

Syllabus

Introduction to Web Science - COMP 4750

2:30 – 3:45 TR, Science 200

Fall 2019

Instructor: Dr. Frank McCown
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Office Hours: Science 208: 8-9 daily, 4-5 Tue & Thu, 2-5 Fri or by appointment

Course Description

The web has fundamentally changed how we learn, play, communicate, and work. Its influence has become so monumental that it has given birth to a new science: Web Science, or the science of decentralized information structures. Although Web Science is interdisciplinary by nature, this course will be focusing mainly on the computing aspects of the Web: how it works, how it is used, and how it can be analyzed. We will examine a number of topics including: web architecture, web characterization and analysis, web archiving, social networks, collective intelligence, search engines, web mining, and information diffusion on the web. Prerequisite: COMP 2450 and 2500.

Optional textbooks:

[An Introduction to Search Engines and Web Navigation, 2nd edition](#) by Mark Levene (2010)

[Networks, Crowds, and Markets: Reasoning About a Highly Connected World](#) by Easley and Kleinberg (2010)

Online version: <http://www.cs.cornell.edu/home/kleinber/networks-book/>

[Programming Collective Intelligence: Building Smart Web 2.0 Applications](#) by Toby Segaran (2007)

Online: http://mines.humanoriented.com/classes/2009/fall/csci568/collective_intelligence.pdf

Student Learning Outcomes

At the end of this course, the student will be able to...

1. Describe central architectural components of the web.
2. Identify key components of search engines and web archives.
3. Create Python programs that can extract and manipulate web data.
4. Describe several notable algorithms that operate on web data.
5. Describe how recommendation systems work.
6. Create visualizations for web and other networked data.

Exams

Three regular exams will be given in class as well as a final comprehensive exam covering the entire course and, in more detail, the information presented after the third exam. If you are unable to take an exam as scheduled due to a serious illness or some other emergency, it is **your responsibility** to call me and leave a message **before** the exam or as soon as you are physically able. If an official school function takes you out of class on an exam date, it is your responsibility to make arrangements *one week prior* to the exam as to when you will take the exam. Usually it will be given early, not late.

Programming Projects

Several Python programming projects will be assigned. You may work independently on all projects or in pairs (two people only) when permitted. If you work in pairs, both of you must work together on a *single* computer, and both of you must write *approximately half* of the code. **No code can be written without the other partner present and watching.** Both of you should understand completely

what is being written since you will have to complete your exams individually. When you submit a program that has been written in pairs, you must include both names in the documentation at the top of all submitted code.

Homework Assignments

Weekly homework assignments are given to help you understand the material better. All homework assignment are to be completed *individually*.

Extra Credit

The McChallenge: 1% will be added to your final grade for the completion of a program which will be made available to you later in the semester. The program will be due the Friday before final exams. You can skip the program and still get the 1% added to your final grade if you beat me in a game of basketball, tennis, racquetball, Halo, chess, Trivia Pursuit, or any other sport/game that I know how to play. If you lose, you still may complete the program to get your 1%. Only one challenge per semester, and all challenges must be made *before* the final week of class. Come by my office to schedule a time to play.

Giving blood at the Red Cross blood drives will earn you 0.2% added to your final grade each time you donate. Donate as many times as you'd like, and give me a signed note confirming your donation each time you donate.

Grades

Final grades will be computed as follows:

Exams:	30%
Projects:	30%
Homework:	20%
Final Exam:	20%

Standard letter grades: A = 90-100%, B = 80-89% C = 70-79%, D = 60-69%, F = 0-59%

Late work: A maximum of 10% will be taken off *each day* (not each class period) a program or assignment is late, up to 50%. Every day is counted, including weekends. Nothing late more than 1 week will be accepted.

Final grades are not rounded unless the student has given significant effort which is evidenced by regular attendance, completion of nearly all homework assignments, significant effort on projects, etc.

Expectations

1. Notes (in the form of PowerPoint presentations) for each day will be made available to you on Canvas. They are usually available the evening before the next day of class. If you want to print them out, please do so *before class, not during class* so you don't disrupt others. Please print them out with at least 6 slides per page to save paper.
2. To be successful in this course, be prepared to spend at least **two hours outside of class** for every hour in class studying, reading, completing quizzes and homework, working on projects, and preparing for exams.
3. It is important that you **check Canvas regularly** because I occasionally give hints or corrections to homework assignments via Canvas announcements.
4. Everyone is expected to hold to the **highest standard** of personal conduct and **integrity**. Cheating in all its forms is inconsistent with Christian faith and practice and will result in sanctions up to and including dismissal from the class with a failing grade. Homework should be completed *individually* (not in teams or pairs), and it should be *your work*, not the work of someone else. One thing that you should *never do* is give someone your source code to look at... this often leads to cheating. Come by during office hours (or we'll arrange a time) for assistance on programs.
5. Please adhere to the **dress code** listed in the Student Handbook. Please wear shoes to class (flip flops are OK).
6. No laptops or phones in class. Why?
 - Professors who have banned electronics show improves grades.

- Students not using electronics are harmed when others do.
- Humans simply cannot multitask when using higher-level brain functions.
- Multitasking lowers your IQ and may damage your brain.
- Links to evidence: <https://frankmccown.blogspot.com/2019/08/no-laptops-or-phones-in-class.html>.

If you ever need assistance in this class or anything else, please don't hesitate to come by my office or give me a call.

Assessment

Harding University, since its charter in 1924, has been strongly committed to providing the best resources and environment for the teaching-learning process. The board, administration, faculty, and staff are wholeheartedly committed to full compliance with all criteria of the Higher Learning Commission. The university values continuous, rigorous assessment at every level for its potential to improve student learning and achievement and for its centrality in fulfilling the stated mission of Harding. Thus, a comprehensive assessment program has been developed that includes both the Academic units and the Administrative and Educational Support (AES) units. Specifically, all academic units will be assessed in reference to the following Expanded Statement of Institutional Purpose: **The University provides programs that enable students to acquire essential knowledge, skills, and dispositions in their academic disciplines for successful careers, advanced studies, and servant leadership.**

Students with Disabilities

It is the policy for Harding University to accommodate students with disabilities, pursuant to federal and state law. Therefore, any student with a documented disability condition (e.g., physical, learning, psychological, vision, hearing, etc.) who needs to arrange reasonable accommodations, must contact the instructor and the Disabilities Office at the *beginning* of each semester. If the diagnosis of the disability occurs during the academic year, the student must self-identify with the Disabilities Director *as soon as possible* in order to get academic accommodations in place for the remainder of the semester. The Disabilities Office is located in Room 205 in the Student Center, telephone: (501) 279-4019.

Schedule

- I. Studying the Web (Exam 1 on Sep 11)
- II. Web Search Engines (Exam 2 on Oct 9)
- III. Social Networks and the Web (Exam 3 on Nov 7)
- IV. Collective Intelligence (Final Exam)



http://www.cartoonstock.com/directory/s/search_engine.asp

“Whatever you do... do it all to the glory of God.” – 1 Cor 10:31