Course Notes

Class Meetings Section 1 will meet from 5:30 PM to 6:45 PM in PKI 256, and section 3 will meet from 1:30 PM to 2:45 PM in PKI 157. Both sections meet every Tuesday and Thursday from August 25 through December 10, 2014, except for Tuesday, October 20 and Thursday, November 26.

Instructor The instructor for this class is Professor Stanley Wileman. His office is PKI 281E. His phone number is 554-3583 (voice mail is never listened to or answered), and the department’s telephone number is 554-2834. Electronic mail may be sent to stanw@unomaha.edu; please use a subject that uniquely identifies the course (e.g. CSCI 8530). Office hours are 3:00 PM to 4:00 PM Tuesday and Thursday when the class meets. Other office hours are possible, preferably by appointment. Check the instructor’s web site (see below) for any changes to this schedule.

Prerequisites This course assumes students have a good understanding of basic operating system principles similar to that provided by a traditional introductory undergraduate operating systems course. In particular, the major functions of an operating system should be familiar, as should the basic algorithms and techniques used for implementing them. Concepts of concurrent programming, including processes, threads, and various mechanisms for interprocess communication should be familiar. In particular, it is expected that students will have familiarity with the API for a traditional UNIX/Linux operating system, including such things as input/output and process management. Much (perhaps all) of the programming for the course will be done using the C language. Familiarity with the concepts of assembly language for some machine is expected.

Course Organization This is a course about the design and structure of computer operating systems. It covers the concepts, principles, functionality, tradeoffs, and implementation of systems that support concurrent processing. The individual components of a real system (Xinu) will be examined in detail at the source code level, and students will be expected to complete various assignments on real hardware (Intel Galileo Gen 2). Some of these assignments will involve simple “follow the steps” activities, while others will require the design of new or modified system components and application programs. Lectures will closely follow the textbook, and expected textbook readings are indicated in the class schedule on the class web pages.

Textbook and Other Materials The primary textbook for the course is Operating System Design: The Xinu Approach (second edition) by Douglas Comer, 2015, CRC Press. It is expected that we will cover all of the material in the text. Additional materials will be provided through the class web pages.

Web Sites The URL http://cs3.ist.unomaha.edu/~stanw identifies the instructor’s home page on the web. The web pages for the class will contain copies of material distributed in class, programming assignments, and other items of interest. The home page can be found at
http://cs3.ist.unomaha.edu/~stanw/153/csci8530/index.html. Students should regularly refer to the web site for the latest information about the class.

**Class Directory** Various files needed for the assignments, PDF versions of the slides used in class, reference materials, and other files of interest will be provided in a class directory on the system at loki.ist.unomaha.edu. The directory is a publicly-accessible subdirectory of the instructor’s home directory, specifically /home/stanw/csci8530. With few exceptions, all of the material in this directory is readable by everyone. However public writing to this directory is not allowed. You may copy material from this directory to edit it for your own assignments.

**Grading** Grades will be based on several components, as follows:

- Several small Xinu assignments (15 percent total)
- A larger Xinu “project” (15 percent)
- Several sets of homework questions from the textbook (20 percent total)
- Midterm examination (25 percent)
- Final examination (25 percent).

Examinations will be given on the dates specified in the class schedule. **There will be no “makeup” offerings of examinations except in exceptional circumstances.**

**Programming Assignments** Programming assignments will vary significantly in difficulty and scope. It is expected that all of these will require development activity on a Linux system. Many will also require downloading an executable system to an embedded system (an Intel Galileo Gen 2). Some programming assignments will allow students to work in groups with a specified maximum size. Each member of a group will receive the same evaluation as the other members, so it is incumbent on group members to satisfactorily divide the work and collaborate appropriately.

**Computing Resources** Accounts on a Linux system will be provided for use in completing the assignments for the course. Intel Galileo Gen 2 systems will be provided for your use. These may be connected to a Linux system through a suitable “back end” for use in downloading and testing your code. Alternatively, a physical system with power supply and cables may be provided to you (or perhaps a group of several students). In this case you are responsible for returning the system and other components in good condition at the end of the semester. Of course you are free to purchase your own system; a few sources are identified on the class web page. You are expected to be aware of, and abide by, the policy for responsible use of university computers and information systems. It can be found at http://www.nebraska.edu/about/exec_memo16.pdf.

**Attendance Expectations** Attendance at all class meetings is expected. The instructor will not repeat lecture material for students who do not attend.

**Department Policy on Cheating and Plagiarism** The general university policies on cheating and plagiarism apply within the department. Unless otherwise specified by an instructor, student work shall represent only the individual effort of that student, with portions of that work done by others given appropriate attribution. If a group effort is explicitly permitted or required by the instructor for one or more assignments, then the instructor shall indicate which part(s) of the assignment must be completed on an individual basis, if any.
If an instructor believes a student has plagiarized the work of another (regardless of whether the other person is a student in the same section/class or not), or represented as their own work that which another person produced (whether on a paid basis or not), then that instructor shall inform the student of the suspicion. The student shall be given an opportunity to explain, if they wish, why the work was not plagiarized. If after such student explanation the instructor still believes the work was plagiarized, the instructor has the responsibility for assigning an evaluation to the work that is substantially lower than if the work had not been completed at all. The department chair will be notified for the action. If the student whose work being copied or plagiarized knows the fact but does not take a proper action, the student will be held responsible the same as the copying or plagiarizing student.

If a second occurrence of plagiarism is evidenced for the same student, the instructor has the responsibility of assigning a grade of F to the student for the course and informing the registrar’s office that the student will not be permitted to withdraw from the course. Both the department chair and the college dean will be notified for the action.

Repeated occurrences of plagiarism (in multiple courses) by the same student shall result in notification of the Vice Chancellor for Academic Affairs and/or the Graduate Dean, as appropriate, from the department chair or the college dean, and possible dismissal of the student from the program.

**Final Examination**  The two-hour final examination is scheduled as shown in the class schedule found on the class web page.