Syllabus

GEOG 3000 Introduction to Data Analytics

Spring 2014
Thursdays 5 PM to 7:45 PM
McEniry 420

Instructor: Kailas Venkita
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Office Hours (McEniry 413 or 404): Tuesdays 2 PM to 3 PM, Thursdays 11 AM to 12 PM

Course description

This course will be your first baby step into the world of data science. Data science is starting to gain momentum in academia and industry alike, given the advent of massive user-data accumulation driven by the internet and mobile applications. The need and demand for qualified analysts who are comfortable in handling unstructured, messy data has never been greater. You will learn the foundational aspects of conducting quantitative research, essential analytical techniques and their conceptual base, and best practices of reporting and displaying analytics through visualizations. To support this learning, you will be exposed to multiple desktop and online software applications. At the end of this course, you would possess a versatile skillset to independently carry out data-intensive projects in various business domains.

Teaching Style

The class sessions will be an eclectic mix of lectures, group discussions, brainstorming and short workshops/tutorials. The course is highly interactive and your success depends significantly on the level of participation in the class activities. Data analysis ultimately is all about communication. So, talk. And talk well

Textbook

No required textbook. I would discourage buying a $100 textbook since all of the material is available for free in the internet (unless you want to exercise your consumerist rights). I will provide you with weekly reading material and helpful links.

Reference books

Edward Tufte, *The Visual Display of Quantitative Information, 2nd edition*

John Walkenbach: Excel 2010 Bible

Others will be added soon

Software

Mainly Microsoft Excel 2010 and R (Rattle etc).

Other software tools may be introduced, time permitting

Evaluation

Project (35% of the grade)

You will complete a group research project under my supervision. This is an important component of the course because you will, in effect, work on a potentially publishable (if you work hard) piece of research with me. I will delegate the project tasks to each team member every week or so. You will prepare the intermediate deliverables by the specified deadlines along with a progress memo. You'll also prepare lightning (5-minute) presentations to show your intermediate findings. The final deliverable will be a good quality report and a group presentation. Following will be evaluated over the semester

1. Your ability to follow instructions and ask questions when in doubt
2. Recognizing and applying the concepts learned in the course
3. Competence in meeting the project requirements within specific deadlines
4. Quality of your final report and presentation

Assignments (25 % of the total grade)

Assignments are usually data analysis exercises and/or writing. There will be about 5 assignments in total. Assignment deadlines (date and time) will be mentioned with the questions. Late submissions will lose a letter grade for every 12 hours of delay.

Exams (30% of the total grade)

An in-class mid-term exam and final exam will be held. No makeup exams will be given except if the student has serious medical condition certified by a physician.

Class participation (10% of the total grade)

Class participation will be evaluated during lectures, class discussions and student presentations.

Grading

A-90% and above, B-80% to 89.9%, C-70% to 79.9%, D-60% to 69.9% F-Below 60%

Attendance policy

You are expected to attend all of the classes since most of the sessions will require your input. If you do not attend a class, your class participation points will obviously drop. If you miss a class requiring a project presentation, project points will drop as well. If you need to miss a class, discuss with me beforehand.

Electronics policy

Please turn off electronic devices such as phone, ipod etc. That means no texting, facebooking etc during the class. If you expect an important call, let me know before the class and try not to disturb the class while attending the call. Using the phone/ipod during the exam will be considered cheating – zero grades will be given as a result. You may use your laptop during the class.

Course schedule (Topics/Themes to be covered)

- Introduction to analytics environment, the world of big data, analytic thinking
- Designing an analytics project – collecting data, metadata, evaluating validity, sampling
- Data Management – Detecting problems, techniques to handle messy data, cleaning methods – Using Excel and other tools to prepare datasets
- Topics in Applied Statistics – Exploratory analyses methods, correlation and crosstabulations, regression
- Topics in Visualization: Common methods of data visualizations, Best practices in preparing and presenting graphics, Advanced charting and tabulation using excel and online tools.
- Reading and writing analytics: Summarizing quantitative information, Analytics writing standards and best practices.
- Introduction to data mining – Tools for exploring large datasets, Introduction to select data mining methods, social media analytics

Academic Integrity:
Students must AT ALL TIMES adhere to the policies consistent with UNCC policy of academic integrity.

All UNC Charlotte students have the responsibility to be familiar with and to observe the requirements of The UNC Charlotte Code of Student Academic Integrity (see the Catalog). This Code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials (such as Library books on reserve), and complicity in academic dishonesty (helping others to violate the Code). Any further specific requirements or permission regarding academic integrity in this course will be stated by the instructor, and are also binding on the students in this course. Students who violate the Code can be punished to the extent of being permanently expelled from UNC Charlotte and having this fact recorded on their official transcripts. The normal penalty is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases, the course grade is reduced to "F." If you do not have a copy of the Code, you can obtain one from the Dean of Students Office or access it online at http://www.legal.uncc.edu/policies/ps-105.html. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty they become aware of to the course instructor who is responsible for dealing with them.