

CIS 221	UNIX/Linux Tools and Scripts	Course Syllabus
Instructor: Philip Geyer	Office hours: Tuesday 1:00 - 1:30, 3:30 - 6:00 PM	
Phone: 973-3604	Wednesday 5:00 - 6:00 PM	
Office: BE-228	Thursday 1:00 - 1:30, 5 - 5:30	
PM		
Email: pgeyer@wccnet.edu	Office Hours are usually in BE-228 or TI-239	
	Other times spontaneously or by appointment	

## COURSE MATERIALS

Required Textbook: UNIX Shell Programming – 3<sup>rd</sup> Edition by Kochan and Wood  
SAMS Publishing, 2003 ISBN 0-672-32490-3

Recommended Text: UNIX in a Nutshell, 4th Edition by Arnold Robbins  
O'Reilly & Associates 2005 ISBN 0-596-10029-9

## COURSE DESCRIPTION:

This course enables students to use UNIX more efficiently by learning advanced forms of commands and utilities covered in CIS 121, as well as new commands and constructs. Advanced forms of topics begin in CIS 121 include sed, effective use of regular expressions and writing shell scripts. Other topics covered include functions, traps, conditional statements, loops, arithmetic on variables, and input/output techniques. In addition emphasis is placed on how the UNIX shell operates.

\*\*\* WARNING – THIS CAN BE A TIME CONSUMING AND CHALLENGING COURSE! \*\*\*

## COURSE OBJECTIVES:

As a result of taking this course the student will be able to:

1. Code and debug shell scripts.
2. Understand and modify existing shell scripts.
3. Be able to write shell scripts that take various command line arguments.
4. Use conditional commands (including if, elif, case) to control the flow of program execution in shell scripts.
5. Utilize the test command, and exit status, within conditional commands.
6. Know and correctly use file operators in conditional commands.
7. Correctly use Metacharacters and different types of special characters.
8. Use sed to solve problems
9. Utilize constructs to enable or disable dependent programs based on the outcome of a preceding program.
10. Use three looping commands (for, while and until) available to shell scripts.
11. Read data from a terminal or a file.
12. Understand how the individual shell environment of each UNIX user relates to the writing and running of programs.
13. Understand and use regular expression syntax
14. Define and use functions.
15. Use awk to create basic scripts.
16. Explain the use of Perl and other scripting languages.

**GRADING:**

The following activities are the means by which the above skills and proficiencies will be measured:

Three exams: Students will be expected to contact the instructor before the test day if they are not able to take tests at the assigned time. The decision to give a makeup test will be left to the discretion of the instructor. The exam dates are NOT fixed. Dates will be announced. Exams will be given in the Testing Center on WCC's Ann Arbor Campus.

Homework and lab assignments: Shell scripts must include sample runs, and appropriate comments, to show how they work. Students may also be asked to place copies of their scripts in a specific directory on the server. Due dates will be established when the assignments are made. Generally there will be one to two assignments per week.

The exams and some of the homework assignments for this class are very difficult. This class can be very time consuming and the exams have a well-deserved reputation for being very challenging.

All homework and lab assignments must be typewritten and labeled with:

1. The student's name
2. The student's cidermill uname
2. Course and section number
3. Date
4. Due Date
5. The chapter number and/or exercise title
6. Each answer must have a problem number

All homework and lab assignments are to be done individually. Although general discussions among students are encouraged, students who rely upon the work of others or who share their work with others will be subject to consequences ranging from loss of points to expulsion from the class or other college discipline.

**Assignments more than two days late may not be accepted except by prior arrangement with the instructor. All late work is subject to a late penalty.**

Students are expected to be familiar with and follow WCC policies and guidelines including the WCC Students Rights and Responsibilities Policy

<http://www.wccnet.edu/trustees/policies/4095/>

and the WCC Computing Resources Usage Policy

<http://www4.wccnet.edu/resources/computerresources/computerpolicies/index.php> Failure to do so may

result in expulsion from class and a failing grade.

If you need an academic accommodation because of a disability, please make an appointment with a counselor in Learning Support Services (LA-104, 973-3342) to verify the disability and arrange accommodations.

Computation for the final grade for the course:

Lab Assignments and quizzes.....	50%
Tests .....	<u>50%</u>
	100%

Or if you like formulas:

- $P_T/T_T * 0.5 + P_P/T_P * 0.5 = \text{Your Score}$
- $P_T = \text{Test Points Earned}$
- $T_T = \text{Total Test Points Possible (Adjusted)}$
- $P_P = \text{Problems, Lab assignments, etc. Points Earned}$
- $T_P = \text{Total Problems, Lab assignments, etc. Points Possible (Adjusted)}$

This formula may be adjusted depending on the number of assignments and the difficulty of the exams. Students cannot receive a grade that is more than one letter grade above their test grade. i.e. If you fail the tests, the best grade you could get for the course would be a 'D'. There are no "make-up exams" except under very special circumstances and by prior arrangement. The grades for this class will range from A and A- through F. B, C, and D will have both plus(+) and minus(-) modifiers. In general, grading ranges follow the pattern: >92.9% = A, >89.9% = A-, >86.7% = B+, etc. However, there may be curving of the ranges depending upon exam difficulty. The instructor reserves the option of issuing "AU", "W", or "N" grades as seems appropriate given a specific students circumstances. If you vanish during the semester, you can expect an "F" in the course.

Anytime you are wondering about your current grade, please see the instructor. Email is not a secure method of communication. If you request personal information on how you are doing in class by email, you are acknowledging that you recognize that a lack of security may exist and that you wish to use that method to communicate in spite of the limitations. All such requests must come from your wccnet.edu account.

The best way to reach me is by email. At anytime, except when I am teaching, you may contact the BE-200 secretary, who can try to reach me by cell phone. If I am not in TI-239 or BE-228 during office hours, have the secretary call me. Please do not use "write" or "talk" on cidemill to reach me.

**CLASS FORMAT**

Exercises, videos and slides will be available on Blackboard. Exams will be given on Aardvark in the Testing Center.

There will be a Discussion Board on Blackboard that you can use if you have questions. People answering questions may earn extra credit. Do not provide answers to assigned problems.

Anytime that you are wondering about your current grade, do not hesitate to contact your instructor.

### **FINAL THOUGHT**

This is a VERY challenging class. It is hard for the students and it is hard for the instructor. You need to have all of your work well done and in on time. I will try to get your work back to you within a week. The class is also a lot of fun. Together we can be successful and move you forward in your career. Never hesitate to contact me with concerns or questions. I teach because I like to and I regard my student's success as a plus for me as well.

## TENTATIVE COURSE SCHEDULE

DATE	Module	SUBJECT
	1	Introduction Chapters 1 & 2 - Introduction/Review of Basic UNIX Chapter 3 - Shells and Environment
	2	Regular Expressions and More Commands Chapter 4 - sed, grep and Fun with Regular Expressions Chapter 5 – Writing scripts
	3	Metacharacters, Special Parameters, Quotes and Passing Arguments Chapters 6 – Quotes Chapter 7 – Passed Parameters
		Buffer EXAM 1
	4	Conditional Statements Chapter 8 - Writing and Debugging Scripts - Decisions
	5	Loops Chapter 9 - Writing and Debugging Scripts - Looping
	6	Reading Data Chapter 10 Reading Data
	7	Controlling Your Environment and More Fun With Parameters Chapter 11 User Environment Chapter 12 - More Parameters and Commands
		EXAM 2
	8	Controlling and Scheduling Chapters 13 & 14 – Odds and Ends
	9	Awk
	10	Introduction to Perl
		EXAM 3