Class :   Online recordings + Zoom on Wednesday at 5:45pm each week
                            Zoom Recordings will be available the following morning.
Instructor :   Dr. Anthony Chung
Office :   Online via Zoom (Link to join in d2l)
Office Hours : M T W 3:00-3:45 PM and F 10:15-11:00 AM
Email :   achung@depaul.edu

Phone :   (312)-362-8724

Email :   achung@depaul.edu

IMPORTANT:
While email is a great means of communication, increasingly we are bombarded with a volume of emails that is getting difficult to manage. In order to manage emails to better serve both the students and the professor. **Pay attention to ALL of the following:**

- **You MUST include NET384 or NET484 (no space, case insensitive)** in the subject line of the email as they will be directed to the appropriate mailbox where I check for emails related to this course.

- I meet with students through Zoom, answer student emails, and respond to discussion forums etc **during my office hours.** In this way, you know exactly when you expect to hear from me by these means of communications. If you contact me close to the end of my office hours I may have to respond during the next office hours period. If you do not hear from me after two office hours periods, check to make sure that you included NET577 in the subject, email me again, or call to leave a message.

- I will be available through Zoom during the office hours. If I cannot make some office hours due to special circumstances, announcements will be made on d2l.

  Depending on the complexity of your questions, **sometime we can get more out of meeting by Zoom interactively rather then by emails.**

- Given my response time frame and office hours, you should **work on your assignments early so as to give you ample time to ask questions.**

- Please observe the following email etiquette so that we will be able to better focus our energy on learning and getting the most out of the class. It is also part of being professional. Some recruiters are abhorred at some of the emails received from recent recruits. It is important to form the good habit of writing appropriate emails in a professional setting.

  o Before sending questions via email or posting questions on the d2l discussion forum, make sure that your question is not already answered on the course

syllabus, the d2l website (announcements, discussion forums, assignment information etc), or in the lecture (view the class recording if you missed a class, or if you are an OL student).

o   Questions that are of general interest to the entire class should be posted on the course discussion forum.

o   In addition to including NET384 or NET484 in the subject line, **be specific about the subject of the email in the mail subject heading and use proper spelling, grammar, and punctuation. DO NOT respond to an old email with a different subject when asking a new question.**

o   **Include <u>your full name</u> in the message body.**

o   While you have my permission to address me as Anthony or Tony, you should not assume that you could address other professors on a first name basis unless you have their explicit permissions.

- **For online-sync students:** We will meet the full period by Zoom during the first lecture. After that there will be pre-recorded materials before each lecture that students should go through before the regular class meetings, and we will be meeting for 1 ½ hours, starting at 5:45pm, for the remaining lectures of the quarter.

- **Zoom recordings of lectures –** will be available no later than noon the following day.

Course Home Page :   https://d2l.depaul.edu (Open on or before December 28, 2020)

Prerequisites: A programming course, and
IT 263 for NET 384; or NET/TDC 413 for NET 484.
IMPORTANT NOTE: it is not possible for the registration system to verify the programming course prereq. If you have never taken any programming or scripting courses please contact me ASAP.

Optional Text: (Available through DePaul's ebooks library – O'Reilly for Higher Education (Formerly Safari) - https://go.oreilly.com/depaul/

These are NOT required as most information can be easily found via the web. Some course materials are from these books.

- Ryan Tischer and Jason Gooley, **Programming and Automating Cisco Networks**, Cisco Press, (September 2016), **ISBN:** 9780134436777

- Jason Edelman, Scott Lowe, and Matt Oswalt, **Network Programmability and Automation: Skills for the Next-Generation Network Engineers**, O'Reilly, (February 2018), **ISBN:** 9781491931257

Course Description and Objective:

This is a hands-on course on using scripts to develop practical applications for Network Management. Students will first learn the fundamentals of Linux operating system and script language(s) for task automation, and use scripts to develop dynamic web sites. After that, the course will cover Simple Network Management Protocol (SNMP), and use Application Programming Interface (API) to automate networks tasks of Fault Management, Configuration Management, Accounting Management, Performance Management, and Security Management (FCAPS). The final project of the course is to develop a dynamic web site with the above five functional areas to manage Linux servers, Ethernet switches and IP routers.

Learning Outcomes:

After this course you should be able to:
- Identify network management tasks that are suitable for automation.
- Apply scripting to perform the function of auto discovery of active network elements.
- Apply scripting to collect data from syslog and identify security risks and account activities.
- Use different approaches (CLI, telnet, SNMP, etc.) to perform network management functions.
- Apply SNMP API to read/write configuration data (and traps) and conduct network management functions on Ethernet switches and IP routers.
- Develop a web site to perform network management functions.
- Use 3rd party tools (e.g., the MRTG) to conduct performance analysis and generate time series graphs.

Grading

HW01	**5%**
HW02-08 (10% each)	**70%**
Project	**15%**
Class Participation	**20%**

Note: These add up to 110% but the final total grade will be capped at 100%.

A	93-100%
A-	90-92%
B+	85-89%
B	80-84%
B-	75-79%
C+	70-74%
C	65-69%
C-	60-64%
D	50-59%
F	< 50%

Notes:

- **Changes to Syllabus:** This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

- **Penalty for late assignments:**
    - **Participation Quizzes: No late submissions**
    - **HW:**
        - **After the due time: -20%**
        - **After one day: -50%**
        - **After two days: -100%**
    - **Project: No late submission.**
    All due dates and time are given in the submission boxes. Please check the schedule and be sure of the due dates. You must use the homework submission system (drop box) through d2l. **If there are problems with the submission system, you should email me a copy of the assignment BEFORE the due time.**

- **About Class Participation**
    - For OL-Sync students: Attending Zoom lecture is required.
      For OL-Async students: Viewing of recorded lectures is required.
    - For every lecture module there will be a **participation quiz**. The questions will be on the "in class" exercises and certain points that we emphasized in the

recordings. Students are allowed to take the quiz **up to 10 times** before the quiz is due and the **highest** score will be used towards the final grade. To do well in the quiz you are recommended to

- Take notes while attending/viewing the lectures, especially on points not in the slides but were filled in within the lecture videos, and points where I emphasized that students should write down.
- When an "in class" exercise is given, students should work through the exercise before checking solutions.
- Make sure that you get the answers of the in class exercises. Some quiz questions will be on the in class exercises.

Here's a link from Columbia about the importance of note taking (and resources) https://www.cc-seas.columbia.edu/node/31875

Although you can choose to take notes using you laptop or by hand, here's an article on recent research showing the advantage of taking notes by hand. http://www.npr.org/2016/04/17/474525392/attention-students-put-your-laptops-away

- Any grading questions **must be directed to me within 1 week of the posting of the grade. No grade adjustments will be made more than a week after the grade is posted. You should email me with the following information:**
    - **The assignment**
    - **The problem in question**
    - **Why you think you should get a grade rather than the one given.**

- Please check DePaul's academic calendar https://academics.depaul.edu/calendar/Pages/default.aspx for important dates such as last day to add/drop/withdraw from classes.

- **Please make sure that you read and understand DePaul's academic integrity policy:** https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Documents/Academic%20Integrity%20Policy_Spring%202016.pdf

- **For additional resources concerning academic quality, please check here:** http://academicintegrity.depaul.edu/Resources/index.html
    - **All assignments are individual assignments.** **You should not work so close with another student as to produce solutions that are identical or almost identical.**

o **Under no circumstances should you copy or use simple paraphrasing/modification of someone else's work, <u>including course materials and lecture slides</u>, without giving proper credits and references.**

o **Please be aware that any work submitted in this course may be verified using *Turn-It-In* and/or other technologies in order to ensure that the work is the student's own creation and not in violation of the University's Academic Integrity Policy. Submission of work in this course constitutes a pledge that the work is original and consent to have the work submitted to verify that fact.**

o Publicly sharing or posting online any prior or current materials from this course is a violation of DePaul's academic integrity:

All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

- **Student Attitude:** A professional and academic attitude is expected throughout this course. Measurable examples of non-academic or unprofessional attitude include but are not limited to: talking to others when the instructor is speaking, mocking another's opinion, cell phones ringing, emailing, texting or using the internet whether on a phone or computer. If any issues arise a student may be asked to leave the classroom. The professor will work with the Dean of Students Office to navigate such student issues.

- **Civil Discourse:** DePaul University is a community that thrives on open discourse that challenges students, both intellectually and personally, to be Socially Responsible Leaders. It is the expectation that all dialogue in this course is civil and respectful of the dignity of each student. Any instances of disrespect or hostility can jeopardize a student's ability to be successful in the course. The professor will partner with the Dean of Students Office to assist in managing such issues.

Schedule (Tentative):

Note: All assignments are due at 11:59pm.
For online-sync meetings – Week 1 – 5:45 to 9:00pm.
Remaining lectures – 5:45 to 7:15pm.

Week: Date	Topic	Assignments
1: 1-6	Course Introduction • Scripting for Network Automation • Linux System Administration • Linux Command Primer • HTML Primer • Editing	
2: 1-13	Introduction to Linux Shell Programming • Scripting vs. Programming • Shell Data Structures • Shell Control Structures • Network Probing and Auto Discovery	**Non-graded assignments due (Academic integrity pledge, and posting of self-introduction on discussion forum)** **HW01 Due** **Week 1 participation due**
3: 1-20	Introduction to Python (Basics) • Syslog analysis • Intrusion detection	**HW02 Due** **Week 2 participation due**
4: 1-27	Python (II) • Using "Tables" for problem solving • Time API • Accounting Management	**HW03 Due** **Week 3 participation due**
5: 2-3	Python API and Dynamic Web Development • HTML and Web Development • Web Administration • Performance measurement	**HW04 Due** **Week 4 participation due**
6: 2-10	Network Management and SNMP • telnet scripting (Shell) • Command encapsulation in Python	**HW05 Due** **Week 5 participation due**
7: 2-17	Network Configuration Management • Python SNMP API	**HW06 due** **Week 6 participation due**
8: 2-24	Network Performance Management • Traffic measurement • MRTG	**HW07 due** **Week 7 participation due**

9: 3-3	Network Fault Management • SNMP Trap • Final Project Requirements • Regular Expression	**HW08 due** **Week 8 participation due**
10: 3-10	Course Wrap Up • Database and MySQL • Final Project Q&A	**Week 9 participation due**
11: 3-17	**No Class**	**Final Project due** **Week 10 participation due**

Online Instructor Evaluation

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over two weeks. Students do not receive reminders once they complete the evaluation.

Email

Email is the primary means of communication between faculty and students enrolled in this course outside of class time. Students should be sure their email listed under "demographic information" at http://campusconnect.depaul.edu is correct.

Academic Integrity Policy

This course will be subject to the faculty council rules on the Academic Integrity Policy

Plagiarism

The university and school policy on plagiarism can be summarized as follows: Students in this course, as well as all other courses in which independent research or writing play a vital part in the course requirements, should be aware of the strong sanctions that can be imposed against someone guilty of plagiarism. If proven, a charge of plagiarism could result in an automatic F in the course and possible expulsion. The strongest of sanctions will be imposed on anyone who submits as his/her own work a report, examination paper, computer file, lab report, or other assignment which has been prepared by someone else. If you have any questions or doubts about what plagiarism entails or how to properly acknowledge source materials be sure to consult the instructor.

Incomplete

An incomplete grade is given only for an exceptional reason such as a death in the family, a serious illness, etc. Any such reason must be documented. Any incomplete request must be made at least two weeks before the final, and approved by the Dean of the College of Computing and Digital Media. Any consequences resulting from a poor grade for the course will not be considered as valid reasons for such a request.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.
To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at:
Student Center, LPC, Suite #370
Phone number: (773)325.1677
Fax: (773)325.3720
TTY: (773)325.7296