

Subject Overview

COMP90007
Internet Technologies

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THE UNIVERSITY OF
MELBOURNE

A Little Bit of Myself

- Research Fellow – Networked Society Institute
- Research Interests:
 - *Smart wearables and Internet of Things*: Developing wirelessly charged sensors to measure critical health metrics of workers for health and safety monitoring.
 - *Internet services energy modelling*: Developing vendor agnostic non-proprietary energy models and assessment methodologies for telecommunication service providers to determine the energy consumption of the services they provide.
 - *Network analytics*: Developing big data network analytics and service modelling techniques to provide cloudification of personalized content and service access to next generation mobile users.
 - *Energy-efficiency of optical access networks*: Developing new energy-efficient technologies for point-to-point and point-to-multipoint optical access networks.
- Publications:
 - https://www.researchgate.net/profile/Chien_Chan

How To Contact Me?

- Preferably at the end of lectures
- Email: chienac@unimelb.edu.au
(Start the subject field of your email by the word **COMP90007**)
- Try to get back to you at most within 2 business days (QoS)
- Office: Networked Society Institute,
Level 4, Dept. EEE (Building 193)
- Consultation: By appointment

About Yourself

- Take two minutes to know who is sitting next to you
- I will ask few people to introduce their peers in the following format

This is [name]. S/he is from [country] and s/he is doing a [course]

Subject Structure

- 12 Weeks of Lectures
 - 3 hours of teaching + 1 hour of workshop
 - Visit LMS pages for time and venue of lectures.

Assessment:

- 35% Project/Assignment
 - 2 assignments (total 10%, each individual work) → (50% Hurdle)
 - 2 projects (total 25%, each individual work) → (50% Hurdle)
- 5% Mid-semester test
- 60% Final examination (50% Hurdle)
- Hurdle is important, if you fail any hurdle then your mark will be minimum of 49 and your total marks.

Project Work (25% - Individual work)

- Two Parts:
 1. Network Analysis (10 %): A project assignment requiring a report due in *Week 8*
 2. Report Project (15 %): A 1,000 word report on a chosen topic completed individually. Due sometime in *Week 11*. Details will appear later

- Detailed specification will appear after Assignment 1

Plagiarism

- This is a very important issue and the teaching team will be extremely strict on this in marking your Assignments and Project Reports.
- You **CANNOT** copy your reports submitted in previous semester (self-plagiarism), you **CANNOT** copy from all other reports submitted in previous semesters (plagiarism) and you **CANNOT** copy from Internet websites, published papers, technical reports, Internet forums, textbooks, etc. (plagiarism).
- You must use your own wording in your report and provide proper referencing. Students who have high similarity index in their reports will be penalised heavily.

Mid-semester Test

[Dates to be Confirmed]

- **Tentative date:** Week 8 or 9

Assignments

- Assignment 1 due Week 4
- Assignment 2 due Week 7

Subject Resources

- Prescribed Textbook:
 - Computer Networks (5th Edition) by Andrew S. Tanenbaum
- Subject LMS: <http://www.lms.unimelb.edu.au/>
- The textbook website:
<http://www.prenhall.com/tanenbaum>
- Your fellow students (for discussion, not sharing assignments)
- The University Libraries

Other Resources:

- Data and Computer Communications by Richard Stallings (ERC 004.6 Stal)
- High-Performance Communication Networks by Walrand & Varaiya (ERC 621.3821 Walr)
- Computer Networks by Andrew Tanenbaum (ERC 004.6 Tane)

Computational Resources:

- Workshop and Project: networking tools for analysis, measurement and experimentation
 - Wireshark
 - Iperf
 - telnet
 - Traceroute
 - wget
- The above software has been installed on computers in all workshop venues
- Publicly Available

Subject Outline

- Develop an understanding of **network technologies** and **applications**, and be able to demonstrate proficiency in internetworking and its management
- The subject will introduce the basics of computer networks to students through a study of **layered models of computer networks and applications**.
 - The first half of the subject deals with data communication protocols in the lower layers of OSI and TCP/IP reference models.
 - The second half of the subject deals with the upper layers of the TCP/IP reference model through a study of several Internet applications.

Subject Outline

- Topics covered include:
 - Introduction to Internet, OSI reference model layers, protocols and services, data transmission basics, interface standards, network topologies
 - data link protocols
 - message routing, LANs, WANs, TCP/IP suite
 - detailed study of common network applications (e.g., email, Web)
 - network management

Course Plan (Dates to be Confirmed)

Topics by week:

1 Introduction to Networking (Ch 1)

2 Physical Layer (Ch 2)

3 Data link Layer (Ch 3)

4 Medium Access Control Sublayer (Ch 4) **Assignment 1 due (5%)**

5 Network Layer (Ch 5)

6 Transport Layer (Ch 6)

7 Applications (current) (Ch 7) **Assignment 2 due (5%)**

**Mid-sem test (5%)
date TBC** **8** Applications (emerging) (Ch 7) **Network Analysis due (10%)**

9 Network Management

10 Security (Ch 8)

11 Guest lectures **Report Project due (15%)**

12 Review

Intended Learning Outcomes (ILO)

- Having completed this unit the student is expected to:
 1. to develop an understanding of network technologies and applications.
 2. to be able to use correct terminology within the domain of computer networks.
 3. to be able to conceptualise and explain the functionality of the different layers within a network architecture.
 4. to be able to explain the architecture and operation of the Internet.

Generic Skills

- On completing this subject, students should have the following skills:
 - Be able to undertake problem identification, formulation and solution
 - Have a capacity for independent critical thought, rational inquiry and self-directed learning
 - Have a profound respect for truth and intellectual integrity, and for the ethics of scholarship.