

A decorative graphic on the left side of the slide, consisting of several overlapping blue rectangles of varying shades and sizes, creating a stepped effect.

Computer Network Administration

Computer Center, Department of Computer Science
(CSCC)

Syllabus

❑ Website:

- <https://nasa.cs.nctu.edu.tw/na/2020/>

❑ Instructors:

- 曾亮齊 lctseng@cs.nctu.edu.tw
- 王則涵 wangth@cs.nctu.edu.tw
- 林瑞男 jnlin@cs.nctu.edu.tw
- 許立文 lwhsu@cs.nctu.edu.tw

❑ Time:

- Thu. IJK (PM 6:30 ~ 9:20)

❑ Place:

- EC114

❑ Lecture/Exam in Chinese

- Not recommend for those do not speak Chinese

Syllabus

❑ Discussion Forum

- <https://groups.google.com/forum/#!forum/nctunasa>
- We suggest you to join - TAs might give homework hints here
- Request join and tell us your student ID
- Ask **course-related/technical questions** here
- Everyone in the group can answer/vote
- **But DON'T post direct answer/configuration here!**
 - Otherwise you will be banned.

Google 搜尋訊息

網上論壇

我的群組
首頁
已加星號

NCTU NASA 課程討論區 公開分享
第 0 個主題，共 0 個
申請加入群組

這是交大 NASA 課程討論群組

電子郵件傳送偏好設定：有新訊息時通知我 (每天最多 1 封) ▾

當我針對某個主題留言時，自動為我訂閱該主題的電子郵件更新
這個群組的其他成員可查看你的電子郵件地址，甚至也可以查看你的 Google 個人資料。加入這個群組後，你就能存取群組的共用資源。[瞭解詳情](#)。

您可以在下面的文字方塊中填入說明，將詳細資訊傳送給管理員。

我是108下學期NA的修課生曾亮齊，學號0116057

申請加入這個群組 取消

Syllabus

☐ TAs:

- We might get about 4 TAs
- Office hour: 3GH every week @ CSCC
- Email to TAs: ta@nasa.cs.nctu.edu.tw
 - Also received by all lecturers

☐ Email Policy (**IMPORTANT**)

- Don't send course-related/technical questions to TAs
 - TAs won't answer you
- Only ask TAs for personal/non-technical questions
 - Course registration/dropping
 - Grading
 - Office hour appointment
 - Demo appointment

Syllabus - Registration & Dropping Policy

❑ Registration (non-NCTU students)

- Send registration form to CSCC front desk if cannot find lecturers

❑ Dropping (after midterm)

- Contact CS Department Office if cannot find lecturers near the deadline
- Email to ta@nasa.cs.nctu.edu.tw

Syllabus – Course Overview

□ Main topics

- Networking
 - TCP/IP Networking Environment
 - NAT, DHCP, Firewall, VPN, Load Balancer, ...
- DNS – BIND (Berkeley Internet Name Domain)
- Mail System - Postfix
 - SPF (Sender Policy Framework)
 - DKIM (Domain Keys Identified Mail)
 - DMARC (Domain-based Message Authentication, Reporting & Conformance)
- Network Management/Authentication/Authorization
 - LDAP, SNMP
 - Configuration Management (Ansible, Puppet)

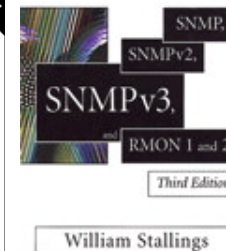
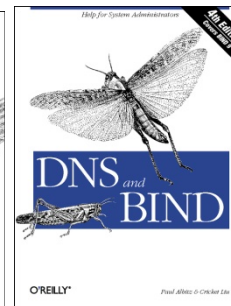
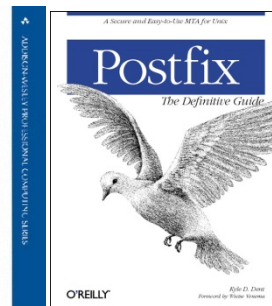
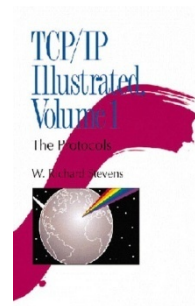
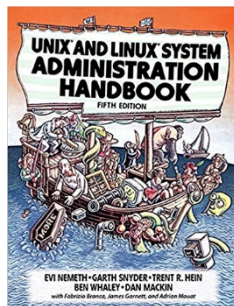
Syllabus – Course Textbook and Reference

❑ Textbook

- Unix and Linux System Administration Handbook (5th Edition)
- Course slides

❑ Reference book

- TCP/IP Illustrated Volume 1
- Postfix
- DNS and BIND
- SNMP, SNMPv2, SNMPv3 and RMON 1, 2



Syllabus – Text book outline

Part I. Basic Administration

- ❑ Chap 1 – Where to start.
- ❑ Chap 2 – Booting and Shutting Down
- ❑ Chap 3 – The Filesystem
- ❑ Chap 4 – Access control and rootly powers
- ❑ Chap 5 – Controlling processes
- ❑ Chap 6 – User Management
- ❑ Chap 7 – Storage
- ❑ Chap 8 – Periodic processes
- ❑ Chap 9 – Backups
- ❑ Chap 10 – Syslog and log files
- ❑ Chap 11 – Software installation and management
- ❑ Chap 12 – The Kernel
- ❑ Chap 13 – Scripting and the Shell
- ❑ Chap 14 – Configuration Management

Part II. Networking

- ❑ Chap 15 – Physical Networking
- ❑ Chap 16 – TCP/IP
- ❑ Chap 17 – Routing
- ❑ Chap 18 – DNS: Domain Name System
- ❑ Chap 19 – NFS: Network File System
- ❑ Chap 20 – HTTP: Hypertext Transfer Protocol
- ❑ Chap 21 – SMTP: Simple Mail Transfer Protocol
- ❑ Chap 22 – Directory Services
- ❑ Chap 23 – Electronic Mail
- ❑ Chap 24 – Web Applications
- ❑ Chap 25 – Network Management and Debugging

Syllabus – Text book outline (Cont.)

Part III. Operations

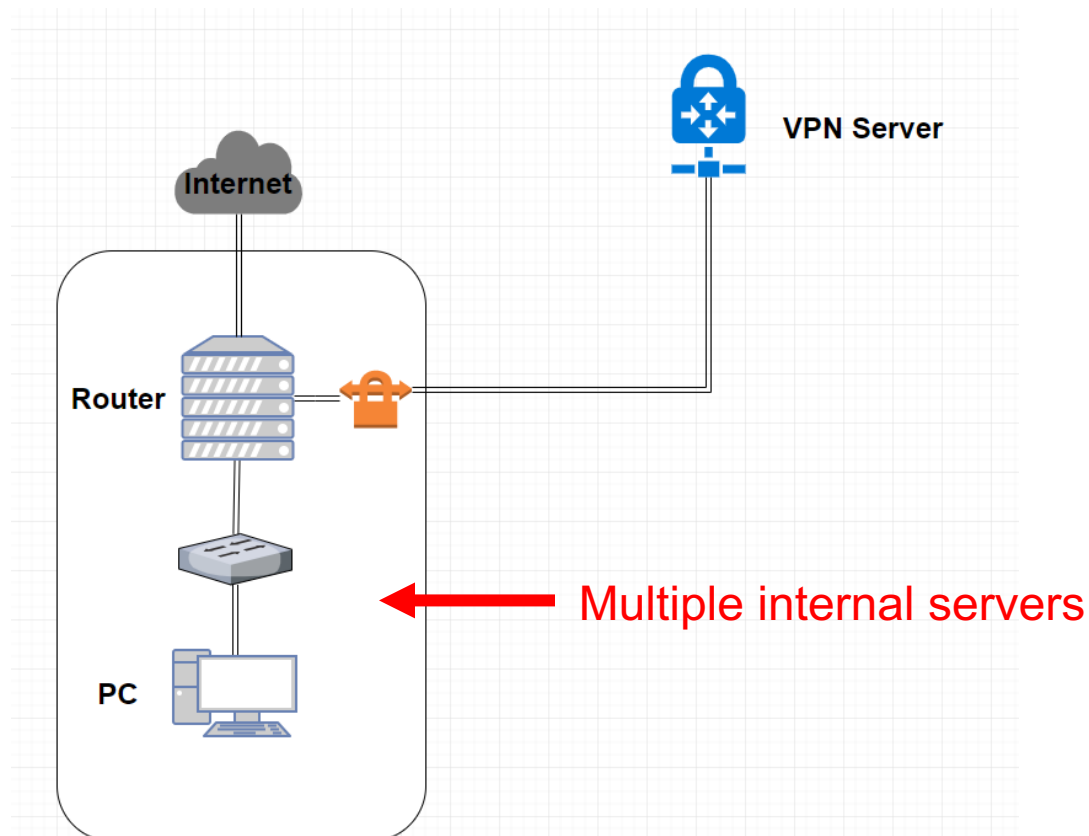
- ❑ Chap 26 – Continuous Integration and Delivery
- ❑ Chap 27 – Security
- ❑ Chap 28 – Cloud Computing
- ❑ Chap 29 – Containers and Virtualization
- ❑ Chap 30 – Monitoring
- ❑ Chap 31 – Performance Analysis
- ❑ Chap 32 – Policy and Politics

Syllabus – Grade Policy

- ❑ Mid
 - 15 ~ 20%
- ❑ Final
 - 15 ~ 20%
- ❑ Homework
 - 60 ~ 70%
 - No Delay Work
 - 4 homework

Syllabus – Homework Outline

- ❑ Building an intranet with DHCP, NAT, VPN, DNS, LDAP, Mail, WWW... services
- ❑ Understanding and managing all these services



Syllabus – Homework Outline

- ❑ Every homework is based on previous one
- ❑ Homework 1
 - Setup Intranet
 - DHCP, NAT, VPN
- ❑ Homework 2
 - + DNS Service
- ❑ Homework 3
 - + Mail Service
- ❑ Homework 4
 - Authorization, Authentication, Monitoring, Management
 - + LDAP, SNMP

Syllabus – Prerequisite

❑ Background Knowledges

- Strongly recommend that you should take these first
 - “Computer System Administration” (計算機系統管理)
 - “Introduction to Networking” (計算機網路概論)
- Unix-like system
 - You can use any OS for homework
 - FreeBSD is used for lecturing

❑ Environment

- A dedicate(powerful?) PC that can run **multiple** VMs
 - VirtualBox, VMWare
 - 2~3 Unix-like system running at the same time

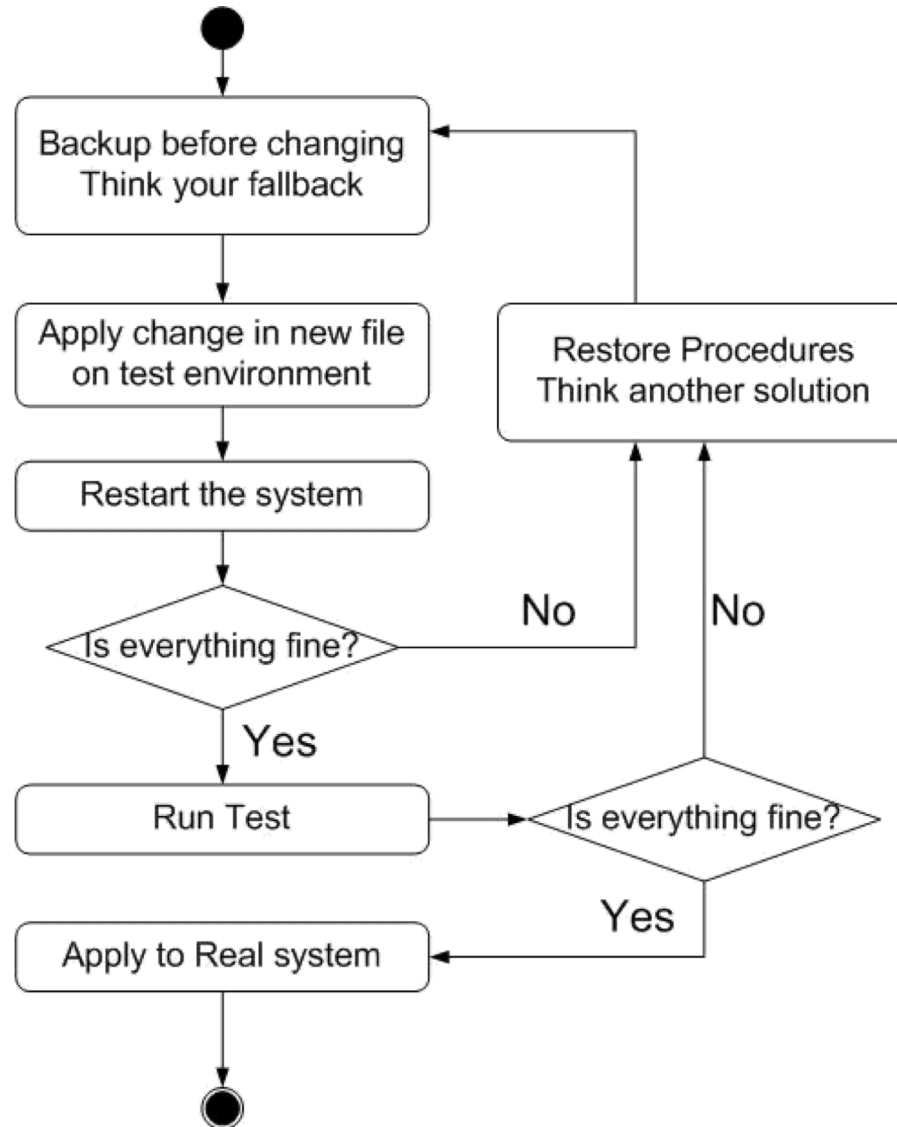
Attitude

- Attend every class
- Do every exercise
 - As early as possible
 - **On your own**
- Read book and practice at least 6 hours every week
 - Use Unix-like environment
 - Recommend: more than 1.5 hours/day averagely
- Collect information on the Internet
 - The newer, the better.
- Not recommended for those have more than 3 major courses in this semester**
 - This is a heavy course - loading roughly equal to a 9-credit course



When You Perform Any Changes...

□ Flow of Change



SA-NA Junction

- ❑ FreeBSD
 - 12.0-RELEASE
- ❑ Self-study for the SA course
 - <https://nasa.cs.nctu.edu.tw/sa/2019/>