Arab Academy for Science and Technology

College of Computing and Information Technology

CS714   Advanced Operating Systems

Fall 2017
3 Credit Hours
Lectures: Wednesday 6 – 9 PM

Instructor: Dr. Ayman Abdel-Hamid
Office: College of Computing and Information Technology
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Office hours: by appointment.

Course Objectives
The course explores advanced topics in operating systems. Aspects of designing, implementing, and evaluating operating systems for cluster, multiprocessor, and multicore environments will be explored. In addition, operating system issues in managing distributed systems such as distributed file systems will be presented. Several advanced topics will be tackled as well such as virtualization and security in operating systems. Upon successful completion of the course, the student should be able to identify open research issues within the domain of operating systems.

Key Text
> *No Required Textbook*. The instructor will provide presentation notes and lecture slides were appropriate. Some lectures will be based on research papers published in scholarly journals/conferences.

Reference Texts
1. William Stallings, Operating Systems: Internals and Design Principles, 8th Edition, Prentice Hall, 2015 (A 9th edition exists)
2. Andrew S. Tanenbaum and Maarteen van Steen, Distributed Systems: Principles and Paradigms, 2nd Edition, Prentice Hall, 2007

Course Workload

One lecture is scheduled per week.

Course material will be introduced in lectures. Course material will be supplemented through reading material (conference/journal papers). A midterm and comprehensive final exams are scheduled. Furthermore, exercises/questions will be assigned as homework. Moreover, a group research project (and/or group research seminar) will be assigned during the course of the semester.

Topics

Tentatively, the topics that will be covered include:

- Background and review of uniprocessor scheduling

- Multicore/Multiprocessor scheduling

- I/O Management and Disk Scheduling

- Security in Operating Systems

- Distributed file systems

- Virtualization and Virtual Machines

- Large-scale Systems

Grading

Homework	20%
Mid-Term	20%
Comprehensive final exam	30%
Project(s)	30%

The instructor reserves the right to change the grading scheme or add assignments/projects/exams.

Policies

- Homework/Assignments are due at the beginning of the class on the due date.
- Late submission will be penalized by 20% off for each late day.
- Attendance is crucial to your success in this course. You have the responsibility to cover any missed material.

Academic Honesty

The honor code applies to all homework/assignments and examinations. The instructor's academic honesty policy is very strict; instances of academic dishonesty will be penalized, ordinarily by failure of the course (in addition to any University penalties). *All work submitted must be the student's own work!*
It is unprofessional and dishonest to submit someone else's work as your own.