**Arts & Science 3BB3 – Technology & Society II**  
2015-16 (Term 2)

**Instructor:** Dr. John Maclachlan  
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**Class Times:** M, 12:30-1:20 pm; Th, 11:30-1:20pm  
**Office Hours:** W, 4-5:00pm (or by appt)  
**M:** MDCL1010, **TH:** BSB 331,332

**Course Description:**  
In this course, we will build on the relationships and interactions between technology and society established in Arts and Science 3B03: Technology and Society through the exploration of the current explosion of publically data availability and how the manipulation of this newly available data by interpreted as both a positive and negative societal development. Our focus of inquiry will be on the use of spatial data and cartography and how it can be used as a tool in effectively informing society through the visualization of complex data or to manipulate discussion through creative data management and cartographic techniques.

The course will be organized in a unique manner. During the Monday meetings we will discuss topics and readings through varied methods including lectures and class discussion. My intention is to have the class help shape the direction of the Monday meetings through their questions and proposed areas of interest. On Thursdays the class will meet in the Geographic Information System (GIS) labs in the Burke Science Building where we will put into practice the discussions of the week through the manipulation of spatial data using various GIS software. No prior knowledge of GIS software is necessary to succeed in this course.

**Course Objectives:**  
Upon successful completion of this course, students should be able to:

1. **Describe, discuss, compare and evaluate spatial data and their cartographic outputs**  
2. **Develop a working knowledge of Geographic Information Systems**  
3. **Effectively find, create and visualize spatial data to inform a research question**

**Required Texts:**  
There is one textbook for this course that will be often referred to as both a reference to the basic elements of map making and how to evaluate maps critically and promotes a healthy skepticism about these easy-to-manipulate models of reality. The majority of the readings in the course will come from journal articles based on class discussions. Key readings will be assigned each week.


**Assignments and Evaluation:**  
- **Collaborative Writing Group**  
  - Various (Jan. 11-March 31, 2016) = 35%
- **Historical Map Analysis**  
  - Due February 26, 2016 = 20%
- **Code Red**  
  - Due March 11, 2016 = 15%
- **Python Coding**  
  - Due March 25, 2016 = 5%
- **Public Participation GIS**  
  - Due April 1st, 2016 = 10%
- **Participation**  
  - Throughout term = 15%

**Assignment Descriptions & Evaluation Criteria:**  
**Collaborative Writing Groups (35%)**  
Working in groups of 3-6, students will have the opportunity to fully explore a topic of their choice under the umbrella of spatial data and society. The end results will be submitted for publication in a special issue of the journal *Cartographica*. Topics will be discussed the second week of classes and there will be numerous checkpoints throughout the semester. This will give you the opportunity to go through the peer-review process and, ideally, have a paper published in the summer edition of the
Historical Map Analysis (20%)
Working as individuals you will have the opportunity to choose an archived mapped from the McMaster Map Collection and discuss the historical significance and explore any unanswered questions the map may have. This will involve the creation of research questions based on the spatial information and a write-up on the importance of the map itself. You will also learn how to geo-rectify a map. With permission of the author the final deliverables will be posted on the McMaster Map Collection website.

Code Red (15%)
As a class we are going to work with the same data used to create the ‘Code Red’ maps that give a snapshot of the health of the City of Hamilton. Using your knowledge of how to use colours and classification systems to manipulate data you will illustrate through a series of maps how a single data set can be used to creating a seemingly endless number of conclusions to the untrained eye.

Python Coding (5%)
While this is not a class where programming will be emphasized you will be tasked to create, manipulate and run Python Code within ArcGIS. Your deliverable will be the code used and a short write-up.

Public Participation GIS (15%)
The class is going to identify a question on campus they would like answered that involves the collection of primary spatial data. We will go through the process of collecting data and explore the issues that revolve around having numerous data collectors. The deliverable will be a map using the collected data and a written discussion on the difficulties of implementing a PPGIS project.

Participation (15%):
Participation is extremely important for a class such as this. Each week we will be building on the knowledge of the week before making attendance imperative. Each week there will be small deliverables and class discussion that everyone is expected to participate in.

Students will also be given an opportunity to engage in reasoned self-assessment of their participation over the duration of the course. This self-assessment (which will need to be explicitly justified) will count toward 5% of the final participation grade.

Policy Statements
Assignment Deadlines & Missed/Late Work:
Students are expected to hand in all assignments on the specified due dates. Late submissions will be subject to a penalty of 20% per day (including weekend days). Assignments submitted after the beginning of class on the due date will be counted as one day late. No assignments will be accepted after the last day of classes.

Given that some course assignments require electronic submission, you should familiarize yourself with the Avenue to Learn dropbox in advance of the deadlines, and ask for assistance as necessary. Problems with electronic submission WILL NOT be accepted as an excuse for lateness.

McMaster Student Absence Form (MSAF):
In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work.” Please also see the MSAF statement on our website (http://arts.mcmaster.ca/forms-requests/) and direct any questions or concerns to Shelley Anderson or Rebecca Bishop in the Arts & Science Program Office as appropriate.

McMaster Policy on Academic Integrity:
You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process.
Academic credentials you earn are rooted in principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behavior can result in serious consequences—e.g., the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty, please refer to the Academic Integrity Policy, located at: http://www.mcmaster.ca/academicintegrity. The following illustrates only three forms of academic dishonesty: 1) Plagiarism—e.g., the submission of work that is not one’s own or for which other credit has been obtained. 2) Improper collaboration in group work. 3) Copying or using unauthorized aids in tests and examinations.

**Academic Accommodation of Students with Disabilities:**
Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or email sas@mcmaster.ca. For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities.

**Sustainable Written Work Submission Guidelines**
The written work submission guidelines for this course have been chosen to support the more sustainable use of paper, energy and toner. Four levels of criteria have been developed by the Office of Sustainability and encouraged for adoption by professors and faculties. The submission guidelines for this course meet the Platinum standard. All written work must be submitted in the following format: double-sided pages, reduced line spacing (1.5 lines), exclusion of title page, sans-serif font. Most work will also be submitted and returned online. For more information about criteria for sustainable written work submissions, visit the Office of Sustainability website: www.mcmaster.ca/sustainability

**Course Modifications & Email Contact**
The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of students to check their McMaster email and course websites weekly during the term and to note any changes. Announcements will be made in class and by using the course email distribution list.
Course Schedule

Note: all readings should be completed PRIOR to the M class on the week for which they are assigned.

A. Definitions & Theoretical Approaches

Week 1 (January 7th): No class
  o A student may not use the GIS labs until all health and safety regulations in addition to lab rules are discussed in detail with the instructor. Due to this regulation the class will first meet on January 11th during class time.

Week 2 (January 11, 14) introduction: What is Spatial Data?
  o Class will go over the rules and regulations of the GIS lab
  o Go over the basics of Geographic Information Systems
  o Required Reading:

Week 3 (January 18, 21): Historical Maps
  o Class will meet on January 21 in the Lloyd Reeds Map Collection on the first floor of Mills Library
  o Required Readings:
    • Explore the Lloyd Reeds Map Collection: https://library.mcmaster.ca/maps/. You must come to the Monday meeting with a map from the digital archives you find interesting
    • Explore the City of Hamilton iMapper Program: http://map.hamilton.ca/imapper.aspx

Week 4 (January 25, 28): Open Source Data
  o Guest Lecturers: Dr. Jason Brodeur and Vivek Jardon
  o Class will meet in the Mills Wong Classroom on January 28
  Required Readings:
    • Explore the Scholars GeoPortal: http://geo2.scholarsportal.info/
    • Explore the QGIS Project: http://www.qgis.org/en/site/

Week 5 (February 1, 4): The importance of colour and scale
  o Required Readings:

Week 6 (February 8, 11): Health and Social Justice
  o Required Readings:


**Week 7 (February 15): Fall Break – No classes**

**Week 8 (February 22, 25): Code Red**

- Guest Lecturer: Pat DeLuca: Code Red
- **Required Readings:**
  - TBD by guest lecturer

**Week 9 (February 29, March 3): Python Coding**

- **Required Readings:**
  - Explore the Python for ArcGIS website: http://resources.arcgis.com/en/communities/python/

**Week 10 (March 7, 10): Social Media and Mapping**

- **Required Readings:**
  - Funayama, T., Yamamoto, Y., Tomita, M., Uchida, O., & Kajita, Y. (2014, November). Disaster mitigation support system using Twitter and GIS. In *ICT and Knowledge Engineering* (ICT and Knowledge Engineering), 2014 12th International Conference on (pp. 18-23). IEEE.

**Week 11 (March 14, 17): Public Participation GIS**

- **Required Readings:**
Week 12 (March 21, 24): Collaborative Writing Group - Discussion
  o Required Readings:
    • no required readings

Week 13 (March 28, 31): Student Choice
  o Throughout the semester we will be going over many different ways spatial data and cartography is used. Over the weeks prior to this the class will be prompted to create a reading list and topics for this week of class. All discussions will be led by the students with the instructor as a facilitator.
  o Required Readings:
    • TBD

Week 14 (April 4, 7): Wrap-up and Discussion
  o Students will be given the opportunity to discuss the course and create a class wide reflection on the takeaways of the class and what they will do with the information moving forward.
  o Required Readings:
    • TBD