Valencia Community College Course Syllabus Summer 2011

CTS 2321 Linux System Administration 3 Credit Hours

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This is an on-line course. It is vital that you keep up with your on-line work from week to week and participate in postings and forum topics in order to succeed. Many larger projects will not be due until near the end of the course, but you help yourself greatly if you start on them earlier and if you submit them early for feedback and rework if necessary.

The work you will perform in our class is:

- Project assignments
- Blackboard Discussion Board postings and replies
- Midterm and Final Examinations

(All assignments must be turned in via Blackboard. You may submit an assignment as many times as you like, up until the closing date for that assignment. Unless you tell me otherwise, I will grade the latest attempt.)

While there is considerable flexibility in our class schedule, we will cover the same amount of material as if the class met face to face. Please bear this in mind when planning your time and other activities.

Course Description:

From the *Valencia Catalog*:

> CTS 2321 - LINUX SYSTEM ADMINISTRATION
>
> This course on the Linux operating system covers the topics required for the Comp TIA Linux + Certification Exam. It builds on concepts of the LINUX operating system covered in COP 2341. Topics include planning a Linux implementation, installation, configuration, administration, system maintenance, troubleshooting, and system hardware. (Special Fee:$ 34.00) "

The main difference between CTS-2321 and COP-2341 (Linux Shell Scripting) is that while COP 2341 emphasizes "user-level" Linux knowledge and skills, this System Administration course covers more system maintenance-related topics, such as installing and upgrading Linux and related packages, some Graphical Desktop configuration, security and a bit of networking. Basically the sort of stuff you would do as user "root" for instance.

Tools:

You may use several freely-available programming environment to complete the requirements of this course. One of the things we'll be learning is the variety of Linux installation options. Ones you may use include:

1. Install a full-fledged Linux distribution on an unused (or under-utilized) computer. This gives you a true Linux "bare-metal" environment.

The particular Linux distribution is not super important, since the elements of commands and scripting are essentially the same under Fedora, Ubuntu and so forth, (and under other flavors of Unix, such as OSX, Solaris or AIX for that matter). In fact, we'll be comparing features of different distributions in class.

2. Add Linux to an existing Windows computer (Desktop or Laptop).
Here there are several options. You can do a full-blown install of Ubuntu on your laptop or desktop, alongside the Windows OS, but this involves repartitioning the disk, which can be a bit scary.

http://www.ubuntu.com/desktop/get-ubuntu/download

This involves downloading and creating a CD or USB stick image that is then used to partition your hard disk (rearranging Windows to make room for Linux) and then installing to the new hard disk partition.

You can also just run Linux from the CD or USB stick you create above, although performance is reduced and there are some challenges with saving configuration information.

Some laptop hardware doesn't play as nicely with Linux as we'd like -- laptops often feature idiosyncratic hardware.

Another option, especially with laptops is Wubi:

http://www.ubuntu.com/desktop/get-ubuntu/windows-installer

Instead of partitioning the disk, Wubi runs its installer under Windows and places the files needed for Linux into a special file within Windows. Wubi then adds Linux to the Windows boot menu so that when you start up your machine, you will be prompted to boot either Windows or Linux. I installed this on an EE PC Netbook and it seems to work well. Of course, you need to have adequate free disk space available under Windows for this option.

3. Run a Linux distribution in a virtual machine under Windows (or a Mac):

In this case you need the VM software:

http://www.virtualbox.org

There is a some performance degradation here relative to a native install, caused by the overhead of accessing peripherals from the virtual environment, but on a fast machine this will be no problem.

What you get for a bit more complexity with this approach is the ability to switch instantly from your "host" OS (Windows , Mac or Linux!) to the VM Linux and back again, assuming adequate memory and processor power. This is also handy if things go awry, since you can backup and restore the state of the virtual machine.

4. We will have a Linux machine on the West campus dedicated to our class. The computer is:

cop2341.valenciacc.edu

You can access this remotely using the SSH protocol from Putty

or other clients (such as an rxvt terminal under Cygwin.)

It is probably best not to rely on the availability of this machine however, and set up your own. Some of the system administration tasks we'll be learning and some of the experiments we'll conduct may leave this machine in a broken state at times.

You will be receiving an e-mail from our lab manager letting you know how to access this computer.

Goals and Outcomes:

This course directly addresses several skills from the Valencia Core Competencies, including but not limited to:

“Analyze data, ideas, patterns, principles, perspectives”,
“Employ methods of communication appropriate to your audience and purpose” and
“Implement effective problem-solving, decision-making, and goal-setting strategies”.

Reading skills and logical reasoning skills are also emphasized.

Like human languages, computer languages must be learned in a context to be understood. For shell scripting, the goal is to learn the language of Linux scripting and commands by applying these to realistic problems.

Learning Outcomes

A number of specific learning outcomes, things you should be able to do after completing this class, are available in a separate documents, accessible in the Learning Objectives folder from the Getting Started link in our Blackboard class.

We'll use these in projects and discussions and I'll refer to them when composing the midterm and final exams.

The textbook is:

There is no required textbook for this class.

We have decided to teach this course from on-line materials this term. As you may know, there is a *HUGE* amount of material about Linux and Linux System Administration freely accessible via the web. It is my intention to use this in lieu of a formal textbook, and I hope you will find this arrangement both inexpensive and useful. One of the first activities we will do in our class is to research, via the web, selected topics related to the course learning outcomes and I think you will be happy to see that there is excellent material available.

Grading

Your course grade will be based on a combination of examinations, projects, and class participation via Blackboard Discussion Forum posts and replies, in the following proportions:

Discussion postings and replies	200 points
Midterm Examination	100 points
Final Examination:	100 points
Projects:	600 points

The grading scale is:

900 to 1000 points	A
800 to 899 points	B
700 to 799 points	C
600 to 699 points	D
Fewer than 600 points	F

General plan of the course

Course activities

Projects

The goal here is to allow you to choose among possible projects so that you can achieve as many points as you wish (up to a maximum of 600) by choosing to complete different projects. There will be enough projects so that you can get full credit without doing every assignment.

These assignments vary in complexity (and realism), with more complex projects worth more points. The points indicated for each assignment represent what you can get for a complete and accurate solution. Projects that display extra effort, creativity and functionality may be awarded more points. Similarly, projects that fall short of meeting the stated requirements will receive fewer of the possible points.

There will be an initial team project, but later projects are intended as individual projects. For the initial team project, I will compose the teams, but I will entertain suggestions for treating later projects as team projects if you wish. I must approve any team projects in advance. If approved, all members

of the team are expected to participate and all will receive the same grade on the team assignment.

Assignments must be submitted via Blackboard by the specified time in order to receive full credit. (If you have questions about the assignments, then please contact me well before due date, or I may not get your question in time to respond helpfully.) You may submit assignments more than once, and I will attempt to provide feedback on early submissions so that you may resubmit if desired. When the deadline arrives, I will grade only the latest submission.

Although this is an on-line course, and help is available via forum postings and e-mail, ***you are also welcome to come to the West Campus BIT open lab, in room 7-144.*** Staff are available there who can assist you hands-on with completing assignments with which you are having difficulty. Our lab manager will be sending out an e-mail with lab hours once the term begins.

Discussion Postings and Replies

Postings and replies are one of the mechanisms by which we communicate and learn from one another in an on-line class. For that reason, a portion of your grade is dependent upon your posting such items as the results of various projects and exercises, and the quality of your constructive comments on the posts of others.

In addition to postings I may require, one of your best ways of getting help on projects or with your Linux system in general is by posting a question to the appropriate Blackboard discussion forum. Since the background of students in our classes varies widely, it is quite likely that your classmates can provide useful advice and information. I also monitor the discussion postings and may reply if I see that key helpful information is missing.

Questions you ask and information you provide in the Discussion Forums also contributes points to your grade.

In addition, I will ask you to complete a few surveys and short quizzes, such as the one covering this syllabus, and any points you earn there will be added to the Discussion Posting and Replies portion of your grade.

Examinations

There will be a midterm and a final examination. The midterm will be entirely objective (multiple-choice, fill in the blank, matching, etc). The final will combine objective and essay questions. Exams will be administered on-line via Blackboard.

Hands-On approach.

The best (only?) way to learn and remember Linux commands, scripting and system administration is to apply these techniques to meaningful and challenging projects. As the section on Projects above suggests, you will be expected to spend significant time working on these applications. The projects are also a good place to show your creativity, since many are “experimental” in nature and have more than one “right” answer. I appreciate the creativity with which students approach these assignments.

Surveys

From time to time, your instructor may ask you to complete an on-line survey to provide immediate feedback about the content and level of the course materials and assignments. We will share some of these findings in summary form, and your instructor will make reasonable efforts to incorporate suggestions into the course, subject to his discretion and understanding of discipline requirements and college policies. Any credit earned for taking these surveys will be added to your points for Discussion Postings and Replies.

Policies:

You are expected to abide by the college rules with respect to the integrity of your own work and with regard to plagiarism or cheating. By way of clarification: working together on a project, or asking other students questions about the assignments or programming in general IS NOT cheating, and is welcome and encouraged. Turning in someone else's work as your own, or providing someone else with your completed work, or providing unauthorized assistance on the quizzes IS cheating. Quizzes are individual assignments and you may not ask anyone else for assistance in answering them.

I reserve the right to ask you to discuss and explain any aspect of a submitted assignment with me by phone or chat. This has the benefit of helping us both understand how you approached the assignment, and of further ensuring that submitted work is original, as defined above.

Makeup exams or alternative testing arrangements must be negotiated with the instructor in advance of the exam dates, except for true emergency situations.

Late assignments may be subject to a reduction in credit, as explained above.

How to succeed in this course

It is critical that you read the assigned materials from the web and review any provided videos. It is unlikely that you will succeed in the class if you do not locate and read relevant web links in timely fashion. Assignments and postings presume that you have understood the related material, and are likely to be markedly less enjoyable and significantly more confusing if you are note prepared in advance.

Exams and assignments have deadlines not to penalize students or to complicate what is likely an already busy lifestyle, but to ensure that:

- you receive timely feedback on your progress and performance,
- you are encouraged to keep up and not fall behind, and
- you are motivated to prepare for subsequent assignments by mastering concepts presented in earlier lessons.

It is critical that you complete the projects you choose. The best way to learn system administration is by solving challenging problems. This is the goal of the project assignments.

Important Dates: **http://valenciacc.edu/calendar/documents/10-11FinalPDFonline.pdf**

May 9 – Class opens
May 30, – College closed
July 4 – College closed
July 27 -- **Any assignments not previously submitted, make-ups, re-do's etc., due, 11:59PM**
August 1 – Final Exam, due 11:59PM

Withdrawal:

The last date for you to withdraw with a grade of W is Monday, July 1st. If you withdraw after that date, you will receive a letter grade from me, based on your performance. See the Valencia catalog Withdrawal Policy for further details. Note that you are responsible for withdrawing if you choose to. Please do not assume that your instructor will automatically withdraw you if you simply stop attending. Also please note that there are financial aid implications to withdrawal, some of which could cause you additional financial liability. Please contact an adviser for further details.

Valencia Core Competencies:

Valencia faculty have defined four interrelated competencies (Value, Think, Communicate, Act) that prepare students to succeed in the world community. These competencies are outlined in the Course Catalog.

http://valenciacc.edu/competencies/

In this course, through classroom lecture and discussions, group work, programming projects, and other learning activities, you will further develop mastery of these core competencies.

Expected Student Conduct:

Valencia is dedicated not only to the advancement of knowledge and learning but is concerned with the development of responsible personal and social conduct. By enrolling at Valencia, a student assumes the responsibility for becoming familiar with and abiding by the general rules of conduct. The primary responsibility for managing the classroom environment rests with the faculty. Students who engage in any prohibited or unlawful acts that result in disruption of a class may be directed by the faculty member to leave the class. Violation of any classroom or Valencia's rules may lead to disciplinary action up to an including expulsion from Valencia. Disciplinary action could include being withdrawn from the class, disciplinary warning, probation, suspension, expulsion, or other appropriate and authorized actions. You will find the Student Code of Conduct in the current Valencia Student Handbook.

Students with disabilities who qualify for academic accommodations must provide a letter from the Office for Students with Disabilities (OSD) and discuss specific needs with the professor, preferably during the first two weeks of class. The Office for Students with Disabilities determines accommodations based on appropriate documentation of disabilities (West Campus SSB 102, ext. 1523).

Disclaimer Statement:

The information presented in this syllabus may be modified as required by the instructor. Students will be notified of any modifications in writing.
