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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 three- and four-year old children in St. Paul.” 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. This semester, we will be building upon and extending the work done by last year’s Urban GIS class in partnership with Councilmember Noecker and the Community Development Department.

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 effort.

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 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 City Hall in downtown St. Paul. Keep in mind that our work and final products will be distributed and utilized widely, from our partners to the general public!

II. MATERIALS

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

It is *strongly* recommended that you use the H: drive or 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).

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, the majority 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 (i.e. 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 introduction, 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. Links to past projects are also available on the geography department website at <https://www.macalester.edu/geography/civicengagement/>.

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 3	Introduction to course and research project		
	Th, Sept 5	GIS Lab administration; ArcPro demo; Joins/Geodatabase demo; Project planning	St. Paul 3K Blueprint (pp. 1-7; 28-29); Urban GIS 2018 StoryMap	
2	T, Sept 10	Discussion of early childhood development; intro to Community Development department Guest: Rob Grunewald, Economist Community Development, Federal Reserve Bank	Rolnick and Grunewald (2007); Weiner (2019); Melo (2017)	
	Th, Sept 12	Project planning	Parent Aware; Grunewald (2018) pp. 303-310	
3	T, Sept 17	Field Trip: Meet with Councilmember Noecker at St. Paul City Council **Early departure at 1:00**	Huey (2018); St. Paul 3K; City Council recommended reports	Joins/Geodatabase lab part 1
	Th, Sept 19	Work time		

Week	Date	Topic	Readings	Deliverables
4	T, Sept 24	Work time		Research plan
	Th, Sept 26	Research plan discussion; Data source/Visualization demo	Research plans	Status update #1; Joins/Geodatabase lab part 2
5	T, Oct 1	Discussion of methods and data	Think Small links; Grunewald and Horowitz (May 2019); Avre (2013)	Journal entry #1
	Th, Oct 3	Data source presentations		Data Source/ Visualization lab
6	T, Oct 8	Data source presentations		
	Th, Oct 10	Work time		
7	T, Oct 15	Prepare progress report		Progress report slides due by Wednesday (10/16), 9:00 a.m.
	Th, Oct 17	Progress report to partners		
8	T, Oct 22	Progress report discussion; ESRI Training demo; Work on status updates	Klein (2016)	Journal entry #2; Status update #2
	Th, Oct 24	<i>Fall Break</i>		
9	T, Oct 29	Status update discussion; Section overview assignment		
	Th, Oct 31	ESRI Training presentations		ESRI Training lab

Week	Date	Topic	Readings	Deliverables
10	T, Nov 5	Section overview presentations		Section overview part 1
	Th, Nov 7	Map presentations; Peer feedback; Style guide decisions		Section overview part 2
11	T, Nov 12	Prepare final maps; Assign additional StoryMap roles		At least one map in basemap format
	Th, Nov 14	Prepare final maps		StoryMap group sections
12	T, Nov 19	Preview final presentation (visuals); Peer feedback		Revised StoryMap group sections (by Wednesday 11/20 at noon)
	Th, Nov 21	Practice final presentation (oral); Peer feedback		
13	T, Nov 26	Final presentation 11:00 a.m. – 2:50 p.m. St. Paul City Hall		
	Th, Nov 28	<i>Thanksgiving Break</i>		
14	T, Dec 3	Final presentation discussion		Journal entry #3
	Th, Dec 5	Lab clean-up and data organization		Final StoryMap group sections
15	T, Dec 10	Present final StoryMap in class; Group assessments; Course evaluations		Data organization (by start of class) Reflection essay (by Saturday 12/14)

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>
- Grunewald, Rob. 2018. "Early Childhood Investments: Paving the Way for the Future Workforce." From *Investing in America's Workforce: Improving Outcomes for Workers and Employers*, Federal Reserve System. <https://www.investinwork.org/-/media/Files/volume-one/Early%20Childhood%20Investments%20Paving%20the%20Way%20for%20the%20Future%20Workforce.pdf?la=en>
- Grunewald, Rob and Ben Horowitz. May 2019. "Differentiating between Price and Cost in the Poorly Functioning Child Care Market." *Community Dividend*. <https://www.minneapolisfed.org/publications/community-dividend/differentiating-between-price-and-cost-in-the-poorly-functioning-child-care-market>
- Grunewald, Rob and Ben Horowitz. July 2019. "Missoula Area Chamber of Commerce's Strategy to Address Child Care." *CD360 Notebook*. <https://www.minneapolisfed.org/community/cd-360-notebook/37-missoula-area-chamber-of-commerce-childcare-initiative>
- Huey, Marie. 2018. "Policy Hour: St. Paul's Citywide 3K Proposal." <https://www.thinksmallblog.org/?p=1635>
- 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. 2018. Saint Paul 3K. <https://arcg.is/09TKqj>
- Macalester College Urban GIS course. 2017. Mapping the Community Context of the Northside Achievement Zone. https://www.macalester.edu/geography/wp-content/uploads/sites/18/2017/09/365Macalester_NAZ_report_2017.pdf
- 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/%7BEB10C188-5C92-4990-BE75-21C570FEDF8F%7D/uploads/Saint_Paul_3K_Report_FINAL.pdf
- Think Small. https://www.thinksmall.org/community_engagement/

Weiner, Jay. 2019. "Rob Grunewald's Passion: Early Childhood Learning and its Powerful Economic Development Outcomes." *fedgazette*.
<https://www.minneapolisfed.org/publications/fedgazette/rob-grunewalds-passion-early-childhood-learning-and-its-powerful-economic-development-outcomes>

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.

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.

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>