

GIIP Networking 3<sup>rd</sup> Quarter Curriculum (Tentative)

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Office hours: Hmmm.

Introduction:

I graduated in June 2003 from UCSC with a degree in Psychology. I have always held the view that knowledge about computers in general is only relevant and fulfilling to my life when I am able to clearly see the practical applications and benefits in the real world that this knowledge can help with.

Teaching you abstract concepts in networking is at times a necessary evil – it is always good to know what really goes on under the hood – however without tying concepts and theory to real examples and hands-on demonstrations, we tend to lose confidence in our ability to jump right into a project, or solve a problem.

We also tend to lose much of the fine detail about how networks work when we don't repeatedly have to fix them.

As important as any of the concepts taught in this class is how to develop a method of methodical troubleshooting. If it broke, and you're on your own, and everybody expects you to have the answer, it is important to be able to triage and assess the situation, and then fix it or start down a path towards a solution. At the end of the day, it is important to be able to have confidence in your ability as a professional in handling a variety of technical problems that come up. The people who are able to best deal with the stress of this responsibility are not necessarily those who have the most technical knowledge, but those who can see patterns and similarities to problems that arise and apply parallel knowledge to similar situations.

And remember: Don't be afraid to ask questions, to correct me when I am wrong, to take the lead when you think you may know what the problem is.

Most people, it seems, are crippled by the feeling that they are not "professionals" and that such and such is best left to those who know what they are doing. This goes for things ranging from gardening to basic auto repair, to of course, computers. By being willing to experiment and explore, and to shun the notion that that guy at Circuit City can really fix your computer better than you, you will propel yourself above 99% of the population.

Goals:

To provide everybody with a firm theoretical grounding in how networks work, and why they are important in many different settings.

To give everybody confidence in their abilities to handle networking projects through hands-on demonstrations and field trips.

To provide everybody in this class with the specific technical skills in networking they need to start their projects with GIIP.

To instill everybody with confidence in troubleshooting what might go wrong.

For me personally, to write down, research, and come back the following week with answers to questions from class that have stumped me.

#### WEEK 1:

Go over individual project proposals and areas of interest in networking. Compile big-picture questions about networking topics from the class.

#### WEEK 2:

Abstract theory day. The OSI 7 layer networking model. A good framework to memorize. And an introduction to more silly ambiguous terms: An internet versus "The Internet" versus an intranet.

#### WEEK 3:

The physical layer of the network. My favorite. Telephones, computers, and everything that hooks them together. The "Minimal Pont of Entry," binding posts, 66 block wiring, 110 block wiring. Sleuthing with tone generator. How to look cool with a Big Red Telephone. Why SBC is always wrong, and who asked them, anyway?

Demonstration: 110 block punchdown, 66 block punchdown. Probing connections with tone generator. Using a line telephone.

#### WEEK 4:

More physical layer stuff. From the block to the switch or hub. Crimping and testing. Bending the rules with cable runs. Troubleshooting the green blinking light.

Demonstration: Crimping cables.

#### WEEK 5:

A simple network. What happens when several windows computers are connected together in complete isolation from the rest of the internet. Introduction to resource sharing (files, printers) across the network. A fun and through overview of the differences between 98/ME networking versus 2000/XP networking. Theory: IP addressing. Client-server vs. Peer to Peer networking. What works best where.

Demonstration: Getting our three or four computers to see each other on this simple network. Why it never works the first time, and how to make idle conversation while you reboot Windows 98/ME machines.