

# CIT 470—Advanced Network & System Administration

Spring 2011

TR 3:05-4:20pm

BEP 306

---

## Instructor Information

Name	: James Walden	Office Hours
E-Mail	: <a href="mailto:waldenj@nku.edu">waldenj@nku.edu</a>	M 2:00-5:00
Office	: ST 340	T 4:20-4:50
Phone	: (859) 572-5571	R 1:00-1:30
Web Site	: <a href="http://faculty.cs.nku.edu/~waldenj">http://faculty.cs.nku.edu/~waldenj</a>	

## Summary

**Description** : Administering networked computer systems. Volume management, filesystems, backups, directory services, network-based authentication and filesystems, automation of installs and file distribution, directory services, e-mail, security, and clustering.

**Prerequisites** : This class requires that you have mastered the concepts and practice of Linux system administration covered in CIT 370. It also requires a basic level of understanding of networking from CIT 447 and scripting from CIT 383.

**Textbooks** : Thomas A. Limoncelli and Christine Hogan, *The Practice of System and Network Administration, 2nd edition*, Addison-Wesley, 2007.

## Student Learning Outcomes

By the end of the term, a successful student should be able to:

1. Administer systems using documented, repeatable processes, assisted by appropriate tools (request tracking, monitoring, configuration management, scripting.)
2. Work as part of a team to develop, administer, and troubleshoot systems.
3. Explain how distributed Linux computing environments (authentication, directory services, networked filesystems, etc.) work.
4. Carry out common administrative tasks, including automation, backups, installs, user management, and server deployment in a distributed environment.

The first two outcomes are primarily assessed by group assignments, the third outcome by exams, and the fourth during labs.

## Topics

1. Desktop management
2. Services and Servers
3. Directories and LDAP
4. Namespaces
5. Booting, runlevels, and init
6. Disks, Logical Volumes, and RAID
7. Network filesystems
8. Data Centers
9. Help Desks
10. Package Management
11. Syslog
12. System Monitoring
13. Backups and Disaster Recovery
14. Security Policies
15. Change Management
16. Upgrades and Maintenance
17. Perception and Visibility

See the course web site for a current course schedule.

## Grading

Your grade in the course will be earned / calculated as follows:

midterm	30%
final exam	30%
assignments	40%

Grade	Percent	Grade	Percent
A	93-100	C+	77-80
A-	90-93	C	73-77
B+	87-90	C-	70-73
B	83-87	D+	67-70
B-	80-83	D	60-67
		F	0-60

Assignment presentations and reports are due at the beginning of class on the date specified on the assignment. Assignment grades will be reduced by one letter grade each day (or partial day) the assignment is late, i.e. an assignment turned in after the class period is penalized by one letter grade. Assignment drafts are not graded, but offer an opportunity to receive feedback on an assignment before turning it in for a grade.

You may use your notes taken in class during exams, but not the textbook or other resources. Requests to change grades must be submitted in writing.

## Assignments

Assignments are essential to learning system and network administration. You will work on assignments as a team. You should take detailed notes on everything your team does as part of the assignment because you will make a group oral presentation and submit a group report that describes the work of the team for each assignment.

Each assignment report must be organized with the following sections:

1. Overview
2. Policies and Procedures
3. Achievements
4. Discussion/Conclusion

If you need additional sections or appendices to include items such as configuration files or source code for scripts, then please add them. If you have any questions about the organization of your report, please ask your instructor.

Assignment grades will depend on a combination of your team's achievements and the quality of the report, including how accurately and effectively it describes your team's achievements. Part of your team's achievements will be satisfying the needs of your users and acting as users to the systems of other teams. The assignment must include the team number and the names of all of the participating team members at the top of the report. Assignment reports will include a short oral presentation and a written presentation that should be five or more pages in length and will be graded on the following criteria.

- **25% Achievements**, graded according to the requirements of the specific assignment. Describe the reasoning behind your design decisions, e.g. why did you choose Apache as your web server. Include any code written, along with modifications to configuration files in this section.
- **25% Individual accomplishments**. Write at least one paragraph describing each member's role in the achievements described above. If there is nothing describing a particular member's contribution, that member will receive zero points for the assignment.
- **25% Accuracy and precision of description**, including appropriate use of technical terms, with a focus on repeatable, well-documented procedures. The reader should be able to follow the procedure given without any outside references to accomplish the specified task.
- **25% Effectiveness of presentation**, including both speaking and writing, including grammar and organization. This component is essential. If you do not communicate your work, you have not accomplished anything as far as your manager and customers (and professor) know.

Use what you have learned in past lab and writing classes to develop a high-quality write-up for your assignment reports. If you experience problems with writing quality, seek out the assistance of the writing center at <http://lap.nku.edu/writingcenter>. Students who struggle with writing quality who have used the writing center have consistently achieved higher scores in the writing portion of their assignment reports.

## Preparation

As with most university classes, it is expected that to receive an average grade you will need to spend two to three hours out of class working on the course for each hour spent in class. This class meets three hours per week, so it is expected that you will spend six to nine hours out of class. As this is a 400-level class, nine hours of work is typical. To prepare for class each week, you need to do the following:

- *Before class*, read and understand the readings on the class schedule. If a section does not make sense to you, read it again and write down questions to ask me in class.
- Before class, print out the lecture on the web site for that day.
- During class, add your own notes to the lecture. The lecture is only an outline of what I'll talk about. You'll need to understand what we discuss in class in addition to what's on that outline. You can take your notes to the exams to help you, so be sure everything you write down everything you might need.
- During class, we'll also work on labs. You should take additional notes when you're working on the lab to reinforce the connections between the theory given in the lecture and practice you experience through the lab.
- After class, complete any uncompleted portions of the lab and schedule a time to work on assignments together with your group. Follow the links on the assignment and course web site to help you understand the assignments, and ask me questions whose answers you cannot find that way.

The book covers the theory of system administration, while the labs and assignments cover practice. You need to understand both. Use our time together in class to reinforce what you learn outside of class: ask me questions about the readings and assignments.

## Students with Disabilities

Students with disabilities who require accommodations (Academic adjustments, auxiliary aids or services) for this course must register with the Disability Services Office. Please contact the Disability Service Office immediately in the University Center, Suite 320 or call 859-572-6373 for more information. Verification of your disability is required in the Disability Services Office for you to receive reasonable academic accommodations. Visit our website at <http://www.nku.edu/~disability/>.

## Academic Dishonesty