<div align="center">**Brooklyn College**
Department of Computer and Information Sciences</div>

CISC 3350 [46] Workstation Programming
3 hours; 3 credits

Programming techniques for development of applications on networks of workstations. Process environments, file system issues. Concurrent programming, interprocess communication. Graphical user interfaces, event-driven programming. Distributed programming; remote process creation, the client-server model, message passing.

Textbook:

Kay A. Robbins and Steven Robbins, Unix System Programming, 2nd edition, Prentice Hall, 2003. (RR)

Syllabus:

1. Overview of the course, introduction to Unix, Linux and security. Relationship of a program to a process. RR, Chapter 1.

2. Processes, threads, process environment, program image in memory, command line arguments, static objects, process identification and state. RR, Chapter 2,3.

3. System calls involved with process creation and monitoring, background processes, critical sections. RR, Chapter 3.

4. Reading and writing files, system calls, redirection and filters. RR, Chapter 4.

5. Unix file system, directories, links. RR, Chapter 5.

6. Exam 1, Chapters 1-5, RR.

7. Interprocess communication with special files, pipes, FIFO.s, terminal control. RR, Chapter 6.

8. Asynchronous events, introduction to signals, generating signals, manipulating signals, signal system calls, program control with signals. RR, Chapter 8.

9. Posix threads, thread management, thread safety, user threads vs kernel threads. RR, Chapter 12.

10. Thread synchronization, mutex locks, condition variables, signal handling, deadlocks. RR, Chapter 13.

11. Critical sections, semaphores. RR, Chapter 14 and Chapter 15.

12. The client server model and networks, sockets, host names and IP addresses. RR, Chapter 18.

13. Exam 2, Chapters 6, 8, 12-15, and 18.

14. UDP and datagrams. RR, Chapter 20 + handouts.

15. TCP/IP and packet transmission. RR, Chapter 20 + handouts.