

Introduction to ITS 323 – Introduction to Data Communications

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Welcome

- To a first course on the basics of communications and how computer networks and the Internet work
- A 3rd year course for computer scientists and IT professionals



Who Am I?

- Steve Gordon
- Assistant Professor in ICT
 - Since 2006
- 2001-2006: Researcher/Lecturer in Australia
 - Telecommunications, Internet, Wireless Networks, ...
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What will you learn in ITS 323?

- Components of computer networks
- Transmission techniques
 - How are bits transferred from source to destination over different mediums
- Communication protocols: principles and details
 - Protocol mechanisms: retransmissions; error detection; flow control; ...
 - Details of common/important protocols: HDLC, Ethernet, TCP, IP, ...
- Internet architecture and applications
 - What is the Internet and how do applications work?



Topics

- Introduction to Data Communications
- Protocol Architectures
- Data Transmission
- Transmission Media
- Signal Encoding Techniques
- Digital Data Communications
- Data Link Control Protocols
- Multiplexing
- Circuit and Packet Switching
- Local Area Networks
- Routing in Switched Networks
- Congestion Control
- Internetwork Protocols
- Transport Protocols
- Internet Applications
- Network Security



Why is ITS 323 Useful?

- It will help you get a job!
 - ISPs (Pacific, True), Telecommunication companies (CAT, TOT, AIS), service companies (IBM, HP), equipment manufacturers (Toshiba, Cisco), small to large businesses (e.g. as network manager/engineer),
...
 - Designing and writing Internet applications
 - Managing computer networks
 - Designing and managing telecommunication systems
- Prerequisite to other courses:
 - Computer Network Architectures and Protocols
 - IT Lab III (Networking)
 - Internet Technologies and Applications
- You will have an understanding of:
 - The principles of telecommunication systems
 - Details of popular Internet protocols and systems
 - Principles of building networks



Prerequisites

- There are no formal prerequisites, but I assume you know:
 - Basic engineering mathematics (waveforms, statistics, ...)
 - Operating system concepts (processes, RPC, ...)
 - Software design principles (divide-and-conquer, functions, ...)
 - Programming languages (e.g. C, C++, Java or similar)



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)
- Assignments
 - Set of problems for you to complete over a number of weeks
 - Test your in-depth understanding of concepts and protocols
 - Open book
 - 20%



Assessment

- Mid-term Exam
 - Test your knowledge and understanding of all material to date
 - Closed book
 - 30%
- Final Exam
 - Test knowledge of topics after mid-term (and some before!)
 - Closed book
 - 30%
- For advice:
 - Closed book assessment is not a memory test (e.g. I won't test your ability to remember header formats) – it's a test of understanding
 - We will discuss types of questions and topics before exam



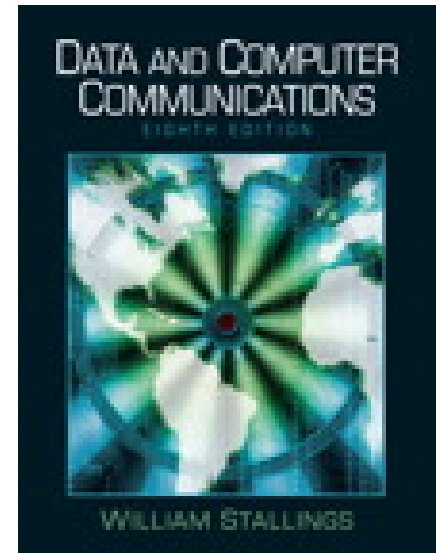
Academic Misconduct

- 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 copy centre
 - Aim to have available 1 day before lecture
 - Make your own notes
- Recommended Textbook
 - “Data and Computer Communications” by Stallings
 - 8th Edition (90% of my content is based on this)
- Other Useful Textbooks
 - Earlier editions of Stallings textbook
 - These other textbooks should only be used as supplementary readings



Learning Materials

- Recommended Readings
 - Almost every lecture corresponds to a chapter in the Stallings textbook; it is recommended you read the chapter before the lecture
- Homework Problems
 - Stallings textbook contains useful practice homework problems; try to solve them!
- 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/its323/>
 - 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

