

# COSC 350: System Software

**Instructor:** Dr. Sang Eon Park

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**Prerequisite:** Computer Science II (COSC 220) and Microcomputer Organization (COSC 250) with grades of C or better.

**Description:** To help students deepen their understanding of C programming and program development in a Linux environment, and develop familiarity with the Linux operating system and script programming. Three hours lecture, two hours lab per week.

## Reference:

- “Advanced Programming in the UNIX Environment,” by W. Richard Stevens Addison Wesley 3<sup>rd</sup> edition, 2013
- “Beginning Linux Programming,” by Matthew and Stones; Wiley Publishing, Inc, 4<sup>th</sup> edition, 2008

**Remote Lecture:** M. W. F. 2:00 P.M. ~ 2:50 P.M.

- Each lecture will be conducted remotely by Zoom.
- Zoom link will be sent to each student by e-mail five minutes before each class begin.
- Students must turn on web cam during the lecture.
- Attendance will be checked for each class.
- Each lecture note will be available on my homepage at least one day before each lecture.

**Remote Lab:** Th. 12:30 P.M. ~ 2:10 P.M. or Th. 3:30 P.M. ~ 5:10 P.M.

- Each Lab will be conducted remotely by Zoom.
- Zoom link will be sent to each student by e-mail five minutes before each lab.
- Attendance will be checked for each lab.
- Student must have the camera on during each lab hours
- Student will work each lab assignment in LINUX environment
  - Student with Window system: Instructor will provide instruction for installing virtual Linux on hypervisor (virtual box).
  - Student with Mac: Mac provide Linux emulator.
- Lab assignment will be provided at the beginning of a lab class by e-mail.
- Each lab assignment has submission due date. Student must submit each lab assignment on time by e-mail ([cosc350@gmail.com](mailto:cosc350@gmail.com)). Late lab work will not be accepted without special permission.
- Each student must be ready to show his/her works at the beginning of each lab class. Each program must be compliable with expected output. Student need demonstrate his/her job remotely. Instructor will create a Zoom breaking room for each student’s demonstration.
- Students are expected to work independently on each lab. Copying code is strictly prohibited. Copying code from another student or any other source (e.g., a web site) is considered plagiarism

and will be prosecuted under the Code of Student Conduct at Salisbury University. If two students have identical or similar work, both will be given a failing grade.

#### Office Hour:

- Remote office hour will be conducted by using Zoom.
- Zoom link will be sent to each student by e-mail five minutes before each office hour
- Office hours for Spring 2021:
  - Monday, Wednesday, Friday between 9:00 A.M. and 11:00 A.M.

#### Topics:

- ***The UNIX/Linux Operating System Basics***  
UNIX/Linux basic commands, login scripts and environment set up, C programming environment, introduction to basic shell scripts
- ***Working with files***  
File and directory structure, low-level file access, standard I/O library, formatted input and output.
- ***Process***  
Basic concepts of Linux process and process attributes, process control using fork, exec and wait, process relationship.
- ***Signals***  
Concept of signals, usage of signal between processes, process functions
- ***Threads***  
Thread concepts, thread creation, termination, synchronization, thread control, thread attributes
- ***Inter-process Communication***  
Basic concepts of inter-process communication using Signals, PIPE, FIFO, message queue, Shared Memory, Semaphores, Mutex, Conditional Variable and so on.
- ***Socket Programming***  
Basic concepts of socket communication, network information and multiple clients

#### Exam Policy:

- There will be an announcement before each exam (midterm, mini-test or final exam).
- Students will take each test remotely during lecture hour.
- There will be no make-ups or rescheduling of exams for individual cases (except emergency cases with evidence).
- Instructor will send exam questions to each student right before test hour.
- During the test, student must have the camera on.
- Students must submit their test answer within the given time by e-mail ([cosc350@gmail.com](mailto:cosc350@gmail.com)).
- Late submission cannot be accepted.

**Grade:** Test 1: 20 %, Test 2: 20 %, Final: 30 %, Lab/Mini Test – 15/15 %. Your final grade will be based on the standard formula

- **A:**  $90 \leq \text{Total\_Average\_score}$
- **B:**  $80 \leq \text{Total\_Average\_score} < 90$
- **C:**  $70 \leq \text{Total\_Average\_score} < 80$
- **D:**  $60 \leq \text{Total\_Average\_score} < 70$
- **F:**  $\text{Total\_Average\_score} < 60$

**Attendance:** Each student is expected to be present each lecture and lab hours. Attendance will be checked for each class and lab. If a student misses lectures more than 6 times (2 weeks) without any reason with evidence, he/she will lose 3% from the total average score. If a student misses lab and do not demonstrate his/her work during lab hours, he/she will lose lab point. If a class or lab must be missed, however, students are responsible for all material, assignments, and announcements made during class or lab hours.