CS 345 – Operating Systems Design
Course Syllabus and Calendar – Fall 2001

Professor Don Colton

Brigham Young University Hawai'i

1 Brief Overview

Operating Systems are "way cool." They are real power centers in the computing universe because the control access to all the resources. And they provide an excellent vehicle for talking about important programming techniques. Even though most CS students never design or build or work on an operating system, the maturity gained from their study is well worth the effort, and the insight gained is a wonderful bonus.

1.1 The Course

- **Course Number:** CS 345
- **Title:** Operating Systems Design
- **Course Description:** Principles and concepts of operating systems design and the implementation of an operating system. (Prereq: CS 380, concurrent enrollment okay)
- **Textbook:** *Operating System Concepts, 6/E*, by: Silvershatz, Galvin, and Gagne
- **Class Time:** MWF 1:00–1:50 PM
- **Classroom:** GCB 153
- **Final Exam:** Mon 10 Dec, 3:00–6:00

1.2 The Instructor

- **Instructor (me):** Don Colton
- **My email:** don@cs.byuh.edu
- **My Office:** GCB 130 B
- **Teaching Assistant:** Andrew Thompson
- **Teaching Assistant:** John Waite
- **T.A. Hours:** Mon–Thu, 7–11 PM
- **T.A. Location:** GCB 103 (CS Research Lab)

1.3 Office Hours

My office hours for Fall 2001 are MWF 3–4. Updated office hours are posted outside my office door. Students for whom the posted hours are not convenient can contact me by email to make an appointment.

I am usually in my office, and I have an open-door policy. It is posted on my office door as follows: "If my door is open (even just a bit) feel free to knock and come in. – Bro. Colton"

1.4 Special Needs

Brigham Young University–Hawai'i is committed to providing a working and learning atmosphere, which reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, please contact the students with Special Need Coordinator, Leilani A'una at 293-3518. Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Human Resource Services at 780-8875.

1.5 Preventing Sexual Harassment

Title IX of the education amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds, including Federal loans and grants. Title IX also covers student-to-student sexual harassment. If you encounter unlawful sexual harassment or gender-based discrimination, please contact the Human Resource Services at 780-8875 (24 hours).

1.6 Subject to Change

The entire CS curriculum is under revision this semester, with the ongoing release of CC2001 (Computer Curriculum 2001), jointly sponsored by IEEE-CS and ACM. My intention is to bring all CS courses into line with CC2001, which will require numerous small adjustments. Any important change will be communicated in class and by email to those affected.

For this particular class, I have never taught it before. I have some great ideas (I believe), but there are a lot of unspecified gaps in the plan at this time. The main elements are in place, but many minor elements are still in flux.

If any of the changes I make seem unfair to you, let me know. I will try to correct it.

2 About the Course

The course revolves around the textbook and an extremely cool project that lasts all semester and comes in four parts. The project is to implement a substantial operating system. As luck would have it, operating systems are so complex nowadays that starting from scratch is nearly impossible, certainly within the time we have available. (You do want some kind of a life outside of class, don't you?)

The OS we will implement is called Nachos. It will be handed to you in pieces, each of which you will be required to enhance. All you will get is enough of a stub to work with. You get to add the cool parts.

From the text book, we will discuss the underlying principles that you need to know as you go about your lab work.

3 Attendance

I take roll in this class. Attendance counts for 10% of your final grade. Typically attendance is worth 3 points per day. I take 3-point roll at the start of class. I take 2-point roll about 10 minutes into class. If you come later than that, you can get one point by making sure I notice you in class (maybe right after class). Missing and unnoticed persons get zeros.

Due to INS (immigration) and VA (veterans) requirements the Vice President for Student Life is supposed to be notified whenever a student misses four consecutive class days. I try to do this.

4 Lecture Policies

I typically use a flexible and open lecture style, rather than a regimented sequence of slides. I try to focus on interesting aspects of the subject matter, instead of simply repeating what you were assigned to read in the textbook. My goal is that you develop intuition about the subject matter, and get unstuck if you have become stuck. Accordingly, I devote as much time as necessary to answering your questions, especially when those questions seem to be of general interest to the others in the class.

5 Grading

I use the following grading scale, both for individual assignments and for the course as a whole.

93%+	A	90–92.9%	A-	87–89.9%	B+
83–86.9%	B	80–82.8%	B-	77–79.9%	C+
73–76.9%	C	70–72.9%	C-	67–69.9%	D+
63–66.9%	D	60–62.9%	D-	0–59.9%	F

Grades will be computed on the basis of points earned on homework, quizzes, lab work, and tests. The weighting is as follows:

10%	attendance
10%	homework, pop quizzes, tests
60%	four labs (programming assignments)
20%	final exam
100%	total

Final Exam: Even though the final exam may count for just a small percentage of your overall grade, you must pass the final exam (60.0% or better) in order to get a B- or better in the class.

Incomplete and UW: The short answer is, "don't even think about it." The long answer is: If you quit working in the class before achieving a passing grade, I will probably give you a "UW" grade instead of an "F." I generally do not give "I" grades (incompletes). I will consider it if you request it, seem to have a good reason, have a pretty solid time line for completion, and you get the necessary paperwork filled out.

6 Communication by Email

Official communications will be sent by email, and will be uttered in class. These might include clarifications on assignments. You are required to maintain an email account and to provide me with a valid email address.

7 Computer Accounts

As a member of this class, or as a CS major, you are entitled to a computer account in the CS lab. See me or a lab person (GCB 101) to get set up.

8 Course Calendar

ISECON: I will be off-island for ISECON'2001, the Information Systems Educators Conference, in Cincinnati, Ohio. I am a member of the board of directors for EDSIG, the sponsoring organization, and am also the Proceedings editor. I plan to fly out Tuesday, Oct 30 and return Sunday, Nov 4. The conference is Thursday through Sunday. **There will be no class on Wednesday or Friday.**

ACM: I will be off-island, taking several programming students (maybe including you) to compete in the regional ACM programming contest in Riverside, California. We will fly out Thursday, Nov 8 and return Sunday, Nov 11. The contest itself is on Saturday. **There will be no class on Friday.**

CS 345 Very Tentative Course Calendar Fall 2001

mtg	day	date	time	read	Topic	Comment
1	Wed	Aug 29	1pm		Overview of operating systems	
2	Fri	Aug 31	1pm		continued	
	Mon	Sep 3			Labor Day Holiday	**no class**
3	Wed	Sep 5	1pm		Operating system principles	
4	Fri	Sep 7	1pm		continued	Concurrency lab intro
5	Mon	Sep 10	1pm		Concurrency	
6	Wed	Sep 12	1pm		continued	
7	Fri	Sep 14	1pm		continued	
8	Mon	Sep 17	1pm		continued	
9	Wed	Sep 19	1pm		continued	Concurrency lab due
10	Fri	Sep 21	1pm		continued	
11	Mon	Sep 24	1pm		Scheduling and dispatch	teams assigned
12	Wed	Sep 26	1pm		continued	
13	Fri	Sep 28	1pm		continued	Dispatch lab intro
14	Mon	Oct 1	1pm		Memory Management	
15	Wed	Oct 3	1pm		continued	
16	Fri	Oct 5	1pm		continued	
17	Mon	Oct 8	1pm		continued	
18	Wed	Oct 10	1pm		continued	
19	Fri	Oct 12	1pm		tba	
20	Mon	Oct 15	1pm		tba	
21	Wed	Oct 17	1pm		tba	Dispatch lab due
22	Fri	Oct 19	1pm		tba	
23	Mon	Oct 22	1pm		tba	
24	Wed	Oct 24	1pm		tba	
25	Fri	Oct 26	1pm		tba	VM lab intro
26	Mon	Oct 29	1pm		tba	
27	Wed	Oct 31	1pm		team workday (Colton at ISECON)	**no class**
28	Fri	Nov 2	1pm		team workday (Colton at ISECON)	**no class**
29	Mon	Nov 5	1pm		tba	
30	Wed	Nov 7	1pm		tba	
31	Fri	Nov 9	1pm		11/9: ACM Programming Competition, California	**no class**
32	Mon	Nov 12	1pm		tba	
33	Wed	Nov 14	1pm		tba	VM lab due
34	Fri	Nov 16	1pm		File systems	FS lab intro
35	Mon	Nov 19	1pm		continued	
36	Wed	Nov 21	1pm		continued	
	Fri	Nov 23			Thanksgiving Holiday	**no class**
37	Mon	Nov 26	1pm		continued	
38	Wed	Nov 28	1pm		tba	
39	Fri	Nov 30	1pm		tba	FS lab due
40	Mon	Dec 3	1pm		tba	
41	Wed	Dec 5	1pm		tba	
42	Fri	Dec 7	1pm		Review for Final Exam	Late Work Deadline
	Mon	Dec 10	3-6		Final Exam	