Geographic Information Systems
GEOM 2007 A and C

Any changes or corrections will be posted on cuLearn on the first day of
classes each term.

Course title: Geographic Information Systems (GEOM2007)
Department: Department of Geography and Environmental Studies
Faculty of Arts and Social Sciences, Faculty of Science

Instructor: Dan Patterson
Building: B450B Loeb Building
Website: http://www.carleton.ca/geography/people/patterson-dan/
Email: Dan.Patterson@carleton.ca
Phone: My cell number will be provided in class, for text messaging ONLY.
Office: To be determined in the first week of each term and posted in cuLearn.

Course Description

Calendar description
Data in a spatial context; spatial data structures, georeferencing, data query; mapping; creating
spatial databases; selected topics in GIS application to environmental, land-use planning and
market analysis issues.

Prerequisite: GEOM 1004 or ERTH 2406 (may be taken concurrently), or permission of the
Department. Workshop three hours a week.

Other information
This is a first course in Geographic Information Systems (GIS) with a focus on analysis. Two
raster/vector-based GIS packages will be used (ArcMap 10.5.1 and ArcGIS Pro 2.0, with
various extensions).

The workshops serve as an introduction to some of the concerns on the nature of geographic
data, principles of GIS and map analysis. Topics will include an analysis of data in a spatial
context; database structures for GIS; data query, summary and presentation; cartographic
representation and creation of GIS databases for analysis. The student will learn how to
compile and work with spatial databases and use them in an area of spatial analysis of interest
to them.

The course will be delivered as a 3 hour workshop. The course will be very hands-on and a
degree of familiarity with computers is assumed. Students should be able to use a
wordprocessor, text editor, various operating system applications and others as needed.
Students deficient in these areas will be expected to gain confidence in using these applications
on their own.
Texts
There is no definitive GIS text and definitely not one that covers the conceptual issues as well as the practical issues. The document we will be using is called: GIS: A Primer which is available in portable document format (PDF).

A myriad of materials on GIS are in the library on the main shelves and in the MADGIC section on the main floor which the student is expected to consult. I also maintain a library of GIS and related texts which students are free to borrow.

Special Note
Students who are not fully comfortable working with computers will have difficulty in the early stages of the course. Casual use of wordprocessors or an internet browser does not constitute an adequate background. The course runs 1 day a week for 12 weeks during fall/winter sessions, or 4 days a week during summer session. Each session is 3 hours and you will probably require an additional 2-4 hours a week on average to complete assignments. The final project commands between 25 to 50 hours of work based upon prior student efforts. Allocate time accordingly.

Evaluation and due dates

Faculty grading policy:
"Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean."

Due dates: These are listed on the course schedule attached.

Course grade:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>5%</td>
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<tr>
<td>Esri campus course</td>
<td>5%</td>
</tr>
<tr>
<td>Lab assignments</td>
<td>30% (3 assignments, 10% each)</td>
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<tr>
<td>Lab test</td>
<td>30%</td>
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<tr>
<td>Final Project</td>
<td>30%</td>
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</table>

Attendance
You are either here for the workshop, or you are not. Think of this as 0.5% per week with a discretionary absence of 2 weeks. I will not entertain any deviations from this, so plan accordingly in the case of inclement weather or other misadventures.

Virtual Campus Courses
These provide the student the chance to get ahead or review foundational materials. The courses are online and can be completed within the first 3 weeks of class. See the following links
Virtual campus courses and Course listings
Specific details will be discussed in class.
The courses that you can take are:

1. Getting Started with ArcMap (3 hours)
2. Getting Started with GIS (3.5 hours)
3. Editing in ArcGIS Desktop (3 hours)
4. Getting Started with ArcGIS Pro (2.5 hours)

Lab Assignments
There will be three lab assignments of equal weighting. Submissions are made online within cuLearn. Due dates are noted in the course schedule which follows. **Note: Late labs are not accepted, hand-in what you have done by the due date.**

Test
There will be one test which deals with the theory and practice of GIS. There will be a practical component to this test.

Final Project
The final project generally entails the creation of an interactive digital atlas. Atlas examples will be discussed in class. The atlas will focus on an area within the City of Ottawa (which includes the former municipalities) and it will have a particular theme. The atlas will be submitted in digital form and it will accompanied by a printed report. There will be no deviation from the chosen study area or format.

Late policy:
There are no late assignments unless accompanied by a medical certificate covering you for the period from assignment issue date to assignment due date. For non-medical issues, contact me directly and as soon as possible. Otherwise, hand in what you have completed by the due date.
General University Rules and Regulations

Academic Accommodation:
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation:
Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www.carleton.ca/equity/

Religious obligation:
Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www.carleton.ca/equity/

Academic Accommodations for Students with Disabilities:
The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website http://carleton.ca/PMC/students/dates-and-deadlines/ for the deadline to request accommodations for the formally-scheduled exam (if applicable).
## ASSISTANCE FOR STUDENTS

<table>
<thead>
<tr>
<th>IF A STUDENT NEEDS ASSISTANCE WITH...</th>
<th>REFER TO...</th>
<th>CONTACT INFORMATION</th>
</tr>
</thead>
</table>
| ...understanding academic rules and regulations...choosing or changing their major...finding a tutor...academic planning guided by an Academic Advisor...polishing study skills | Student Academic Success Centre (SASC)  
"Helping students build a foundation for academic success by facilitating services that foster personal direction and academic competence" | 302 Tory Building  
613-520-7850  
http://www2.carleton.ca/sasc/  
No appointment necessary as all students are seen on a walk-in basis. |
| ...developing a coherent pattern of courses in the major and consultation about opportunities for graduate and professional study | Undergraduate Program Advisors | Consult the individual departmental website |
| ...a learning disability | Paul Menton Centre  
"Integration, Individualization, Independence" | 500 University Centre  
613-520-6608  
http://www2.carleton.ca/pmc/  
Students can call or drop in to make an appointment |
| ...developing writing skills | Writing Tutorial Service | 4th Floor, Library  
613-520-6632  
http://www2.carleton.ca/sasc/writing-tutorial-service/ |
| ...peer assisted tutoring for pre-identified, notoriously difficult courses | Peer Assisted Study Sessions  
"PASS workshops integrate how-to-learn (study skills) with what-to-learn (course content) in a fun, relaxed environment." | Learning Support Services  
http://www2.carleton.ca/sasc/peer-assisted-study-sessions/ |
| ...polishing English conversation skills, or proof reading (International students only) | International Student Services Office | 128 University Centre  
613-520-6600  
http://www1.carleton.ca/isso/ |
| ...Library and Research help; Learning Support and IT support | Staff at MacOdrum Library  
(reference services desk) | http://www.library.carleton.ca/  
613-520-2735 |
| ...coping with stress or crisis | Office of Student Affairs or Health and Counseling Services | Either ext. 2573 or  
http://www.carleton.ca/studentaffairs or www.carleton.ca/health |
## Schedule: Fall term 2017

<table>
<thead>
<tr>
<th>Workshop (Week) Monday date</th>
<th>Workshop materials</th>
<th>Assignments/tests/etc</th>
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<tbody>
<tr>
<td>(1) Sept 4-</td>
<td>An Introduction to GIS. Review of ArcMap and an introduction to ArcGIS PRO</td>
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<tr>
<td>(2) Sept 11-</td>
<td>Geographic Data and GIS</td>
<td>Assign 1 start</td>
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<tr>
<td>(3) Sept 18-</td>
<td>Tabular data, spatial and attribute query</td>
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<tr>
<td>(4) Sept 25-</td>
<td>Scripts and extensions: geoprocessing, projection and sampling</td>
<td>Assign 1 due, Assign 2 start</td>
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<tr>
<td>(5) Oct 2-</td>
<td>Tabular data: creating, linking and import/export operations</td>
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<tr>
<td>(6) Oct 9</td>
<td>Digitizing: Creating Feature Themes</td>
<td>Assign 2 due, Assign 3 start</td>
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<tr>
<td>Mon. holiday</td>
<td>Workshop 6 continued</td>
<td>Assign 3 due at the end of class!!!</td>
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<tr>
<td>(7) Oct 16-</td>
<td><strong>Break</strong></td>
<td></td>
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<tr>
<td>(8) Oct 23-</td>
<td><strong>Laboratory Test</strong></td>
<td>Test AND Project proposals due</td>
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<td>(9) Oct 30-</td>
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<tr>
<td>(10) Nov 6-</td>
<td>Customizing ArcGIS Building models and tools.</td>
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<td>(11) Nov 13-</td>
<td>Spatial Analyst and 3D Analyst</td>
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<tr>
<td>(12) Nov 20-</td>
<td>Network Analyst and other extensions</td>
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<tr>
<td>(13) Nov 27-</td>
<td>Wrap-up/Project work</td>
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<tr>
<td>Dec 4-8</td>
<td>Final Projects Due <strong>Friday Dec 8</strong>(th) by 10:00 am ** ****</td>
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