EE3204/E: Computer Communication Networks I

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EE3204/E Administrative Details

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Assessment:	20% Lab 15% Quiz 1 15% Quiz 2 50% Final Exam

EE3204/E Syllabus – Part II

- ➢ Protocols & Layering
  - ➢ OSI Layers
  - ➢ Cross Layer Design
- ➢ Network Layer
  - ➢ Internet Protocol
  - ➢ Routing
  - ➢ Multicast
- ➢ Transport Layer
  - ➢ End-to-End
  - ➢ TCP
  - ➢ Flow & Congestion Control
- ➢ Hands-on
  - ➢ Packet analysis with Wireshark
  - ➢ TCP analysis
  - ➢ Setting up a wireless router

Course References

- ➢ J. Kurose & K. Ross,``Computer Networking: A Top-Down Approach Featuring the Internet'', Pearson/Addison-Wesley, 3rd edition, May 2004. 4th edition, July 2007.
- ➢ Peterson & Davie, "Computer Networks: A Systems Approach",2nd Edition, Morgan Kaufmann, 2000.
- ➢ William Stallings, "Data and Computer Communications", 6th edition, Prentice Hall, 2000.
- ➢ S. Tanenbaum, "Computer Networks", 3rd edition, 1996, 4th edition, 2003, Prentice Hall, PTR.
- ➢ Alberto Leon-Garcia & Indra Widjaja, "Communication Networks: Fundamental Concepts and Key Architectures", 2nd edition, McGrawHill, 2004.
- ➢ Other links to references will be provided throughout the semester and updated on the course webpage.

Getting to know each other

➢ Why are you taking this class?
  ➢ Please think about this and feed back to me.
➢ What do I expect?
  ➢ Ask questions – you can interrupt me to ask a question!
  ➢ Sincere effort – you must have a desire to learn.
  ➢ Self-learning – you must read and learn things on your own.
➢ How can you ask questions?
  ➢ Old school: raise your hands ☺
  ➢ New school: Send me an SMS!

Getting to know each other

➢ How will we run the class? (or Learning Methodologies)
  ➢ Lectures – two way dialogue
  ➢ Critical Thinking
  ➢ Independent learning
➢ What will you get out of it? (or Learning Outcomes)
  ➢ Understand Concepts of Computer Communication Networking
  ➢ Learn how to think about problems
  ➢ Learn how to learn
  ➢ A good grade in this class ☺

Learning How to Learn

- ➤ Cultivate your curiosity - You should read extensively outside of class.
- ➤ Talk to Other Professors and Students
  - ➤ Find out what other researchers are working on to get a broad idea of the research space
- ➤ Good source of references include:
  - ➤ Textbooks
  - ➤ NUS: Physical Library & Digital Library
  - ➤ Magazine and Journal articles
  - ➤ IEEEXplore database
  - ➤ Learn to use Google!
- ➤ Great Web Site for Advice on Research:
  - http://www.cs.cmu.edu/~mleone/how-to.html

Topics in Computer Communication Networks

EE3204 topics

- ➤ Protocol Layering
  - ➤ OSI & Cross Layering
- ➤ Link Layer
  - ➤ Ethernet, Token Rings
  - ➤ Framing, Error detection
  - ➤ ARQ
  - ➤ Switching, virtual LAN
- ➤ Transport
  - ➤ TCP, Reliable transmission, flow/congestion control
- ➤ Network Layer
  - ➤ Routing & IP
- ➤ Packet analysis with Wireshark

Lots more to learn!

- ➤ Applications
  - ➤ Client/Server
- ➤ Socket programming
- ➤ DNS
- ➤ Advanced Routing
- ➤ Queuing Theory
- ➤ Medium Access Control (MAC)
- ➤ Physical Layer
- ➤ FEC, Compression
- ➤ Mobile & Wireless Networks
- ➤ Privacy & Security
- ➤ Quality of Service