

1. Course number and name

CptS 370: Systems Programming Java

2. Credits and contact hours

4 credits; 3 lecture hours, 3 laboratory hours

3. Instructor's or course coordinator's name

Nella Ludlow

4. Textbook, title, author, and year

Abraham Silberschatz, Peter Galvin, and Greg Gagne. 2009. *Operating System*

Concepts with JAVA (8th ed.). Addison-Wesley.

Other supplemental materials

Daniel P. Bovet and Marco Cesati. 2000. *Understanding the Linux Kernel*.
O'Reilly.

Marice J. Bach. 1987. *The Design of the Unix Operating System*. Prentice Hall.

W. Richard Stevens. 2005. *Advanced Programming in the Unix Environment* (2nd
ed.). Addison Wesley.

Scott Oaks and Henry Wong. 2004. *Java Threads* (3rd ed.). O'Reilly.

5. Specific course information

- a. *Catalog description:* Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities. Taught in Java programming language.
- b. *Prerequisites or co-requisites:* CPT S 233 with a C or better; CPT S 260 with a C or better or E E 234 with a C or better; certified major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics.

6. Specific goals for the course

By the end of the course, students will:

- understand and implement process management that schedules, executes, synchronizes with events, and terminates application programs. (2a, 2e, 2g, 6a, 6b, 7c, 7d, 7f, 7g)
- understand and implement memory management that loads programs in memory and allocates/deallocates memory space they requested dynamically. (2a, 2e, 2g, 6a, 6b, 7c, 7d, 7f, 7g)
- understand and implement file system that provides the mechanism for on-line storage of and access to both data and programs residing on the disks. (2a, 2e, 2g, 6a, 6b, 6c, 6d)
- understand protection and security. (1d, 7a, 7d, 7g)

7. Brief list of topics to be covered

- Processes
- Threads
- CPU scheduling

- Synchronization
- Deadlocks
- Memory management
- Virtual memory
- File systems
- I/O systems
- Network programming
- Protection
- Security used in the popular desktop and real-time operating systems.