Information Sciences and Technology Department

Course Syllabus: AIT-622-001: Determining Needs for Complex Big Data Systems [Credits: 3], Fall 2018

Instructor: Prof. Harry J. Foxwell

Catalog Description:
Explores requirements, organization, and management of Big Data projects, including architecture of data analytics systems, roles of Analysts and Project Managers, methods of research, and data governance, security, privacy and legal issues. Reviews case studies from social media, government and industry, Big Data definitions and concepts, and communication requirements. Principles are applied by students using case studies and individual assignments and labs.

This course is currently one of the core requirements for the MS in Applied Information Technology

Prerequisite(s): Admission to a graduate program in Applied IT or Health Informatics, or permission of the instructor.

The course *includes but is not limited to* the following topics, and emphasizes both the business and technical aspects of Data Analytics projects:

- architecture of data analytics systems
- role of the Data Scientist and the Data Analytics Project Manager
- tools for conducting data analytics research
- characteristics and representations of data
- Public Big Data resources
- Big Data Use Cases in Social Media, Government, and Industry
- principles of statistical analysis
- querying data using SQL and R
- data visualization concepts and methods
- machine learning and predictive analytics
- data governance, security, curation, privacy, and legal issues

AIT-622 emphasizes the requirements, design, organization, and management of large data analytics ("Big Data") projects. It will include review of case studies, definitions and concepts, and communication requirements.

Required Course Material:

There is *no required textbook* for this course section. There will be required Web-based readings and tutorials, along with recommended resources. These will be listed on the course Blackboard site's general resource links and individual assignment links.

Course dates: Week of August 27 through week of December 17
Location: Krug 204
Meeting day & time: Tuesdays , 4:30 pm to 7:20 pm.
Please arrive at class on time. We will start on time, have a short break in the middle of each class session, and will finish not later than 7:20 pm

Blackboard: mymason.gmu.edu All assignments, class announcements, schedules, files and presentations will use Blackboard

Instructor Information: Harry J. Foxwell, Ph.D. (GMU 2003), http://ist.gmu.edu/people/detail/harry-foxwell/ , and http://cs.gmu.edu/~hfoxwell

Professor's Email: hfoxwell@gmu.edu
In the Subject line of your email, use the prefix AIT622:
For example: Subject: AIT622: Question about Assignment #1

Office location: 434 Research Hall
Office hours: Mondays and Tuesdays Noon to 3:00 pm, or by appointment
Phone: 703-304-3838 (cell), 703-993-5931 (office); okay to text or call me (be sure to identify yourself!)

Graduate Teaching Assistant (GTA): Bhargav, blakshmi@masonlive.gmu.edu, 703-953-4409
Office Hours: Call or email to arrange appointment day/time/location

Grading Policy

Student grades will be determined based on class participation, general assignments & lab exercises, case studies and reports, and on the final evaluation/assignment:

Grade Component	Weight
General assignments & lab exercises	30%
Case studies and reports	35%
Final evaluation/assignment	35%

Grading Guidelines: Some grade components are evaluated *subjectively*

- A: *consistently above and beyond* the course/assignment requirements
- B: *meets* and *occasionally exceeds* the course/assignment requirements
- C: *minimally meets* the course/assignment requirements
- F: *fails to mee*t the course/assignment requirements

Honor Code

All work performed in this course will be subject to GMU's Honor Code. Students are expected to do their own work in the course unless a group project is approved by the instructor. In papers and project reports, students are expected to write in their own words, rather than cutting-and-pasting from sources found on the Internet. The goal of assignments is to demonstrate what you have learned, not what you can google. When you do use text or graphical material from books, articles, and the Web, enclose the material in quotes and *provide a complete and proper reference*. If a paragraph is used then it should be indented in the text (both left and right margins). In-text citation can use the [Author, Year] format or the Numerical [1] format which must refer to the source in the References section of your assignment. Use Chicago Manual of Style for guidance on citation style, usage, etc. (Don't buy the big CMS. See the smaller *A Manual for Writers* by Kate Turabian). Regardless of the citation method used, proper citations always include: Author(s), Title, Publication Date, Publisher, and URL (if from the Web, along with Last Accessed Date). BlackBoard's SafeAssign service will be used to review selected student assignments.

NOTES:

- Wikipedia is **not** a primary reference. Use it for initial discover, but use and cite primary references (which Wikipedia itself might use).
- If you need assistance with writing an assignment, you can get assistance here: http://writingcenter.gmu.edu
- The first item Prof Foxwell looks at in assignments is the References section!

- Is plagiarism a serious issue? See http://money.cnn.com/2017/01/16/media/kfile-crowley-out/

Any programming/coding assignments must adhere to the CS Honor Code.

Assignments

Submission format:
Unless otherwise specified, all assignments must be submitted as **PDF files.** Upload all assignments to Blackboard.
Use the following filename format: Lastname-Assignmentname.pdf. For example: Smith-CaseStudy1.pdf

There a several Computer Labs available for general use by students, which are located on the Fairfax campus. For more information go to the web site at http://labs.vse.gmu.edu/ .
Otherwise, students are expected to use their personal laptops for course work.

Class Participation: Contribute *actively* to the in-class discussions, *participate* in online discussion topics posted on Blackboard.
Some online discussion topics will be selected for grading.

Other Notes:

- There will be reading assignments *along with the assumption that you have actually read them*.
- Lectures will augment reading material; lecture material will be asked about on assignments and on final evaluation.
- Lecture slides from instructor's material will be posted on Blackboard.
- Some material you may already know (good! that's review!) Some material you may have learned earlier and have forgotten (good! you'll be reminded) Some material you may know more than the instructor (good! share it!).
- *Turn cell phones to silent mode*; if you need to make an urgent call, *leave the classroom*. If you *need* to text, check emails, or other activity, ***do not disturb other students***.
- Call or email the instructor if you anticipate being late or absent.
- Personal Safety and Security: The Mason Alert system provides emergency information of various sorts. Students can sign up for it by visiting the website https://alert.gmu.edu. Students are also reminded that an emergency poster exists in each classroom explaining what to do in the event of crises and that further information about emergency procedures exists on http://www.gmu.edu/service/cert.
- Computer and IT Security: Visit GMU's IT http://itu.gmu.edu/security/ and computer security http://itu.gmu.edu/security/desktopsecurity/ web sites regularly. Norton AntiVirus Software is free to download for all GMU students/faculty/staff.
