Fall 2015 CMSC 818e  
Distributed and Cloud-based Storage Systems

1 Description
The objective is an in-depth understanding of the issues in designing and deploying large-scale distributed systems, and file systems in particular. In the course of this investigation we will be tackling a variety of topics, such as peer-to-peer systems, remote procedure calls, multi-threading, consensus protocols, cloud systems, layered systems (supporting high-level consistency guarantees on top of cloud services), and security as it relates to such systems. The class will consist of lectures by the instructor, student project presentations, and a final. However, your grade will primarily be determined by class participation, performance on the projects, and the final.

Examples of technologies we may use include FUSE (and MacFUSE), the Amazon Simple Storage Service, MySQL, Google’s Protocol Buffers, Google’s Go language, PAXOS, and Apple’s development kit for the iPad.

The lectures will be split between lectures describing the tools we will use to build our file systems, and lectures based on recent research in the literature (such as those at OSDI, NSDI, and Infocom).

2 Textbooks
None.

3 Contact information
3.1 Instructor
Instructor: Dr. Pete Keleher
Office: 4157 A. V. Williams
Contact info: keleher@cs.umd.edu (*)

Office hours: Tuesday 1:30-2:30pm, and by appointment (feel free to drop in any time I’m in my office).

4 Class webpage and Computing Environment
1. Webpage: Various course materials will be made available on the class webpage, which can be accessed at the following link:

   http://triffid.cs.umd.edu/dss

   Check the webpage frequently, as it will contain (among other things) the class’s schedule, reading materials, and project descriptions, files, and errata.

2. Piazza: Class help and details will also be posted on Piazza. This provides a forum-like functionality that allows you to post questions and insights, as well as respond to questions from others. I ask only that you do not post code, even pseudo-code. You should have received an invite from piazza; let me know if you have not.

3. Blog: Students will be required to enter comments about the papers we discuss before class.

Programming can be done anywhere, but all students’ projects will be tested and graded on triffid.cs.umd.edu. Project submission will be done by emailing tarballs to the instructor.

5 Blog
The blog URL can be found off the class web page. We profs have reluctantly come to the conclusion that students do not read papers unless there is some checking mechanism involved. For this course, the check will be a blog, inspired by Neil Spring’s use of same.

I will be looking for insights, distillation of the real contributions (if any) of the paper, and constructive criticism. By “constructive”, I do not mean “this paper sucks,”, even if you really think it does. You may assume that I had a reason for including each paper on the schedule.

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No, by “constructive criticism” I mean something along the lines of “the paper describes a simple and elegant protocol that relies on flawed assumptions. Hence, it is just not widely useful.”

Be concise. I will not give points just for verbiage. I’d rather read one insightful paragraph than two that say nothing. While I do not care too much about grammar, please use this as writing practice.

Each student’s blog entry will be graded on the scale of 0, 1, and 2, based solely on what is in the blog before class starts.

6 Attendance and general grading policies

Students are responsible for all material covered, and all announcements, deadlines, policies, etc., discussed in lecture and discussion section, regardless of whether they were in class to hear the information or not. It’s understood that students may occasionally have to miss class for various reasons, but email and office hours are not intended as a replacement for class attendance. Consequently, only students who typically and regularly attend class will receive assistance during office hours.

Coursework will count toward the final grade according to the following percentages:

| Participation: in class, and on blog | 20% |
| Final: will be comprehensive        | 20% |
| Programming projects: six expected coding assignments | 60% |

All projects will be graded out of 100 points.

Final course grades will be curved as necessary, based on each student’s total numeric score for all coursework at the end of the semester.

6.1 Excused absences

Besides the policies in this syllabus, various University policies may apply to students during the semester. Policies that may be relevant appear in the Undergraduate Catalog, which may be reached at the following link:

http://www.umd.edu/catalog

Documentation for absences due to medical reasons must contain a statement that you were incapacitated, the phone number of the health care professional who examined you, and the dates of incapacitation (which must include the dates of the missed exam or quiz).

It is the student’s responsibility to inform the instructor of any expected excused absences ahead of time. For exams, students are expected to inform the instructor of a conflict in writing (email is acceptable) as soon the exam is announced or the conflict is known, whichever occurs first.

An excused absence does not relieve the student of the obligation to turn in programming projects on time, as projects are assigned well in advance of their due dates. In cases of a lengthy illness, or other protracted emergency situations, the instructor may consider extensions on project assignments, depending on the specific circumstances.

6.2 Students with disabilities

Students with disabilities who have been certified by Disability Support Services as needing any type of special accommodations should see their instructor as soon as possible, within the first week of classes. All arrangements for exam accommodations as a result of disability must be made and arranged with their instructor at least three business days prior to the exam date, or accommodations cannot be made.

7 Exam

The final exam will almost certainly be a take-home.

8 Academic integrity

The Campus Senate has adopted a policy asking students to include the following statement on each examination or assignment in every course: “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment).” Consequently, you will be requested to include this pledge on each exam and project.

You may review the University’s Code of Academic Integrity for yourself at
Please carefully read the Office of Information Technology's policy regarding acceptable use of computer accounts and resources at

http://www.nethics.umd.edu/aup

Unless stated otherwise by the instructor, all programming assignments are to be written individually. Cooperation between students on exams, quizzes, or projects is a violation of the Code of Academic Integrity. Any evidence that a violation of the Code has occurred will be submitted to the Student Honor Council, which could result in an XF for the course, suspension, or expulsion. Automated tools may be used to compare students’ code to look for evidence of cheating.

Students are welcome and encouraged to study and compare or discuss their implementations of the programming projects with others after they are graded. However, before a project’s results are announced, students should not discuss or examine each other’s solutions for that project in any way. If you have any question about the appropriateness of a particular situation then consult with the instructors in advance. Should you have difficulty with a programming assignment you should see the instructional staff in office hours, NOT solicit help from anyone else in violation of these rules.

It is the responsibility, under the Honor Code, of anyone who suspects an incident of academic dishonesty has occurred to report it to their instructor, or directly to the Honor Council.

9 Course evaluations

Course evaluations are important, and taken seriously both by the instructor and by the Computer Science Department. Evaluations for the fall semester will be open between December 1 and 13, and reminders will be given in lecture. To complete your evaluation, go to

http://www.courseevalum.umd.edu

10 Right to change information

Although every effort has been made to be complete and accurate, unforeseen circumstances arising during the semester could require the adjustment of any material given here. Consequently, given due notice to students, the instructor reserves the right to change any information on this syllabus or in other course materials.