

Course Information and Standards
OPERATING SYSTEMS II
91.516
UMass Lowell
Department of Computer Science
Spring 2012

Time and Location: Thursday, 5:30 – 8:30 PM, Olsen 402
Instructor: Prof. W. Moloney
Office and telephone: Olsen Hall Rm. 222, 978-934-3640
Office Hours: MWF 10:00 - 10:50, W 1:00 – 2:00, and by appt.
E-mail: bill@cs.uml.edu
Class Web Site: www.cs.uml.edu/~bill/cs516

1 Course Description:

This course will focus on the implementation of systems level software. The implementation model will be the XINU operating system as described in the text *Operating System Design, the XINU Approach* [COMER '84]. The system has been implemented and extended on several hardware platforms within the Department by previous classes. The first half of the course will cover the Comer text in detail and will examine the POSIX context system call support in Linux as a basis for building an emulation platform as a foundation for a XINU implementation. There will be a series of programming assignments developed during the course which will progressively build and deploy the XINU architecturally independent code distribution from the first 13 chapters of the book, onto an underlying hardware processor and IO emulation bed developed over a Linux system. Selected implementation topics including file systems, memory management and PCI device driver support will be presented from the remaining chapters of the text and from various handouts during the second half of the semester.

2 Prerequisites:

Permission of instructor

3 Text:

Operating System Design, the XINU Approach, by Douglas Comer, Prentice-Hall, '84, ISBN 0-13-637539-1, available in the North Campus Bookstore.

4 Grading:

Final grades will be evaluated as follows:

Type	Number	Weight
First Half Exam	1	30 %
Second Half Exam	1	30 %
Homework Projects	4	(5 + 8 + 12 + 15) %

All programming assignments will be done in either C or C++ unless other arrangements are made prior to submission. This syllabus, course assignments and related materials for this course can be found on the course web site at www.cs.uml.edu/~bill/cs516

5 Lateness:

Late class assignments will lose 10% of the total points for each of the first two weeks they are overdue. No more than 20% will be deducted for assignments which are late, but such assignments will not be accepted after the final class meeting (May 3) and the student will receive a grade of 0 points for any unsubmitted assignment. Students who request an incomplete grade will have a minimum 10% deduction on any work subsequently delivered to complete the course.

6 Academic Dishonesty:

In this course, all assigned work is to be each student's own. Project work may be done in groups as previously discussed. Since this course will require a significant amount of project documentation, students should be familiar with the University's rules on academic dishonesty, which can be found in the Bulletin of Graduate Studies and in the Schedule of Classes. In particular, **plagiarism will not be tolerated!** Any student caught plagiarizing work will **automatically receive a grade of F for the course**. If you are unsure as to what constitutes plagiarism, it is your responsibility to check with the instructor. Other forms of dishonesty will result in similar actions. Any project work which is submitted by a group of students must be clearly marked with the participants' names. In previous semesters, I have had assignments submitted by students which have contained the work of previous students without attribution. This is **unacceptable**, and any submitted material which contains literal copies of previously submitted work **will be cause for an F grade** in this course. You're encouraged to work together and share ideas, but you may not submit material which is verbatim identical to other current or previous work.

Calendar:

- Jan 26 Course introduction, **first assignment** discussed, text chapters 1-4
- Feb 2 The Dec PDP-11 and XINU, text chapters 5-7
- Feb 9 **First assignment due, Second assignment discussed**, XINU states, process management and synchronization text chapters 8, 9
- Feb 16 XINU memory management and interrupt dispatching, text chapters 10-11
- Feb 23 XINU clock management and IO interfaces, text chapters 12-13
- Mar 1 TTY device driver example and system initialization, **Third assignment discussed**, exam review and tty emulation demonstration, text chapters 16 - 17
- Mar 8 **** **MID-TERM EXAM** **** **FULL PERIOD**, read filesystem handouts
- Mar 15 **Second assignment due**, submit by midnight
**** **Spring Break Week, NO CLASS** ****
- Mar 22 Introduction to file system implementations, **Fourth assignment discussed**
- Mar 29 File system implementations, the UFS model, ZFS and NTFS, and introduction to memory management
- Apr 5 **Third assignment due**, finish file systems, return and review Exam, introduction to virtual memory implementations in UNIX and NT
- Apr 12 Virtual memory systems continued, Introduction to device driver implementations and the PCI bus
- Apr 19 Device drivers and the PCI bus: configuration and device drivers.
- Apr 26 Complete device drivers, review for second exam
- May 3 **SECOND HALF EXAM** **** **FULL PERIOD**, **Fourth assignment and any other outstanding material due**