some of our class time will be used to demonstrate cartographic and GIS applications. You will be expected to complete the lab assignments on your own time outside of class. The open lab schedule will be posted on the Moodle page. Please do not leave your lab work until the last minute – the lab may not be available and systems do crash. **As a member of an advanced GIS class, you will be given additional lab privileges, including card access to the lab. Please do not abuse these privileges.**

Card access hours are: Monday-Friday: 8am-10pm, and Sunday: Noon-10pm  
\*If the building is open Saturday: Noon-5pm

**Lab Rules** – While working in the computer lab, please abide by the following:

1. Do not bring FOOD or BEVERAGES into the lab; beverages in containers must be kept closed while in lab.
2. Work only on the C: drive and save all files to your personal workspace; back up your work!

3. Print only color maps on the printer. No written assignments (these can be printed in the library).
  4. Obtain permission from Ashley before downloading programs to the computers.
  5. Silent your cell phone *at all times* while working in the lab.
  6. This is a shared workspace designated for GIS students and classes; there are many students who need time in this lab so please keep the use of Facebook, YouTube and other unrelated programs to a minimum.
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**V. GENERAL SCHEDULE: Subject to revision! Additional readings TBA.**

Week	Date	Topic	Readings	Deliverables
1	T, Sept 4	Introduction to course and research project		
	Th, Sept 6	Discussion of early childhood development; intro to Community Development department <b>Guest:</b> Rob Grunewald, Economist Community Development, Federal Reserve Bank	Rolnick and Grunewald (2007)	
2	T, Sept 11	Project planning; Joins/Geodatabase demo	Urban GIS report (2017) – Exec Summary, Intro, Conclusion; Urban GIS (2017) Final Presentation; St. Paul 3K Blueprint (pp. 1-7; 28-29)	
	Th, Sept 13	Project planning; GIS Lab administration; ArcPro demo	Melo (2017); Parent Aware; St. Paul 3K Blueprint	
3	T, Sept 18	Work time		Joins/Geodatabase lab part 1
	Th, Sept 20	<b>Field Trip:</b> Meet with Councilmember Noecker at St. Paul City Council <b>**Early departure at 1:00**</b>	Huey (2018)	

Week	Date	Topic	Readings	Deliverables
4	T, Sept 25	Map design discussion; Work time		Research plan
	Th, Sept 27	Research plan discussion; Data source/Visualization demo	Research plans	Status update #1; Joins/Geodatabase lab part 2
5	T, Oct 2	Discussion of methods and data <b>Guest:</b> Jonathan May, Director of Innovation Think Small	Think Small links; Avre (2013)	Journal entry #1
	Th, Oct 4	Research plan feedback; Data source presentations		Data Source/ Visualization lab
6	T, Oct 9	Data source presentations		
	Th, Oct 11	Virtual Campus demo; Work time		
7	T, Oct 16	Prepare progress report		Progress report slides due by Wednesday (10/17), 9:00 a.m.
	Th, Oct 18	<b>Progress report to partners</b>		
8	T, Oct 23	Progress report discussion; Work on status updates	Klein (2016)	Journal entry #2; Status update #2
	Th, Oct 25	<i>Fall Break</i>		
9	T, Oct 30	Map design discussion and demo; StoryMap guidelines		Virtual Campus lab
	Th, Nov 1	Additional StoryMap roles; Data organization		

Week	Date	Topic	Readings	Deliverables
10	T, Nov 6	Section overview presentations; peer feedback		Section overview
	Th, Nov 8	Work time		
11	T, Nov 13	Work time		
	Th, Nov 15	Prepare final presentation		Final maps for StoryMap section; Presentation slides due by Monday (11/19), 9:00 a.m.
12	T, Nov 20	Peer review of slides (visuals); Revise final presentation		Revised slides due by Monday (11/26), 9:00 a.m.
	Th, Nov 22	<i>Thanksgiving Break</i>		
13	T, Nov 27	Practice final presentation (oral)		Final slides due by Wednesday (11/28), 9:00 a.m.
	Th, Nov 29	<b>Final presentation</b> 11:00 a.m. – 3:00 p.m. Federal Reserve Bank of Minneapolis		
14	T, Dec 4	Final presentation discussion; Work time		Journal entry #3; Final StoryMap section
	Th, Dec 6	Work time for additional StoryMap roles; Lab clean-up and data organization		Additional StoryMap role due by Monday (12/10), 9:00 a.m.
15	T, Dec 11	Present final StoryMap in class; Group assessments; Course evaluations		Data organization due by 1:20 p.m.; Reflection essay due by Saturday (12/15)

## VI. READING LIST

- Avre, Zachary. 2013. Lifeblood of Our City: Reflections on Community Partnerships and Minneapolis Riverfront Vitality. *Undergraduate Journal of Service Learning and Community-Based Research*. <http://berks.psu.edu/volume-2-fall-2013-research-partnerships>
- Craig, Will. 2016. Poverty Explains Some of the Achievement Gap, but Not All. *CURA Reporter* 46(1): 19-21. <http://conservancy.umn.edu/handle/11299/178983>
- Klein, Joseph. 2016. Working in “The Zone”: Reflections on Community Partnerships in North Minneapolis. *Undergraduate Journal of Service Learning and Community-Based Research*. <https://berks.psu.edu/volume-5-fall-2016-reflective-essays>
- Macalester College Urban GIS course. 2016. Examining the Context of the Northside Achievement Zone. <http://www.macalester.edu/academics/geography/courses/coursepages/geography365/>
- Macalester College Urban GIS course. 2017. Mapping the Community Context of the Northside Achievement Zone. <http://www.macalester.edu/academics/geography/courses/coursepages/geography365/>
- Melo, Frederick. 2017 (December 20). “Make Pre-K Available to All in St. Paul, Group Tells City Council.” *St. Paul Pioneer Press*. <https://www.twincities.com/2017/12/20/childrens-collaborative-asks-st-paul-city-council-to-make-pre-k-available-to-all/>
- Parent Aware. <http://parentaware.org/>
- Rolnick, Arthur J. and Rob Grunewald. 2007. Early Intervention on a Large Scale. *Quality Counts*, January 4. <https://www.minneapolisfed.org/publications/special-studies/early-childhood-development/early-intervention-on-a-large-scale>
- St. Paul Children’s Collaborative. 2017. Saint Paul 3K: A Blueprint with Recommendations to Ensure That All Saint Paul Children Are Ready for Kindergarten. [https://www.saintpaulkids.org/vertical/sites/%7BBEB10C188-5C92-4990-BE75-21C570FEDF8F%7D/uploads/Saint\\_Paul\\_3K\\_Report\\_FINAL.pdf](https://www.saintpaulkids.org/vertical/sites/%7BBEB10C188-5C92-4990-BE75-21C570FEDF8F%7D/uploads/Saint_Paul_3K_Report_FINAL.pdf)
- Think Small. [https://www.thinksmall.org/community\\_engagement/](https://www.thinksmall.org/community_engagement/)  
Huey, Marie. “Policy Hour: St. Paul’s Citywide 3K Proposal.” <https://www.thinksmallblog.org/?p=1635>

### **Additional Resources**

#### *Community GIS*

- Craig, William J., and Sarah A. Elwood. 1998. How and Why Community Groups Use Maps and Geographic Information. *Cartography and Geographic Information Systems* 25(2): 95-104.
- Examining Local Housing Markets: Five Twin Cities Neighborhood Profiles. 2012. Macalester College Urban GIS course. <http://www.macalester.edu/academics/geography/courses/coursepages/geography365/>

- Larrimore, Skyler. 2012. Community Partnerships to Examine Local Housing Markets: A Reflection. *Undergraduate Journal of Service Learning and Community-Based Research*.  
<http://berks.psu.edu/volume-1-fall-2012-research-and-reflection>
- Leitner, Helga, Sarah Elwood, Eric Sheppard, Susanna McMaster, and Robert McMaster. 2000. Modes of GIS Provision and their Appropriateness for Neighborhood Organizations: Examples from Minneapolis and St. Paul, Minnesota. *URISA Journal* 12(4): 43-56.
- Minneapolis Riverfront Vitality Indicators Project. 2013. Macalester College Urban GIS course.  
<http://www.macalester.edu/academics/geography/courses/coursepages/geography365/>
- Norwood, Carla and Gabriel Cumming. 2012. Making Maps That Matter: Situating GIS within Community Conversations about Changing Landscapes. *Cartographica* 47(1): 2-17.
- Smith, Laura J. 2008. Indigenous Geography, GIS, and Land Use Planning on the Bois Forte Reservation. *American Indian Culture and Research Journal* 32(3):139-151.

### *Data and Methodology*

- Data Driven Detroit. <http://datadrivendetroit.org/> (Mission & History; Interactive Tools)
- Kingsley, G. Thomas, Claudia J. Colton, and Kathryn L.S. Pettit, eds. 2014. *Strengthening Communities with Neighborhood Data*. Washington, D.C.: The Urban Institute.  
<http://www.urban.org/strengtheningcommunities/>
- National Neighborhood Indicators Partnership (NNIP). <http://www.neighborhoodindicators.org/about-nnip/nnip-concept>
- Spielman, Seth E. and Alex Singleton. 2015. Studying Neighborhoods Using Uncertain Data from the American Community Survey: A Contextual Approach. *Annals of the Association of American Geographers* 105(5): 1003-1025.  
<http://www.tandfonline.com/doi/abs/10.1080/00045608.2015.1052335>

### *Map Design*

- Buckley, Aileen. 2012. Make Maps People Want to Look At: Five Primary Design Principles for Cartography. *ArcUser* (Winter): 46-51.
- Buckley, Aileen and Kenneth Field. 2011. Making a Meaningful Map: A Checklist for Compiling More Effective Maps. *ArcUser* 14(4): 40-43.
- Monmonier, Mark. 1993. Visual Variables and Cartographic Symbols (ch. 3). In *Mapping It Out*. Chicago: University of Chicago Press.