IC221 – Systems Programming
Spring AY2021 Course Policy

Coordinator: CAPT Michael Bilzor, USN

Course Description: The study of an application's interface with the operating system. The operating system is treated as an information resource, and as a facilitator for information flow between processes, including those executing on separate machines. Topics include: process management, multiprogramming, and the basic concepts necessary to understand the design and operation of computer communication networks.

Credits: 2-2-3

Learning Objectives:

1. Understand the operation of the Linux OS from the user, systems programmer, and application programmer perspective.
2. Use a Linux command shell to interact the file system, employ basic scripting, and develop command line tools.
3. Interact with the OS through the system call interface to manage processes and interact with the file system.
4. Use standard techniques and tools for program compilation and debugging.
5. Design simple network programs that use the sockets API.
6. Design software on Linux that uses concurrency to solve problems.
7. Learn basic operating system security concepts.
8. Recognize organizational professional responsibilities regarding computer security and make informed judgments in computing practice based on legal and ethical principles. (supports CS/IT Student Outcome 4)

Student Outcomes:

Graduates of the program will have an ability to:
1. Analysis. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Implementation. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communication. Communicate effectively in a variety of professional contexts.
4. Ethics. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Teamwork. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

CS-6. Theory. Apply computer science theory and software development fundamentals to produce computing-based solutions.
IT-6. Requirements. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing based systems.

Textbook: Advanced Programming in the UNIX Environment (3rd ed.), Stevens, Rago (optional)

Collaboration:

Students are required to abide by the USNA and department honor policies at all times, including, but not limited to: The Honor Concept of the Brigade of Midshipmen, the Policies Concerning Graded Academic Work, and the departmental Policy Concerning Programming Projects.

- **Exams:** Exams will be closed book, individual effort. No electronic devices, notes, or outside material of any kind may be used during exams.

- **Programming Projects**: All programming projects must be the sole work of the student:
  - Students may not collaborate on programming projects in any way, including general discussions.
  - Students may not receive or copy programming project code from other students.
  - Students may not share programming project code with other students.
  - Students may not view other students' programming project code.
  - Students may not view solutions to programming projects from other semesters of this course.
  - Students may not copy code from Internet sources into programming projects, but may conduct Internet searches, properly cited, for general information on programming techniques employed. However, students may not execute Internet searches on how to solve the specific tasks of the programming project.
  - Students must be prepared to explain any program code they submit.
  - All programming project submissions are subject to automated plagiarism detection.
  - Students may use any assistance provided by MGSP leaders.

- **Homework Assignments and Labs:** Collaborative conversations with regard to strategies, techniques, and solution methods for completing homework and lab assignments are allowed and encouraged. However, pencil-to-paper work and coding must be the work of the individual student handing in the final product. Any collaboration must be documented. Actual code and written answers may not be shared with others or copied (in writing or electronically), but strategies, techniques, and solution methods may be freely discussed. Solutions based on online references must be documented. Also, you may not use material or copy answers from previous semesters of this course.

Classroom Conduct: The section leader will record attendance and bring the class to attention at the beginning and end of each class. If the instructor is late more than 5 minutes, the section leader will keep the class in place and report to the Computer Science department office. If the instructor is absent, the section leader will direct the class. Drinks are permitted, but they must be in reclosable containers. Food, alcohol, smoking, smokeless tobacco products, and electronic cigarettes are all prohibited. Cell phones must be silent during class.

Late Policy: Penalties for late submission of graded work may vary among courses or from semester to semester, but they will be the same for all sections of a given course. For *this* course:

- **Homework assignments** are due at the beginning of class. Late submissions will incur a 25% penalty for 0-24 hours late, 50% for 24-48 hours late, and not accepted thereafter.
- **Lab assignments** are typically posted on Thursdays and will normally be due by 23:59 the following Wednesday. Late submissions will incur a 25% penalty for 0-24 hours late, 50% for 24-48 hours late, and not accepted thereafter.
- **Programming projects** will each have their own posted due dates. Late submissions will incur a 20% penalty per day late for the first three days. Projects will not be accepted more than three days late.

Students requesting permission to submit an assignment late must do so *before* the assignment is due.

Grading:

	6 weeks	12 weeks	16 weeks	Final
Homework	25%	10%	10%	10%
Labs	25%	10%	10%	10%
Projects		30%	30%	30%
6-Week Exam	50%	25%	25%	15%
12-Week Exam		25%	25%	15%
Final Exam				20%
Total	100%	100%	100%	100%

Extra Instruction: Extra Instruction (EI) is available and encouraged when your own attempts to understand the material are unsuccessful. To be most effective, you must be prepared for EI. Have your notes with you and specific questions in mind. If you miss class, get the notes from the section leader or another classmate.

Absences: You are responsible for obtaining any material missed due to an absence. You must ensure your work is submitted on time regardless of other commitments, i.e. duty, sick call, military obligation, etc. Should emergencies arise, it is your responsibility to coordinate with the instructor.

Food/Beverages: Food is not permitted in the classroom or labs. Beverages in closeable containers are allowed.

Tobacco: No tobacco use in uniform.

Cell Phones: Cell phones will be in silent mode only.

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