

## COURSE DESCRIPTION

Dept., Number	CSci 323	Course Title	Systems Programming: Linux
Semester hours	3	Course Coordinator	P. Tobin Maginnis, Associate Professor

### Current Catalog Description

Study of a contemporary operating system and its set of tools from the perspective of software professionals and system administrators. The course analyzes the system components and their interactions, the tool environment, and system administration issues such as configuration, installation, networking, security, and performance tuning.

### Textbooks (2002 and 2006)

2002: Tobin Maginnis, *Sair Linux and GNU Certification Level I, Installation and Configuration*, 2nd Edition John Wiley & Sons, 528 pages, ISBN 0471417971, 2001.

2002: Tobin Maginnis, *Sair Linux and GNU Certification Level I, System Administration*, John Wiley & Sons, 512 pages, ISBN 0471369764, 2000.

2006: Matthias Dalheimer and Matt Welsh, *Running Linux*, 5th edition, O'Reilly, 2006.

### References

2002 class website: <http://pix.cs.olemiss.edu/csci323/>

2006 class website: <http://www.movl.net/teaching/2006/fall/csci323/>

### Course Outcomes

Upon successful completion of this course, the students are able to:

1. describe and use a core set of Unix/Linux commands;
2. install and configure at least two Linux distribution desktop or server implementations;
3. perform routine Unix/Linux system administration.

### Relationship between Course Outcomes and Program Outcomes

This is a course taken primarily by undergraduate computer science students; it is sometimes taken by MIS students or others as an elective to enrich their programs.

The course outcomes contribute to the program outcomes as follows: (1) to (a); (2) to (a), (b), (c), and (g); (1) and (3) to (a) and (b).

Prerequisites by Topic

- Fundamental programming skills, algorithms, and data structures (CSci 112)
- Some previous experience with operating systems administration is helpful.

Major Topics Covered in the Course

1. Linux archives, disk partitions, and boot-up (1 hour)
2. Compiling the Linux kernel (2 hours)
3. X-Window design, installation, and configuration (4 hours)
4. Linux kernel overview, data structures, algorithms, system call interface. (3 hours)
5. Network daemon design, installation, and configuration (3 hours)
6. WWW design, installation, and configuration (3 hours)
7. Linux file system (3 hours)
8. System management (3 hours)
9. Linux device drivers (3 hours)
10. Linux socket, TCP, and IP implementation (4 hours)
11. Linux kernel dynamic load modules (2 hours)
12. Performance tuning issues: measurement and management (2 hours)

Assessment Plan for the Course

This is an elective course offered infrequently (e.g., only once in the past four years) and primarily to computer science undergraduate students. An offering typically has 4 examinations and a series of closed laboratory projects. Outcome 1 is assessed by exam questions and laboratory assignment performance, outcomes 2 and 3 are assessed through closed laboratory performance evaluations; and outcome 3 by exam questions. The instructor evaluates the student performance informally and refines the course content, organization, and pedagogy as indicated.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

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Estimate Curriculum Category Content (Semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms			Software design		
Data structures			Concepts of programming languages		