

EECS 768 – Virtual Machines

General Information - Spring 2019

Instructor: Prasad Kulkarni

Office: 2001F Eaton (Ph: 785-864-8819)

Office Hours: Tuesday and Thursday, 1:30PM – 2:30PM, or by appointment

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Other Location: 136 Nichols

Class Information: Location: Room: LEA 1136

Time: MWF 2:00PM – 2:50PM

Prerequisites: One of EECS 645 Computer Architecture, or EECS 678 Introduction to Operating Systems, or EECS 665 Compiler Construction

Texts: Virtual Machines – Versatile Platforms for Systems and Processes, by James E. Smith and Ravi Nair, first edition, Morgan Kauffman, ISBN 1558609105.

Class Homepage: The class home page is at <http://www.ittc.ku.edu/~kulkarni/teaching/eecs768/>.

The page will contain a variety of information, which will include the syllabus, schedule, slides, papers, and reading assignments.

Course Objectives: Objectives are:

1. Define and explain key virtual machine concepts – virtualization, process and system level virtual machines, JIT compilation and optimizations in managed environments, garbage collection, VM implementation issues, and VM-level security.
2. Explore latest developments in the field of virtual machines.
3. Investigate and present several new VM developments in-depth.

Course Design: The course is designed as a one-half lecture, other-half seminar/project-based class. The instructor will conduct several introductory lectures at the start of the semester, and/or before the start of each new topic. Instructor lectures should consume about half of the class. One mid-term exam will be conducted at pre-announced times on this material. There will NOT be a *final* exam. Instead, that time will be used to assess student projects.

The later part of the class will consist of student presentations on a range on interesting historical as well as latest VM topics. Early in the semester, student groups will select a term project from among a range of VM topics in consultation with the instructor. Some topics may involve coding, implementation, or performance analysis of some VM aspect in an actual (open-source) virtual machine. Other topics will conduct an in-depth survey of some VM area. The instructor will assist student groups select appropriate topics.

The class grade will be based on the midterm, class presentations, and the presentation and/or implementation of the selected project. For the project, focus will be on either the implementation or the report aspect of the project.

Grading: The grading will be based on in-class quizzes (25%), the midterm exam (25%), student presentation(s) (20%), and the final project (30%). It is very important in this class to be present and to participate in class discussions.

Exams: Exam dates will be announced in class one to two weeks in advance. Exams will be closed-book and closed-notes.

Attendance: Students need to be present in the class and participate in the discussions, especially during student paper presentations.

Please provide information on the class if you feel that the class is too easy or too hard, you don't have the necessary background, or any general improvements that can be made to the class.

Please advise the instructor of this class at your earliest convenience (minimum of five working days) if you have a disability that will require a reasonable accommodation for any of the activities in the course schedule.