Iona College
Department of Computer Science
Spring 2002

Course:	**CS452A Advanced Operating Systems**	
Instructor:	L. Ivanov	*Office*: M119C
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Office Hours:	Monday through Thursday, 9:00am - 10:00am	

Class Meetings: Mon., Wed., Thu., 11:00–11:50am in M209

Course Description:
Having examined the general theoretical and implementation aspects of a modern operating system in CS451, we shall now begin an in-depth study of one of the most widely used and powerful operating system - UNIX. We shall begin with a quick introduction to the user aspects of UNIX - the file system and the basic commands to manipulate it. Afterwards, we shall turn our attention to a more detailed study of the Bourne- and C-Shells, and their associated programming languages. We shall also examine some important UNIX utilities such as *grep*, *awk*, *find*, etc. Finally, we shall turn to UNIX system programming, including issues such as process and memory management, pipes, and sockets. Throughout our discussion, we will get an opportunity to study the basic design and implementation principles behind the UNIX operating system.

Course Objectives:
- To develop practical skills in using the UNIX file system, shell commands, and utilities.
- To gain a deeper understanding of the implementation and the inner workings of UNIX
- To gain practical skills in writing scripts and systems programs for UNIX
- To add working knowledge C programming language in the UNIX environment

Grading Policy:

Homework and projects:	30%
Best two (2) out of three (3) tests:	40% (20% each)
Final exam:	30%

Policy on Plagiarism and Academic Dishonesty:
Cheating will not be tolerated in any form. A first attempt to cheat on a homework or a lab assignment will result in loss of credit for that assignment. A second attempt will be brought up with the academic dean. Cheating on any exam will also be brought up with the academic dean and may result in loss of credit for the exam or even failure in the class. DO NOT CHEAT!!!

Policy on Attendance:
As outlined in the College Bulletin, unless the reasons for the absence or the quality of the student's work justifies an exemption from the rule, a student who has been absent from 20% or more of the scheduled class sessions will be dismissed from the class and assigned the failing grade of "FA".

Required Texts:
"UNIX for Programmers and Users", by G.Glass, Prentice Hall, 1993

Additional References:
- "*UNIX Internals: New Frontiers*" by Vahalia, Pearson Education, 1996
- *"Operating Systems Concepts"*, by Silberschatz, 5th Edition, Wiley, 1999

Course Outline:

1. Introduction to UNIX. History of UNIX. Design principles.
2. The UNIX file system. Directory hierarchy.
3. Creating, deleting, and changing directories.
4. Creating, deleting, moving, renaming files. File attributes.
5. Printing, counting words in a file, and other basic utilities.
6. The UNIX shells. Common features.
7. Process management utilities.
8. Pipes, background processing, etc.
9. The Bourne shell. Unique features.
10. B-Shell variables, and arithmetic.
11. Conditional expressions. Control Structures.
12. C-Shell. Unique Features.
13. Variables and arithmetic.
14. Control Structures, etc. Aliases.
15. UNIX utilities. The *grep* utility.
16. Comparing files. Sorting files. Finding files.
17. Archiving files. Scheduling commands.
18. Programmable text processing: *awk*.
19. File compression, mounting file systems, etc.
20. System programming in C.
21. Error handling. File management.
22. Process management.
23. Signals. Pipes.
24. Sockets.
25. UNIX internals. Process- and memory management. *
26. File system organization and implementation. *
27. Interprocess communication. *
28. System administration.

* If time permits…

Enjoy the class!

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