Course Description:
To handle the challenges emerging with Big Data, Apache published the Hadoop software library which is actually a framework for efficiently storing and processing Big Data over large scale clusters. Hadoop provides simple programming models for users to develop applications without considering special parallel codes. It automatically partitions applications into numerous tasks, and simultaneously executes those tasks on large numbers of the servers distributed in clusters without any interventions from users. Hadoop also has the ability to scale out from a single server to ten thousand of servers. Moreover, Hadoop can provide fault tolerance at the application layer, which is critical to guarantee applications finished successfully.

This course introduces the basic ideas and programming models of Hadoop. Special topics include an overview of Hadoop, architectures and principles of Hadoop MapReduce and Hadoop distributed File System, MapReduce programming, Hadoop cluster deployment and management, and so on.

Course Overview:
This course is designed for seniors and graduate students to understand the fundamentals of Hadoop. It includes the lectures to introduce the principle of Hadoop, and illustrate MapReduce programming. The course is project driven, which requires each student team to develop a final project to run on a Hadoop cluster. The grade in this course will be mainly based on the final project and its presentation.

Course requirements:
The abilities to program in Java language and operate Linux by shell commands are required to complete the projects of the course successfully.

Workload:
Class: You are expected to attend and actively participate in all the lectures.
Paper Presentation: You are required to complete the suggested readings, and give presentations. Project: You will have 2-3 projects, and could complete them with no more than 1 partner.
No Final Written Exam.

Instructor:
Dr. Xiaohong Zhang Email: ft3063@wayne.edu

Office Hours:
3:00 p.m. - 4:00 p.m. (Monday, Wednesday)
5057 Woodward, Room 2114

Classroom:
Room 0117 State Hall T Th 3:00 p.m. – 4:25 p.m.
Recommended Textbook:

Grading

Allocation for the Course:
- Paper Presentation: 20%
- Participation: 20%
- Project: 40%
- Project Presentation: 20%

Grading Scale:

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<td>70-74</td>
<td>B-</td>
<td>0-54</td>
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<td>65-69</td>
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<td>75-79</td>
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Tentative Course Syllabus:
- Meet Hadoop: 2 lectures
- MapReduce: 2 lectures
- The Hadoop Distributed Filesystem: 4 lectures
- Hadoop I/O: 1 lecture
- Developing a MapReduce Application: 3 lectures
- How MapReduce Works: 4 lectures
- MapReduce Features: 2 lectures
- Setting Up a Hadoop Cluster: 2 lectures
- Administering Hadoop: 1 lecture
- Hive: 2 lectures
- HBase: 2 lectures
- Case Studies: 3 lectures

Special Comments:
1. Students who don’t submit each assignment on time will receive an F unless you got the permission from the instructor.
2. Students who cheat or help someone cheating will receive an F. In this course, cheating is defined as following:
   - Copying codes from a book, the internet or other resources.
   - Copying all or part of codes from other students.
   - Allowing any other student to copy all or part of your codes.
3. Students are required to complete projects by themselves. For the project assigned by groups, members in a group are expected to be familiar with the solutions adopted, whether they write the codes or not.
Religious Holidays:
Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

Student Disabilities Services:

- If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, someone can meet with you privately to discuss your special needs. Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.
- Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student’s accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

Academic Dishonesty - Plagiarism and Cheating:
Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://www.doso.wayne.edu/student-conduct-services.html). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.
- Cheating: Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.
- Fabrication: Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.
- Plagiarism: To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.
- Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating
course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**Course Drops and Withdrawals:** In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: [http://reg.wayne.edu/pdf-policies/students.pdf](http://reg.wayne.edu/pdf-policies/students.pdf)

**Student services:**
- The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit [www.success.wayne.edu](http://www.success.wayne.edu) for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).
- The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit [http://clasweb.clas.wayne.edu/writing](http://clasweb.clas.wayne.edu/writing) to obtain information on tutors, appointments, and the type of help they can provide.

**Class recordings:**
Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student’s personal instructional use. Such recordings are not intended for a wider public audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.