MGT-644(b) **Computational Methods for Doctoral Research in Management**

Younge Kenneth

Cursus	Sem.	Type
Management of technology		Obl.

Language of teaching	English
Credits	2
Session	
Exam	Written & Oral
Workload	60h
Hours	**84**
Courses	84
Number of positions	

Remark

19, 21, 26, 28 sept, 3, 5, 10 oct, 12, 19, 22 dec 2017 from 09:15 to 12:00 except on Dec. 19 from 08:15-12:00

Summary

Computational Methods for Doctoral Research in Management: The objective of the course is to introduce doctoral students to computational methods for data-driven management research.

Content

The objective of this course is to introduce doctoral students to computational methods for data-driven empirical research in management. The course complements courses in statistics and econometrics with a programmatic understanding of how to acquire, store, manipulate, measure, plot, analyze, and classify data.
The course is bottom-up and hands-on – every student is expected to apply the tools, methods, and ideas from the course to solve real research problems in their domain. The course begins with an accelerated series of lectures to cover the methods, and students then use those methods to complete a major project.
The course requires students to program in Python. The basics of Python language will be reviewed during the first week of class, but students who are unfamiliar with Python should review the Python 3 tutorials at: https://wiki.python.org/moin/BeginnersGuide/NonProgrammers and complete the 4-hour tutorial by DataCamp at: https://www.datacamp.com/courses/intro-to-python-for-data-science. You should also familiarize yourself with the official Python 3 documentation at: https://docs.python.org/3/ We strongly recommend completing the tutorials before the start of the course, but in any event you must complete the tutorials before the 4th class session (or already have such qualifications).
The instructor understands that students will enter the course with different levels of programming experience. Each student will be evaluated by the professor based on their own progress within the course (i.e., the “within-student” and “across time” slope in statistical terms).

Keywords

Data Processing, Visualization, Cloud Computing, Data Analysis, Text Analysis, Simulation, Machine Learning.

Assessment methods

There are no written exams. Students will be evaluated based on the following components:
Class Participation (24%)
Physical attendance in the course is mandatory and you are expected to follow along and participate in the class. Please come to class with prepared questions about the material in the previous session. If you miss a class, you must complete a make-up assignment of the instructor’s choosing to review and learn the missed material. Failure to complete a make-up assignment to the satisfaction of the instructor will result in losing a substantial portion of the class participation grade.
Exercises (24%)
The professor will provide you with a list of online resources and exercises at the end of each session. After each session, you are expected to engage in self-directed learning with the resources and exercises before the next session. Certain topics/exercises may be too easy for you, and other topics/exercises may be too hard – you therefore should select ones that are appropriate to your experience level. In general, however, you should dedicate at least 3 hours after

each session to reviewing the material and completing exercises.
You should create a new jupyter notebook for each session with your completed exercises and commit the notebook to your git repository within 45 hours of the end of class. No late exercises will be accepted.
Name your notebooks: Exercises-1.ipynb Exercises-2.ipynb etc.
Final Project (38%)
The main deliverable for the course is a research project of your choosing. The project must be of real academic interest and should be applicable to your field of study/research interests. Ideally, the experience you gain from the project will help you advance your dissertation. The main flow of your project must be contained within a single jupyter notebook, although you may optionally also program and/or import supporting libraries. All code must be fully documented and executable, with links to real data. If the data is too large to fit within your repository, then your program must use a tool such as wget or curl to download the data into the local directory at runtime; alternatively, you may also host the data on a SQL server, Big Query, etc. In any event, your cloned program(s) must be able to run immediately on its own so that it can be fully evaluated by the instructor. If projects are not ready for evaluation by the due date, then you may continue to work on it with a penalty of 3 percentage points per day (deducted from your total overall grade for the course) for up to two weeks past the original due date.
Final Presentation (14%)
As a doctoral student, it is important to learn how to summarize and communicate your findings. An important component of the course, therefore, is to use tools and methods from the course to arrive at real results and to present those findings to the class. In the final class session, you will make a 15-minute final presentation for your project, and then field 5 to 10 additional minutes of Q&A from the professor and other students; we will grill you on the data, tools, and methods that you used in your project. Excellent presentations will anticipate questions and have appropriate “backup slides” to answer probable questions.
Note that your final project is then due three days after your presentation – you should then use the Q&A feedback from your presentation to improve your project before your final submission.

Resources

Notes/Handbook

Please contact the TA of the course for more information or a detailed syllabus: omid.shahmirzadi@epfl.ch