Link to Zoom Virtual Classroom:

- 6:00 Monday & Wednesday Evenings

Notes:

(6/8 Later) Keep On Learning Online works well for INFO300. Bandwidth is required, and sharing screens is required to check in some of the assignments during classroom meetings. Webcams on are greatly appreciated but can't be required. A headset is always more clear than built-in speakers and mike. If you need some accomodation for lack of bandwidth, maybe in the boonies with Hughes satellite, we can find one.

(6/8) Final Grades and points from last semester are posted and this summer's will be similarly assigned.

Reading Assignment:

- Read thru the links from the Networks topic. It will be discussed over the next several class meetings.
- Read thru the specs and discussion of the command line environment for the Hands on Linux topic. We'll get y'all setup with a userid and password and start the Logging in and Working sections on Wednesday.

Last semester's Progress Pages are posted at info300.net. We'll be starting on the Hands on Linux project on Wednesday and using class time for tech support to get working at the unix command line.

Mac users can do all the server side work with their Terminal window and don't need anything but an internet connection to access info300.net via ssh. Windows users will need to get a terminal emulator, putty.exe is the most used unix terminal these days but there are also ssh and sftp clients that make good addons to Chrome.
Syllabus:

Course Description:

The course introduces principles of computer hardware and software architecture & organization, surveys what is likely to be encountered in the IT legacy today and what's emerging, introduces data structures & algorithms, provides some experience with Linux OS via command line.

Text: Operating Systems: A Systematic View; Davis & Rajkumar; Addison Wesley. The 5th edition is in the bookstore, the 6th edition is current on-line. Either will work for the course.

Projects include: Using CASE (Visio) and office tools to diagram and make a bill of details for a medium-sized LAN; and, Exercises to introduce the unix/linux command line; Some Programming in an open source environment to introduce algorithms for processing data structures.

Lecture and demonstrations will introduce basic networking concepts, hardware, & software. The instructor will set up a Linux firewall/router and demo basic network configuration and troubleshooting.

A 'term paper' or other written project will be assigned.
Course Objectives:

At the completion of the course the successful student will demonstrate:

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. An understanding of system and network security fundamentals and current standards of practice.
3. An understanding of computing hardware fundamentals, including classes of computer platforms, processor architectures, and basic networking & internetworking.
4. An understanding of software fundamentals and architecture, and types of software and data involved in business systems.
5. An understanding of operating systems likely to be encountered in business.
6. Some experience with Linux/*ix at the command line and with server-based text editors, setting file permissions, &c. A project using HTML, CSS, linux command line, and the vi editor will be assigned, with results like these.
7. An ability to communicate effectively about historical, current, and emerging computing technology.
8. An ability to use a CASE tool (Visio) to accurately diagram a network of moderate complexity, to specifications provided by the instructor. A project similar to these will be assigned, with lab time in class to get started.
9. An ability to state basic requirements and components for system and network security.
10. An ability to describe and diagram primitive data structures, express structured algorithms for their processing, and write scripts handling data in them.

Grading

Here's a breakdown of points for Summer 2017:

- About 10 Pop Quizzes at 2 points each make about 20 points
- 3 quizzes at 20 points each make 60 points
- The LAN project is 20 points
- 2 early deliverables for HOL - Hands On Linux at 3 each add 6 points
- A Mobile-friendly website that meets other specs is 15 points
- Marked up copies of original references and tech market brief are 10 points
- Total points available: About 131
- Grade will be points earned divided by total points, on a 10 point scale.

Quiz #3 will be given at the exam time. Students who need to take or want to retake Quiz #1 or #2 may take either quiz after Quiz #3. Students who would like to retake both Quiz #1 and #2 may take a cumulative exam that has questions from the topics for Quiz #1 and #2. If a quiz is retaken the score earned on the exam day will be posted -- this is not 'the highest grade will be
posted'. If the cumulative exam is taken, the score earned will replace both Quiz #1 and Quiz #2.

Quizzes ask for short essays, short answers, definitions, & sketches & diagrams in response to questions about concepts presented in the text and in class.

Policy on quizzes: All quizzes must be taken at the announced time. The makeup for any missed quiz will be given at the scheduled exam day & time for the class, regardless of the reason the quiz was missed.

Policy on not wandering out of and back into class: If you must walk out of a class, please take your stuff with you and do not walk back in. Take care of any personal issues before class. Silence cellphones prior to class and do not place or answer calls in class.

**VCU Honor Code and Conduct Policy**

**VCU Honor Code and Conduct Policy** This serves as notice of what happens when students cheat, facilitate academic dishonesty, or otherwise misbehave at VCU. When I observe cheating I turn the matter over to the University's Honor Coordinator and certify that I have posted notices about the Honor Code and discussed them in class.

In this class Cheating would be copying from a 'crib sheet' or another student's test. Or, It would also be Cheating to submit a LAN or WAN Bill of Details that was actually done by another person. Students are encouraged to work together and learn tools together, but each student should start with an empty file and fill it with their own keystrokes and mouse clicks. It is not appropriate for two students to submit a project as 'a team' unless the project has been assigned as a team. It is never appropriate to take a file, or any element of a project, that another student has made, modify it, and submit it as one's own work. Giving another student a copy of you LAN project is 'facilitating academic dishonesty', which is another form of cheating. Do not give other students copies of your files! Some will present your work as their own and expose you to an honor violation.
Topics:

**Networks:**

(6/8...) Definitions; Sketch The Internet & Ethernet; Visualize & Secure Network Traffic; Setup a LAMP Stack in the cloud, firewall it; Infrastructure & Regulation, Management; Data Centers & IX; LANs; Network Management and Security Tools; Visualizing Traffic: Internet, LAN, WiFi Analysis, RF Spectrum, Firewall & its Logs, Packet Sniffing, Port Scanning; Networks Surveyed by Name, Size, & Technology; PSTN, Ethernet, Internet, VPN, Real Private Networks; The Ground & Fried Networks... *Study Questions* | *Lectures for Networks Topic*

**Hands on Linux & Tech Market Brief:**

(6/10...) Working server-side with linux command line and the vi editor. Develop an outline for a brief on an approved topic about the IT marketplace, suitable for a blog or portfolio at LinkedIn. Publish the brief as a mobile-friendly website, responsive, standards-compliant, a clear example of semantic markup that fits the outline. (*HOL Parts 1 thru 3 Video Lectures*)

**Computers:**

(1/7...) Platforms: Hardware, Software, Dependence, Independence, Cross-Platform, Scalability; VARs, Vertical Markets, CPUs; Operating Systems: FOSS & Proprietary; 7 Modern OS Functions; Range of Hardware Platforms: Embedded through Super (*Study Questions*)

**Storage:**

Current Storage Tech: HDD, SSD, Flash, Hyperconverged, Cloud, &c; EDP History: Cards, Tape, Drum, Disc, SSD; HDD Geometry and Management: CHS vs. LBA, Slack Space, Fragmentation, &c; RAID; Attachment: DAS, NAS, SAN, NFS, The Cloud; Transaction Logging & Backup... (*Video Lectures* | *Study Questions*)

**Data Representation**

(4/21) Computers are Binary machines but they input, store, compute, and output all kinds of data. Numbers are represented more or less directly as Binary, Decimal, and Hex Integers, Float, and Decimal. Characters are represented as ASCII, EBCDIC, and UniCode. When data moves from one platform to another, there's usually some translation or conversion involved. (*Video Lectures* | *Study Questions*)
Security & Professional Standards

Pillars of Information Security: CIA, CIAAN, ACID, Transaction Logging, Backups, Redundancy in Depth; Protection; EDI; Threat vectors; Professional Standards: COBIT, ITIL, GES, SOX, PCI, HIPAA, &c... (Study Questions)

Software

4 or 5 Generations of Programming Languages; Types of Software: Malware, Security, Version Control & Divers Others...

Data Structures & Algorithms

Watch this spot...

LAN Project:

(3/26) Memo From the Boss, Visio demo, Intro to Networking, DMZ Firewall, Rack Diagram, Office Floorplan with Network Drops, Read and Follow Directions, Prep Purchase Orders & Summaries of up-front purchases and recurring costs. Videos: Simple Floor Plan | Memo From the Boss & Rack Diagram

Data Centers

(4/14) Data Center Fundamentals; Tradeoffs: Onsite vs. Data Center, Mainframe vs. Server Farms; Provisioning a Data Center; Internet Exchanges... (Video Lectures | Study Questions)

Prior Topics:

When there are some, after the quiz, they'll be here...

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