

School of Computer Science

Course Title: Advanced Unix Programming

Date: 2/5/04

Course Number: COP-4225

Number of Credits: 3

Subject Area: Computer Systems	Subject Area Coordinator: Masoud Sadjadi email: sadjadi@cis.fiu.edu
Catalog Description: Overview: files and directories, shell programming; Tools: awk, sed, grep, and perl; Internals: file systems, process structure; Using the system call interface; Interprocess communication.	
Textbook: - Unix for the Impatient, 2 nd Edition Abrahams and Larson Addison Wesley (ISBN: 0201823764) - Advanced Programming in the UNIX Environment Richard Stevens Addison Wesley (ISBN: 0201563177)	
References:	
Prerequisites Courses: COP 4338	
Corequisites Courses: COP 4610	

Type: Elective

Prerequisites Topics:

- C programming and pointers
- Multithreading and serialization

Course Outcomes:

1. Mastery of the basic UNIX process structure and the UNIX file system
2. Mastery of simple UNIX filters
3. Familiarity with pipes and redirection. the UNIX environment, traps, signals, filter parameters, filter options, UNIX contentions, and Regular Expressions
4. Familiarity with Bourne Shell programming
5. Exposure to C-Shell, AWK, and Perl programming
6. Exposure to Interprocess Communication using pipes, shared memory, semaphores and messages

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Outline

Topic	Number of Lecture Hours	Outcome
<ul style="list-style-type: none">• Using UNIX<ul style="list-style-type: none">○ UNIX history, basic concepts, getting started○ basic operations on files, file tools, editors○ networks and communications	10	2,3
<ul style="list-style-type: none">• Programming<ul style="list-style-type: none">○ shells: Bourne, C○ awk, sed, grep○ Perl	12	4,5
<ul style="list-style-type: none">• Systems programming<ul style="list-style-type: none">○ file i/o, files and directories○ process control○ interprocess communication	14	1,6

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Course Outcomes Emphasized in Laboratory Projects / Assignments

	Outcome	Number of Weeks
1	Statistical evaluation of Unix files Outcomes: 1,2,3	2
2	Shell script design Outcome: 4	2
3	AWK/Perl script design Outcomes: 5	2
4	Interprocess communication Outcomes: 6	2

Oral and Written Communication: No significant coverage

Number of written reports:

Approximate number of pages for each report:

Number of required oral presentations:

Approximate time for each presentation:

Social and Ethical Implications of Computing Topics
No significant coverage

Topic	Class time	student performance measures

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Approximate number of class hours devoted to fundamental CS topics

Topic	Core Hours	Advanced Hours
Algorithms:		1.0
Software Design:		1.0
Computer Organization and Architecture:		1.0
Data Structures:		
Concepts of Programming Languages:		

Theoretical Contents

Topic	Class time
Synchronization	1.0

Problem Analysis Experiences

1.

Semaphores

Solution Design Experiences

1.

Regular expression construction

2.

Design of scripts

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The Coverage of Knowledge Units within Computer Science Body of Knowledge¹

Knowledge Unit	Topic	Lecture Hours
OS8	File structure, file I/O, basic operations on file,	6
OS12	Scripting, passing parameters to scripts, shell scripts, awk and perl scripts.	8

¹See <http://www.computer.org/education/cc2001/final/chapter05.htm> for a description of Computer Science Knowledge units