

CSC 415 – Operating Systems Principles

Dr. Edward C. Cheng

Fall, 2006
TTH 7:00-8:15 PM

Purpose of the Course

This is a course about the concepts of a computer operating system (OS). You can expect to learn all the essential concepts that make up the OS. With such understandings, you are better prepared to go in-depth with other computer science principles such as the databases, networking, graphics, automation, and others. Through several assignments on a train simulation project (TOS) that is given throughout the semester, you will also be working on some hands-on exercises that help you understand some lower-level details related to the OS.

Requirements

Students will be graded on a term paper, two exams, 5 assignments and active class participation. Students are expected to prepare before each class by reading the assigned sections of the textbook or distributed articles, and contribute in class through questions, interactions and discussions.

Reading Materials

The readings for this course include: (1) Silberschatz, Galvin and Gagne (SGG) *Operating System Concepts*, (2) a research paper of your choice (need approval), and (3) a number of distributed articles.

Grading

The course grade is based on the following scheme:

Term Paper (5 pages, double-spacing)	20%
Quizzes	5%
Mid-term Exam	15%
Final Exam	20%
The TOS Assignments	20%
Class participation	20%

Instructor

Instructor: Dr. Edward C. Cheng
TA: Mr. Robert Bierman

Edward will focus on the concepts of the OS and the development of the term paper, while Robert will guide you through the TOS assignments.

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Robert Bierman SCI-255 – Tuesday 4:15 – 4:50
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Wk 1 Aug 29	INTRODUCTION - Historical Background & Overview Reading: SGG – Ch. 1 The TOS introduction and assignment requirements <i>Deliverables: none</i>
Aug 31	OS Structure Reading: SGG – Ch. 2 Term Paper requirement (5 pages, double-spacing) <i>Deliverables: none</i>
Wk 2 Sep 5	TOS (I) TOS Assignment 1 <i>Deliverables: none</i>
Sep 7	PROCESS MANAGEMENT - Processes & Threads Reading: SGG – Ch. 3, 4 <i>Deliverables: none</i>
Wk 3 Sep 12	PROCESS MANAGEMENT - Scheduling Reading: SGG – Ch. 5 <i>Deliverables: none</i>
Sep 14	PROCESS MANAGEMENT - Resource Control & Synchronization Reading: SGG – Ch. 6 <i>Deliverables: none</i>
Wk 4 Sep 19	PROCESS MANAGEMENT - Deadlock Management Reading: SGG – Ch. 7.1-7.3 TOS Assignment 2 <i>Deliverables: TOS Assignment 1</i>
Sep 21	PROCESS MANAGEMENT - Deadlock Management Reading: SGG – Ch. 7.4-7.8 <i>Deliverables: turn in your term paper topic.</i>
Wk 5 Sep 26	MEMORY MANAGEMENT - Real Memory Reading: SGG – Ch. 8.1-8.4 <i>Deliverables: none</i>

Sep 28	MEMORY MANAGEMENT - Real Memory Reading: SGG – Ch. 8.5-8.8 <i>Deliverables: none</i>
Wk 6 Oct 3	MEMORY MANAGEMENT - Virtual Memory Reading: SGG – Ch. 9.1-9.5 <i>Deliverables: none</i>
Oct 5	MEMORY MANAGEMENT - Virtual Memory Reading: SGG – Ch. 9.6-9.11 <i>Deliverables: none</i>
Wk 7 Oct 10	REVIEW <i>Deliverables: TOS Assignment 2</i>
Oct 12	MID-TERM EXAM <i>Deliverables: turn in term paper outline and content highlight (~2 pages).</i>
Wk 8 Oct 17	TOS (II) TOS Assignment 3 <i>Deliverables: none</i>
Oct 19	FILE SYSTEM - File System Concepts Reading: SGG – Ch. 10 <i>Deliverables: none</i>
Wk 9 Oct 24	FILE SYSTEM - Implementations Reading: SGG – Ch. 11 <i>Deliverables: none</i>
Oct 26	FILE SYSTEM - Journaling & Recovery Reading: handouts <i>Deliverables: none</i>

Wk 10 Oct 31	FILE SYSTEM - Disk I/O and Performance TOS Assignment 4 Reading: SGG – Ch. 12 <i>Deliverables: TOS Assignment 3</i>
Nov 2	OTHER STORAGE MECHANISM - Optical Disks, Flash Memory, etc. Reading: handouts <i>Deliverables: none</i>
Wk 11 Nov 7	SECURITY - User, Groups and Directory Reading: SGG – Ch. 14 <i>Deliverables: none</i>
Nov 9	SECURITY - Authentication & Authorization Reading: SGG – Ch. 15.1-15.5 <i>Deliverables: none</i>
Wk 12 Nov 14	SECURITY - Granting and Revoking of Privileges Reading: SGG – Ch. 15.6-15.10 <i>Deliverables: none</i>
Nov 16	TOS (III) TOS Assignment 5 <i>Deliverables: TOS Assignment 4</i>
Wk 13 Nov 21	Thanksgiving Holiday – NO CLASS
Nov 23	Thanksgiving Holiday – NO CLASS
Wk 14 Nov 28	DISTRIBUTIVE SYSTEMS - Overview Reading: SGG – Ch. 16 <i>Deliverables: none</i>
Nov 30	DISTRIBUTIVE SYSTEMS - The Concept of ACID Reading: SGG – Ch. 17 <i>Deliverables: none</i>

Wk 15 Dec 5	DISTRIBUTIVE SYSTEMS - Transaction Models Reading: SGG – Ch. 18 <i>Deliverables: none</i>
Dec 7	FUTURE DIRECTIONS <i>Deliverables: none</i>
Wk 16 Dec 12	TOS (IV) <i>Deliverables: TOS Assignment 5</i>
Dec 14	REVIEW <i>Deliverables: last day to turn in term paper.</i>
Dec 19	FINAL EXAM