# CIS 225 - Personal Computer Systems Administration

Fall 2014

## Syllabus

**Instructor:** Russell Feldhausen
**Office:** 212 Nichols Hall
**Email:** russfeld@ksu.edu
**Website:** http://people.cis.ksu.edu/~russfeld
**Office Hours:** MWF 2:30 - 3:30 a.m. or by appointment

**Classroom:** Nichols 22
**Class Times:**
Section A - MW 11:30 a.m. - 12:45 p.m.
Optional Lab Work Time - F 11:30 a.m. - 12:45 p.m (dates will be announced in class)

**Teaching Assistants:**
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### Course Description

Computers are becoming more and more prevalent and they are used in almost any field, but many students lack the knowledge needed to understand what a computer is doing in many instances. This course will cover the basics of using and administrating a personal computer system, focusing primarily on the Microsoft Windows and GNU/Linux environments. The majority of the learning will take place in a hands-on lab environment working directly with common computer hardware and software, but will also include significant portions of self directed research and learning. Since one of the major duties of a systems administrator is to describe what he or she is doing to their colleagues, developing good technical communication skills using a variety of forms will play a major part in this course. We will also discuss many topics related to the career field of systems administration and seek to provide students with a good knowledge base should they decide to pursue that area further.

### Course Objectives

At the end of this course, students should be able to:

- Understand and communicate information about the latest computer hardware and show competence working with it to build a functional computer
- Understand the basic concepts of installing, using, and configuring common operating systems and demonstrate a functional knowledge of performing those steps
- Create and use command line shells and scripts to perform system administration duties
- Manage system users, file systems, processes, services, and permissions and clearly understand and articulate different system designs based on the desired usage

- Understand how software is installed on a system and where it places all of its files, and be able to demonstrate a functional knowledge of performing those steps
- Understand how a local area network is created and different ways to share information between connected computers, and demonstrate the ability to create such a network
- Clearly communicate and articulate technical topics for a nontechnical and/or technical audience using a variety of communication forms and methods
- Articulate and discuss topics related to system administration as a career, such as “bring your own device,” backup strategies, change management, system monitoring, and mobile computing platforms
- Show sufficient knowledge to be considered for IT helpdesk positions on campus or elsewhere if the student chooses to pursue them

**Major Course Topics**

- Duties of a System Administrator
- Computer Hardware - Choosing, Compatibility, Installing, Configuring
- Operating Systems - Installation, Architecture, Configuration, Security, Troubleshooting
- Scripting and Automation using Command Line Shells
- OS Management - Users, File Systems, Processes, Services
- Software - Installation, Architecture, Configuration, Security, Troubleshooting
- Networking - Architecture, Configuration, Sharing, Security, Troubleshooting
- Backup Strategies and Security
- System Design to meet Organizational Needs
- System Administration Concerns - Change Management, Monitoring, Mobile Computing

**Course Structure**

This course will be taught in a hands-on lab format. Generally, each class period will consist of 30 to 45 minutes of new material presented in an open lecture and discussion format, followed by a hands-on lab assignment to be completed by the students. Each lab assignment must be completed by the student and turned in to the instructor within 1 week of being assigned in class unless otherwise announced. The lab assignments may consist of tasks to be performed on a computer, research to be conducted on a specific topic, documentation or communication materials to be created for different audiences, or any combination thereof.

Due to the hands-on nature of this course, a large portion of the grade will be determined by the student’s attendance in lecture and proper completion of the lab assignments. However, there will be a small number of quizzes and exams to verify that the student is indeed grasping the materials and able to apply it properly.

Depending on the size of the class and the amount of resources available, some of the lab assignments may allow the students to complete the task in groups.

**Grading**
In theory, each student begins the course with an A. As you submit work, you can either maintain your A (for good work) or chip away at it (for less adequate or incomplete work). In practice, each student starts with 0 points in the gradebook and works upward toward a final point total earned out of the possible number of points. In this course, each assignment constitutes a portion of the final grade, as detailed below:

60% - Lab Assignments*
10% - Exam 1
10% - Exam 2
20% - Final Exam

* All group work will include a peer evaluation component which can adjust that portion of the individual's grade up to 50%. If a student should fail to contribute to a group assignment at all, their grade for that assignment will be reduced to a zero.

Letter grades will be assigned following the standard scale:

90% - 100% - A
80% - 89.99% - B
70% - 79.99% - C
60% - 69.99% - D
00% - 59.99% - F

**Late Work**
Every student should strive to turn in work on time. Late work will receive penalty of 10% of the possible points for each day it is late. If you have extenuating circumstances, please discuss them with the instructor as soon as they arise so other arrangements can be made.

**Required Texts**
Since this class covers such a wide range of material, no single textbook will suffice. Therefore, students should purchase a subscription to Safari Books Online (http://www.safaribooksonline.com/) for the duration of the course. We are working on securing a group discount for the class, but at worst it should cost around $100 for each student. Also, students are encouraged to bring an external hard drive (100GB+) for storing and transporting lab assignments. We will also use several online resources as needed.

**Recommended Texts**
The following books are recommended reading for anyone interested in learning more about topics discussed in class. We may discuss information from several of these books in class. Many of them are available through Safari Books Online or directly through the author for free.

This first book contains useful information for anyone thinking about pursuing a career in system administration or information technology in general.

**"The Practice of System and Network Administration"** by Thomas Limoncelli, Christina Hogan and Strata Chalup.
ISBN 0321492668 - http://www.amazon.com/dp/0321492668
Kindle Edition Available

The following books are available on Safari Books Online for a monthly subscription fee (see the Required Texts section above). I HIGHLY recommend using that service to access these books as we will be using chapters and material out of several books. The cheapest subscription allows you to read up to 5 books at a time, and these are the 5 I intend to use most.

**"Windows® 8 Administration Pocket Consultant"** by William R. Stanek
ISBN 073566613X - http://www.amazon.com/dp/073566613X
Kindle Edition Available. Available On Safari Books Online.

**"Windows PowerShell Cookbook: The Complete Guide to Scripting Microsoft's Command Shell"** by Lee Holmes.
ISBN 1449320686 - http://www.amazon.com/dp/1449320686
Kindle Edition Available. Available On Safari Books Online.

**"Ubuntu Unleashed 2014 Edition: Covering 14.10 and 14.04"** by Matthew Helmke.
ISBN 0672336936 - http://www.amazon.com/dp/0672336936
Kindle Edition Available. Available On Safari Books Online.

**"Linux Shell Scripting Cookbook, Second Edition"** by Shantanu Tushar and Sarath Lankshman.
ISBN 1782162747 - http://www.amazon.com/dp/1782162747
Kindle Edition Available. Available On Safari Books Online.

**"Pro Bash Programming: Scripting the Linux Shell"** by Chris Johnson.
ISBN 1430219971 - http://www.amazon.com/dp/1430219971
Kindle Edition Available. Available On Safari Books Online.

This final book is a great security reference and is available online free of charge directly from the author.

**"Security Engineering" A Guide to Building Dependable Distributed Systems"** by Ross Anderson.
ISBN 0470068523 - http://www.amazon.com/dp/0470068523/
Available online **FREE** at http://www.cl.cam.ac.uk/~rja14/book.html

**Software**
We will be using VMWare Workstation software in the labs, as well as Windows 8 and Ubuntu Linux. This software is available free for CIS students. Contact the instructor for information.

**Subject to Change**
The details in this syllabus are not set in stone. Due to the flexible nature of this class, adjustments may need to be made as the semester progresses, though they will be kept to a minimum. If any changes occur, the changes will be posted on the K-State Cavas page for this course and emailed to all students.

**Academic Honesty**
Kansas State University has an Honor System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The honor system website can be reached via the following URL: http://www.ksu.edu/honor. A component vital to the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

**For this course, a violation of the Honor Pledge will result in an automatic 0 for the assignment and the violation will be reported to the Honor System. A second violation will result in an XF in the course.**

**Students with Disabilities**
Students with disabilities who need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes should contact the Student Access Center and/or their instructor. Services are available to students with a wide range of disabilities including, but not limited to, physical disabilities, medical conditions, learning disabilities, attention deficit disorder, depression, and anxiety. If you are a student enrolled in campus/online courses through the Manhattan or Olathe campuses, contact the Student Access Center at accesscenter@k-state.edu, 785-532-6441; for Salina campus, contact the Academic and Career Advising Center at acac@k-state.edu, 785-826-2649.

**Expectations for Classroom Conduct**
All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the *Student Government Association By Laws, Article V, Section 3, number 2*. Students that engage in behavior that disrupts the learning environment may be asked to leave the class.

**Campus Safety**
Kansas State University is committed to providing a safe teaching and learning environment for faculty members and students. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page (http://www.ksu.edu) and click on the Emergency Information button.

**Academic Freedom Statement**
Kansas State University is a community of students, faculty, and staff who work together to discover new knowledge, create new ideas, and share the results of their scholarly inquiry with the wider public. Although new ideas or research results may be controversial or challenge established views, the health and growth of any society requires frank intellectual exchange. Academic freedom protects this type of free exchange and is thus essential to any university's mission.

Moreover, academic freedom supports collaborative work in the pursuit of truth and the dissemination of knowledge in an environment of inquiry, respectful debate, and professionalism. Academic freedom is not limited to the classroom or to scientific and scholarly research, but extends to the life of the university as well as to larger social and political questions. It is the right and responsibility of the university community to engage with such issues.