CSCE 510: SYSTEM PROGRAMMING

1. Course number and name: CSCE 510: System Programming

2. Credit: 3-hrs; Contact: Lecture: 3 periods of 50 minutes or 2 periods of 75 minutes per week

3. Instructor: Manton Matthews

4. Textbook: *Advanced Programming in the Unix Environment 2nd edition*, W. Richard Stevens and Stephen A. Rago, Addison-Wesley, 2005

    a. Alternative Textbook: *Unix Systems Programming*, 2nd Edition, K. F. Haviland and B. Salama, Addison-Wesley, Reading, Massachusetts, 1997.

5. Specific course information
    a. Catalog description: System software such as command language interpreters, client-server applications, debuggers; mail systems, browsers, macroprocessors, and revision control systems; file systems, processes, threads, and interprocess communication.

    b. Prerequisites: CSCE 215, CSCE 240

    c. Elective

6. Specific goals for the course
    a. Specific outcomes of instruction are that students will be able to:
        1. Demonstrate mastery of the internal operation of Unix system software including assemblers, loaders, macro-processors, command language interpreters, inter-process communication. {tests}
        2. Develop medium to large C/C++ programs in a Unix Environment utilizing the C preprocessor, the debugger (gdb), make, source code revision systems (sccs), etc. {programming assignments, tests}

7. Topics covered and approximate weight (14 weeks, 3 hours/week, 42 hours total)
    a. Specific outcomes of instruction are that students will be able to:
        1. Introduction to systems software. (1 hour)
        2. File Systems: directory structures, files, the stat system call, system data files (7 hours)
        3. Processes: arguments, environments, memory allocation, creation, threads (7 hour)
        4. Interprocess communication: signals, pipes, semaphores, shared memory, sockets (12 hours)
        5. System Software Implementation including: macro-processors, editors, terminal handling, software development tools: make, sccs, debuggers, library management: loaders, archivers, tar, compression software, command language interpreters: shells, mail systems: pine, client-server applications: browsers. (12 hours)

b. As an elective this course cannot be counted upon to contribute to the attainment of any student outcome.