CS3103
Computer Networks and Protocols

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About Your Lecturer

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  http://adsc.illinois.edu/

- **Research:**
  - Computer Networking
  - Economics of the Internet
  - Game Theory
  - Stochastic Processes
About Your TAs

- **Yingjun Wu**
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- **Mostafa Rezazad**
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About the Course

- Blog: http://blog.nus.edu.sg/cs3103y14

- Continuation of CS2105 for focus area -- computer networks

- Cover more advanced topics
  - Link layer protocols
  - Routing protocols
  - Congestion control and variations of TCP
  - Network management
How many of you are non-CS students?

How many of you are 2\textsuperscript{nd} year undergraduate students?

How many of you are 3\textsuperscript{rd} year undergraduate students?

How many of you are 4\textsuperscript{th} year undergraduate students?
Differences from Prior CS3103

- Prior CS3103
  - More details in protocols
  - Tightly synchronized with CS3103L
  - Standard material

- This CS3103
  - Focus on high-level design principles
  - Loosely synchronized with CS3103L
  - New topics/material
Differences from Prior CS3103

- **Rationales**
  - You are smart enough to learn the details
  - Include new important networking topics
  - Avoid overlapping with existing courses
  - Transition to a new networking focus area

- **Cautions**
  - Study details for CS3103L by yourself
  - Prepare to learn more content
Focus Area: Computer Networks

CS2105 Introduction to Computer Networks

CS3103L Computer Networks Laboratory (2MC)

CS3103 Computer Networks and Protocols

CS4274 Mobile and Multimedia Networking

CS4222 Wireless Computing and Sensor Networks

CS4344 Networked and Mobile Gaming

CS5229 Advanced Computer Networks

CS5248 Systems Support for Continuous Media
Lab Topics of CS3103L

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<td>Week #</td>
<td>Experiment</td>
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<tr>
<td>Week 3</td>
<td><strong>Experiment 1:</strong> Wireshark (Ethereal) and Internet Address Configuration</td>
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<td>Week 4</td>
<td><strong>Experiment 2:</strong> Configure DHCP and VLAN</td>
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<td>Week 5</td>
<td><strong>No LAB - Lunar New year</strong></td>
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<td>Week 6</td>
<td><strong>Experiment 3:</strong> Domain Name System</td>
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<td>Week 7</td>
<td><strong>Experiment 4:</strong> Wireless Protocol [and, HW: SSL Experiment]</td>
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<td>Week 8</td>
<td><strong>Experiment 5:</strong> ICMP</td>
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<td>Week 9</td>
<td><strong>Experiment 6:</strong> Basic Router Configuration using CISCO Routers (Static Routing)</td>
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<td>Week 10</td>
<td><strong>Experiment 7:</strong> Network Setup using CISCO Routers and OSPF Protocol</td>
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<td>Week 11</td>
<td><strong>Experiment 8:</strong> TCP and its performance</td>
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<td>Week 12</td>
<td><strong>Experiment 9:</strong> VoIP with SIP</td>
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<td>Week 13 Test Week</td>
<td><strong>Experiment 10:</strong> Multicast Protocols</td>
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Caution: Go over pre-lab readings very carefully!
Tentative Course Assessment

- Two written assignments 20%
- One programming project 20%
- Mid-term Exam 20%
- Final Exam 40%
Tentative Topics

- Various Protocols
  - ARP, DHCP and etc.

- Network Layer Routing Protocols
  - RIP, OSPF, BGP

- Transport Layer Protocols
  - Congestion control and variations of TCP

- Network Management
  - Resource allocation and buffer management
  - Software-Defined Networking
Tentative Plan

- Aug 14th: Internet and IP addressing
- Aug 21st: DHCP, DNS and NAT
- Aug 28th: ARP, Ethernet and VLAN (T1)
- Sep 4th: IP and ICMP (T2)
- Sep 11th: Forwarding and Routing (T3)
- Sep 18th: RIP and OSPF (T4)
- Sep 25th: Recess
Tentative Plan

- Oct 2\textsuperscript{nd} BGP (T5)
- Oct 9\textsuperscript{th} Resource allocation (T6)
- Oct 16\textsuperscript{th} Congestion Control (T7)
- Oct 23\textsuperscript{rd} Mid-term Exam
- Oct 30\textsuperscript{th} Buffer Management (T8)
- Nov 6\textsuperscript{th} SDN, OpenFlow (T9)
- Nov 13\textsuperscript{th} Review (T10)
- Nov 27\textsuperscript{th} Final Exam
Tutorial Time

- After discussions, we decide to host two tutorial groups
  - Monday 11-12  COM1-0207
  - Wednesday 15-16  COM1-0209
Acknowledgement:
Many lecture slides will be taken from this book!
Reference Books
