

CSET 3400 Unix System Administration (3 semester credit hours)

CSET Elective
IT Elective

Current Catalog Description:

Commands and methods to install and manage a UNIX system. System administration topics include configuration, user and file management, backup procedures, peripheral devices, performance tuning and troubleshooting. Prerequisite: CSET 2200

Textbooks:

None.

References:

Course web pages: <http://cset.sp.utoledo.edu/cset3400/>

Related Program Outcomes

CSET Program Outcomes are (a, b, and i)

IT Program Outcomes are (a, b, and i)

Course Objectives:

After successful completion of this course, students will be able to:

- Install an operating system and configure a system for a specific task partitioned disk space, added and removed network services, connect to a network.
- Add/delete users , check disk space usage, change passwords
- List processes, kill rogue processes, detect high use processes, move processes from foreground to background. Change process priority
- Shut down and reboot a system safely
- Manipulate and change user permissions on files and directories
- Manage time and tasks from multiple sources at once, and to process large amounts of information including email list messages.
- Articulate system problems clearly and in writing. Document processes and procedures
- Add new packages to a system
- Write programs to automate tasks simple system administration tasks
- Plan tasks and time so that services are stable and effective
- Demonstrate the ability to research a topic and present a clear articulation of the topic issue.

Major Topics Covered in the Course

Topic	Lecture Hours
Introduction + Overview	1.5
System configuration startup	3
Automation and scripting	6
Computer System hardware and software components	6
Disaster planning and recovery	3
System privileges	6
Internet and networking	6
Sysadmin health	6
Social and ethical issues	1.5
Basic Proxy and Firewall Services	6
Competency demonstrations	
Totals	45

Laboratory Projects:

Students implement a Unix operating system and provide user services, internetwork services and application services to serve external “client” requests.

Oral and Written Communications

Midterm and Final examinations are written using essay format. In addition to being evaluated for technical content, all written materials are evaluated for grammar, spelling and punctuation.

Social and Ethical Issues

The topics discussed include the ethical issues of administering a multi-user computing system, the utility of the Unix operating system for monitoring network activity, and the risk factors associated with administering a multi-user operating system. Three hours of class time is spent on this topic.

Theoretical Content

Theory is only mentioned in passing. This is a hands-on, practical course, where students implement specific solutions. However, as they run into problems, it is pointed out how the data structures course, or the analysis courses have material that directly applies to the problem. So while this material is not covered directly, the theory is put into practice in the course. Students often finally gain understanding of some of the theory as they try to solve problems with out it and fail.

Problem Analysis

In assignments and exams, students are presented with a series of memoranda outlining management needs for computing services. Students identify possible applications capable

of providing the service, research competing applications, propose a solution, and implement the solution.

Solution Design

This course requires students to implement a Unix server capable of providing the services required in memoranda outlining management needs for computing services.

Course Coordinator:

Allen Rioux (allen.rioux@utoledo.edu)

2-28-2011

Syllabus: CSET 3400

	Student Outcomes: CSET Program	Course Outcomes	Assessment Methods
a	an ability to select and apply knowledge of computing and mathematics appropriate to the discipline. Specifically, an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices. [CAC-j]	Students will be able to use the current standard Unix operating systems to solve computing problems.	Midterm Examination question to analyze the advantages/disadvantages of competing mail packages. Final Examination questions to analyze advantages of deploying various Unix services; limitations of proxies; research a package to filter web pages.
b	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.	Students will be able to implement a variety of Unix system packages to accomplish computing tasks.	Midterm Examination questions to install telnetd, enable and configure anonymous ftp; research, select and install a webmail package Final Examination question to install and configure squirrelmail.
c	an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs. Specifically, an ability to apply design and development principles in the construction of software systems of varying complexity. [CAC-k]		
d	an ability to function effectively as a member or leader on technical teams to accomplish a common goal.		
e	an understanding of professional, ethical, legal, security and social issues and responsibilities including a respect for diversity.		
f	an ability to communicate effectively with a range of audiences using a range of modalities including written, oral and graphical.		
g	an ability to analyze the local and global impact of computing on individuals, organizations, and society.		
h	recognition and understanding of the need for and an ability to engage in self-directed continuing professional development.		
i	an ability to select and apply current techniques, skills, and tools necessary for computing practice.	Students will be able to troubleshoot Unix server systems.	Midterm Examination problems that deal with remote login, password file recovery, telnet access. Final Exam problem that requires implementation of cron job(s) and recovery of a rooted machine.
j	an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.		
k	a commitment to quality, timeliness, and continuous improvement.		

Syllabus: CSET 3400

	Student Outcomes: IT Program	Course Outcomes	Assessment Methods
a	an ability to select and apply knowledge of computing and mathematics appropriate to the discipline. Specifically, an ability to use and apply current technical concepts and practices in the core information technologies. [IT-j]	Students will be able to use the current standard Unix operating systems to solve computing problems.	Midterm Examination question to analyze the advantages/disadvantages of competing mail packages. Final Examination questions to analyze advantages of deploying various Unix services; limitations of proxies; research a package to filter web pages.
b	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.	Students will be able to implement a variety of Unix system packages to accomplish computing tasks.	Midterm Examination questions to install telnetd, enable and configure anonymous ftp; research, select and install a webmail package Final Examination question to install and configure squirrelmail.
c	an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs. And, an ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems. [IT-k]		
d	an ability to function effectively as a member or leader on technical teams to accomplish a common goal.		
e	an understanding of professional, ethical, legal, security and social issues and responsibilities including a respect for diversity.		
f	an ability to communicate effectively with a range of audiences using a range of modalities including written, oral and graphical.		
g	an ability to analyze the local and global impact of computing on individuals, organizations, and society.		
h	recognition and understanding of the need for and an ability to engage in self-directed continuing professional development.		
i	an ability to select and apply current techniques, skills, and tools necessary for computing practice. And an ability to effectively integrate IT-based solutions into the user environment. [IT-l]	Students will be able to troubleshoot Unix server systems.	Midterm Examination problems that deal with remote login, password file recovery, telnet access. Final Exam problem that requires implementation of cron job(s) and recovery of a rooted machine.
j	an understanding of best practices and their application. [IT-m]		
k	an ability to assist in the creation of an effective project plan. [IT-n]		