Introduction to ITS 413 - Internet Technologies and Applications

Dr Steve Gordon

ICT, SIIT

Welcome

- To an advanced course on technologies and applications that are used in the Internet

- A 3rd/4th year course for ICT stream

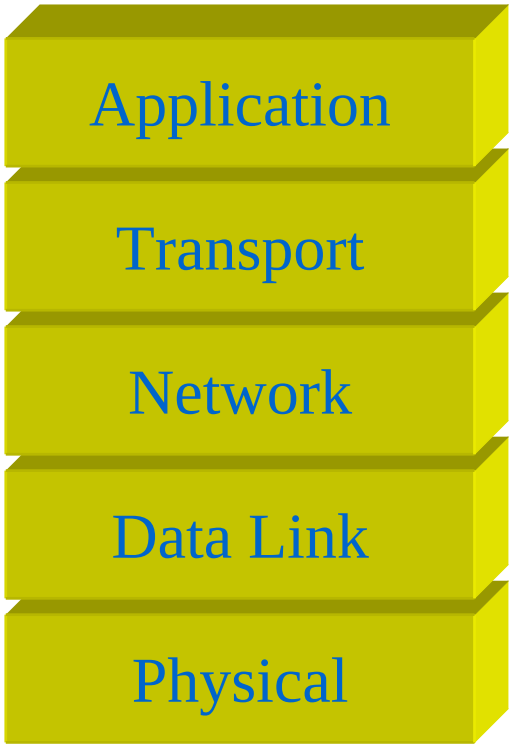
Who Am I?

- Steve Gordon
  - Assistant Professor in ICT
- Contact details:
  - Email: steve@siit.tu.ac.th
  - Office: 2304-7, Bangkadi (IT&MT Building)
  - Phone: ext 2014, Mobile: 0817227288
  - Consultation: anytime
  - Website: http://ict.siit.tu.ac.th/~steven/

What will you learn in ITS 413?

- Network technologies used in the Internet
  - Current and next-generation wireless networks
  - Details of transport protocols
- How Internet applications work
  - Voice and video over IP
  - How search engines work
  - Instant messaging
  - Peer-to-peer file sharing applications
- Aspects of Internet security
  - Internet security protocols
  - Hiding your activities

Topics



Search, Privacy, P2P, IM, IPTV, VoIP

TCP

Mobile Networking, Multicast, QoS

Wireless LANs

Why is ITS 413 Useful?

- It will help you get a job!
  - Designing and writing applications that use the Internet
  - Setting up and managing computer networks
  - Designing and using network software and hardware

- You will have deeper understanding of:
  - Details of network protocols' operations
  - Protocol and algorithm design principles
  - Factors affecting performance and security of networks
  - Directions and challenges for future Internet technologies

Prerequisites

- I assume you have passed:
  - ITS 323 Introduction to Data Communications
  - You may not have completed the co-requisites:
    - ITS 327 Computer Network Architectures and Protocols; or
    - ITS 393 Networking and Collaborative Computing
- And you know:
  - What are computer networks and distributed systems?
  - What are communication protocols?
  - What is the Internet and what are the basic principles of operation, e.g. routing?
  - What are the principles and details of layered communications, e.g. OSI 7 layer stack?
  - What devices are used in networks, e.g. computers, switches, routers, cables?
  - How do basic protocols and algorithms work, e.g. MAC, routing, physical transmission?

Course Structure

- Lectures
  - 3 hours per week
- Self study
  - At least 6 hours per week
  - Browsing lecture notes BEFORE and AFTER class, reading the textbook and other materials, studying for quizzes and exams, preparing assignments, consultations, group discussions, …
- Assessment

Assessment

- Quizzes
  - 10 minute quizzes at the beginning of selected lectures
  - Cover the topics since the last quiz
  - Test your understanding of lectures, reading materials and homework problems
  - Closed book
  - 7 quizzes; 5 best marks will count
  - 20% total (4% each)
- Assignment
  - Set of problems for you to complete over a number of weeks
  - Test your in-depth understanding of concepts and protocols
  - Open book
  - 25%

Assessment

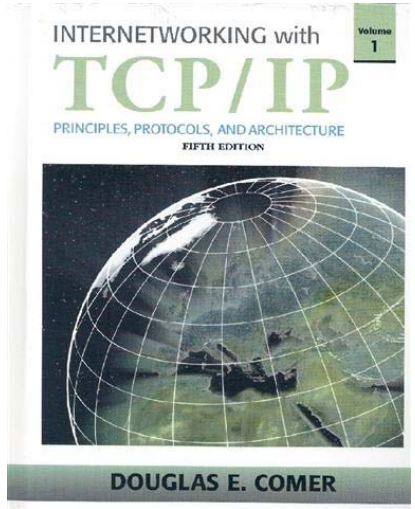
- Mid-term Exam
  - Closed book
  - 25%
- Final Exam
  - Closed book
  - 30%
- For advice:
  - Closed book assessment is not a memory test (e.g. I won't test your knowledge of every header field in every protocol) – it's a test of understanding
  - We will discuss types of questions and topics before exam

Academic Misconduct

- What is it?
  - Plagiarism, cheating, copying, “lending”, …
- Examples
  - Copying assignment answers from friend (verbal or written)
  - Giving your assignment (or some answers) to a friend
  - Looking at neighbours answers during quiz/exam
  - Copying sentences/paragraphs/code from textbooks/Internet without acknowledgement
- Results
  - If detected, questions or entire assessment item may get 0 marks
- Discussion with friends is encouraged; telling your friends answers is not!

Learning Materials

- Lectures
  - Attend, listen and ask questions!
  - Will include examples and demonstrations
- Lecture notes
  - PDF of Powerpoint slides
  - Available on website and from document services
  - Aim to have available 1 day before lecture
  - Make your own notes
- Recommended Textbook
  - Internetworking with TCP/IP by Douglas Comer
  - 5th Edition
- Other Useful Textbooks
  - 3rd and 4th edition of Comer textbook
  - Network textbooks by Stallings, Tanenbaum, Comer, Kurose, …
  - These other textbooks should only be used as supplementary readings



Learning Materials

- Recommended Readings
  - For selected topics I will list papers/chapters/websites/standards that should be read
  - These will be publicly available on the Internet or available through the Library (electronic or hardcopy)
- Course Website
  - All materials will be available from the website
  - Announcements, selected solutions will be on the website
- Mailing List (access via course website)
  - You must subscribe (as will be used for announcements)

Course Web Site

- http://ict.siit.tu.ac.th/~steven/its413/
  - Introduction, Topics, Lecture Notes, Assessment Schedule, Textbooks, Web Links, Extra Handouts, Maillist, …
  - When you click on Lecture Notes (and other handouts) to download, you will be prompted for a username and password:
    - Username: stevecourse
    - Password: siitict