IT246
Introduction to Networks

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Goal of This Course

- The goals of this course are
  - To teach you basic concepts and principles of computer network management.
  - To learn how to set up, maintain, and troubleshoot computer networks, on the hardware and software levels.
- The goal of *this class* is to let you now how this course will be conducted

Format of the Course

- *This is a lab course*
- I will speak at the beginning of each class…but a large part of the class time you will spend working on different lab exercises
- I will be here to help you with any issues that may arise
- **HINT:** When issues do arise, it is to your great benefit to resolve them sooner, rather than later.

Format of the Course

- You are expected to complete a number of lab exercises, working in teams of two (or more)
- Each team will chose a Windows machine *in this room – the IT Lab.*
- In addition, you may be doing some of your work on your own personal computers, depending.
- Many components will be done *in class*, but some may be doable *outside* of class.

Course Work

- Though you will be working on the labs in groups, you will be graded *individually*
- Each of you must keep a record of what you are doing in an Administrator's Log
- You will need to read a number of chapters in *Networking Essentials*, along with any supplementary readings that are provided to you.

Course Work

- In addition to the aforementioned, there will also be:
  - Individual homework assignments
  - Two exams: ***Mid-term*** and ***Final***
- The homework portion of your final grade will be based up the ***best eight*** out of the total number of homework assignments given.
- The exams' questions will be taken/derived from those located at the end of chapters in the textbook.

Making the Class Interesting

- Since the first universities appeared in Europe over 1,000 years ago, the way subjects are taught has not changed much
- The teacher stands at the front of the class and lectures to the students
- The word "lecture" comes from Latin and means to read
- The first universities came before the printing press

Making the Class Interesting

- There were no textbooks
- Books had to be copied by hand, so they were very expensive and rare
- The teacher read from one of these books, and the students took notes, because most of them would never be able to see the book
- A lot has changed since then, but most teachers in universities still lecture

Making the Class Interesting

- Lecture has its place, but it is not always the most effective way to learn
- The more students interact with the teacher, the more they learn
  - I want you to interact with me
  - I want you to ask questions
  - I want you to make comments
- This will make the class more interesting for you … and for me

Making the Class Interesting

- I will take note of the students who speak up, even if "participation" is not an official part of the grade
- However, this can still help you when it comes time for final grades
- If a student is only a small distance away from a higher grade and has participated a lot, I may choose to boost you to the next higher grade

Lab Exercises

- The core of this course is your work on a series of lab exercises
- You and your teammate(s) will chose a machine in this lab.
- There, you will use different tools in order to analyze and work with networks.
- Depending on your machine, you will be assigned a team name

Lab Exercises

- In the upcoming lab, you start to experiment with some networking-related tools
- Through subsequent labs, you will branch out into exploring more aspects and layers of networking hardware and software
- This will help you to become more comfortable and familiar with the field and its components

Administrator's Log

- One of the most important things you can learn from this course, is the importance of keeping a *written record* of what you have done
- When you change a network you administer – or something significant happens on that network – you should make a note in your admin log
- This is particularly important when you solve a problem because that problem (or a similar one) may arise in the future.
- **Note:** There is *no need* to include class notes in your log, nor should you do so – except as it pertains directly to lab work.

Administrator's Log

- In that case, you need to remember what you did
- Changes to a machine's configuration can cause problems, that may not appear until *months* afterwards
- If you forget what you changed and when, you will have a hard time figuring out what to do next
- For this course, you must keep an **Administrator's log**, where you will keep track of your work on lab exercises.

Administrator's Log

- Each team member must keep his or her own log
- The log must be a text file named **admin_log.txt**, which must be kept in your it246 directory, inside your home directory on the CS department network.
- When you are signed into Linux, the file path will probably look something like this:
  `~/it246/admin_log.txt`

Administrator's Log

- I will check these logs periodically and grade them at the end of the course
- You should make an entry in the log for each day you work on anything related to lab exercises
- Read Specifications for the Administrator's Log for details
- There is a link to this page on the class web page.
- ***Remember, this is 30 percent of your final grade, so do not neglect this or procrastinate!***

Homework Assignments

- You will work on the lab exercises in teams of two or more
- But, each of you must complete homework assignments *by yourself*
- You will find the list of homework assignments on the course web page
- The first assignment is available, and it primarily involves preliminary setup for the class.

Chapter Summaries

- *Networking Essentials* describes many of the fundamental aspects of computer networking
- It will help clarify many of the technical steps we go through during the course and help to prepare you for the lab exercises
- Do not neglect this reading!
- You will find the reading schedule on the course web page
- We may have some discussion on these chapters, if we have time

Chapter Summaries

- To make sure you have read this book, you must submit chapter summaries
- Each week I'll assign a chapter to read, along with a suggested completion date for the summary.
- You will find the specifications for the chapter summaries on the course webpage
- You need to read the first chapter by the end of this weekend

Working in Pairs

- For your work on the projects you will be working in teams of two
- In today's class, you will choose
  - Your partner(s) for this work
  - The machine in this lab you will use
- IT20 and IT30 are special machines:
  - You should not touch them
  - However, you **will** occasionally ssh into them

Working in Pairs

- You should choose your machine from the following eight: ***it21*** through ***it28***
- On your physical machine you and your partner will work with various network-related tools, such as those introduced in **Lab #01**
- You may also be able to do some of the work on your personal computers.
- Though you will be working together on the projects, you will be graded *individually*

Working on the Command Line and with Configuration Files

- Depending on previous classes and experience, you may already know that the command line is a user hostile environment
- Some of the lab work you do in this course will be done at the command line
- Much administration work done on Linux machines is done at the command line – and/or in text files

Working on the Command Line and with Configuration Files

- You must be very careful about what you type at the command line
- If you mistype or misspell a single character, your command will not work the way it is supposed to
- In Linux and Unix, in particular, almost all configuration information is stored in *text files*

Working on the Command Line and with Configuration Files

- As such, you must be *extremely careful* when changing these files
- A single typo could cause some Linux service on your machine to fail
- Since there are two of you working on the projects, one person should make the entries – and the other should read the file for accuracy
- The two of you should occasionally *switch roles* so that you can experience both sides

Attendance

- At each class I'll take attendance
- I do this to:
  - Learn your names
  - Have a record
- Your attendance will not affect your grade directly
- However, if you find yourself struggling with the material and have not been coming to class, I'll be less sympathetic

Do You Have Enough Time to Do the Work for This Course?

- Many of you work, either part time or full time
- This cuts down on the time you have for class work
- You *should not* be taking this course if you do not have enough time to do all the work
- In this course, you will be engaging in a number of tasks, some of which may require more work and troubleshooting than others.

Do You Have Enough Time to Do the Work for This Course?

- Some new software may take time to learn.
- If you sign up for more work than you can achieve in the time you have, you are cheating yourself
- Many people in this country rush to get a degree, but haven't done enough work to digest the material
- Those people invariably set themselves up for failure

Course Documents

- Everything I create for this class is made available online
- All of it can be accessed from the Class Page:

http://www.cs.umb.edu/~ckelly/teaching/it246

- You should bookmark this page because the page will function as our syllabus, instead of a paper syllabus
- It is a lot of material, but you should at least get to know the layout

Course Documents

- The "Course Policies" section will give you a good idea of my rules and expectations.
- That section also contains some supplementary information you should check out.
- The schedule will feature links to class notes, along with reading assignments – *including your chapter summaries*

Course Documents

- The "Labs" section will feature descriptions of each lab as it comes up
- Similarly, links to homework assignments may be found in the "Homework" section
- Many terms we encounter in this class can be found on the Definitions page:
  `http://www.cs.umb.edu/~ckelly/teaching/it341/local_assets/files/common/data/linux/linux_sysadmin_definitions.html`

Taking Notes

- Although I make my notes available in PDF form, I want to encourage you to take notes in class
- Studies have shown that students learn more when they take notes, even if they never look at their notes again
- Other studies have shown that the more activities and senses are engaged when you learn something, the greater your likelihood of remembering

Taking Notes

- Writing notes engages another part of your brain, which increases recollection
- All of you should take notes
- Probably the best practice would be for you to print the notes *before* coming to class.
- That way, you can write your own notes in the margins, along with any questions you may have.
- ***Note:*** *Sometimes PDF content may differ from slides as presented in class!*

Textbook

- There is one textbook for this course:
  - *Networking Essentials* (4th Edition) by Jeffrey S. Beasley and Piyasat Nilkaew, ISBN: 0789758199
- You may also be able to find electronic versions or rent the text for a semester.
- There will also be occasional external readings, available in PDF form or as web links

Cheating

- All students are expected to follow the University's Code of Student Conduct
- You will find this at
  http://www.umb.edu/life_on_campus/policies/community/code
- The Computer Science Department has the following policy on cheating
- You will be given a score of zero if you cheat on any assignment, quiz or test

Cheating

- If you cheat a second time you will receive an F in the course
- If you cheat a third time you can be expelled from the University
- I put a great deal of work into my courses, and I ask you to respect that work by not cheating.
- ***Important:*** *It is the student's responsibility to know what constitutes academic dishonesty – at this university and in this class. Lack of knowledge that something constitutes an academic honesty violation will not be accepted as a valid excuse.*

Courtesy and Decorum

- The following two items are matters of basic consideration:

  1) When I am just coming into class and setting up, please hold your questions until I am finished and we begin. This way, I can give you my full attention and do a better job helping you.

  2) When I or someone else is addressing the class, please put your conversations on hold. It is a matter of common courtesy, and the talking can be distracting for some of us.

Grading Policy

- All homework and exams are subject to the honor code
- Plagiarism is not allowed in any form
- Grades will be computed as follows
  - **Administrator's Log** 30%
  - **Homework** 25%
  - **Reading Summaries** 10%
  - **Midterm Exam** 15%
  - **Final Exam** 20%

Accommodations for Disabilities

- The school is legally obligated to try to accommodate students with disabilities
- If you have a disability you can get help from Ross Center for Disability Services
  - **Location:** Upper Level of the Campus Center, Room 211
  - **Phone:** 617-287-7430
  - **Web Site:** https://www.umb.edu/academics/vpass/disability

Accommodations for Disabilities

- After you have discussed the matter with them, see me
  - They will usually draft a letter explaining any accommodations you should receive.
  - You should get this letter to me **ASAP!**
  - If you require extra time for an exam, then it is **your** responsibility to arrange for this at least a week in advance!
- Also, you may wish to check out the page containing my own notes:

  `http://www.cs.umb.edu/~ckelly/teaching/common/data/disability.html`

Email

- All communication outside of class will be conducted through email
- For regular contact, we are going to use your **@cs.umb.edu** email
- The first assignment will involve setting up email
- I will use that account when sending you a *personal* email concerning the class or any *class-wide* announcements outside of class. It is your responsibility to check both
- If I have sent you an email about something concerning the class, I'll assume that you have been given adequate notice

Contacting Me

- If you have a question, email me at cg.kelly2013@gmail.com
- Please be sure to:
    1) Use a descriptive, meaningful subject line
    2) Begin the subject with **IT246:**
- *Failing to include #2 is effectively the same as **not having sent** the e-mail at all!*
- Don't hesitate to contact me if you are stuck and/or need help with something.
- Others might be having the same issue!

Office Hours

- My office is S-3-130
- My official office hours for Spring 2017 are 3-4 pm (Mondays and Wednesdays) and 2-2:30pm (Tuesdays and Thursdays)
- You **do not** have to make a special appointment to see me during office hours – just drop in!
- If you need my help and cannot make it to office hours, contact me and we'll work something out