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Computer Science & Engineering Syllabi

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Fall 2013

### CEG 4400/6400-01: Computer Networks and Security

Bin Wang

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*Department of Computer Science and Engineering  
Wright State University*

**CEG4400/6400 Computer Networks and Security**

**SYLLABUS**

Fall 2013

Drop dates: 9/20 (in-person), 9/22 (online) no grade; 10/25 (in-person), 10/27 (online) with a W  
Last day of class: December 7

<b>Time/Place</b>	Section 1: 4:40-6:00pm, 4 credits, M, W Health Science Bldg 140 Section 90 online section
<b>Instructor</b>	Dr. Bin Wang, Professor, 491 Joshi Research Center Tel: (937) 775-5115, E-mail: <i>send email via Pilot</i> Office hours: 3:00-4:00pm M, W, or walk-in
<b>TA</b>	Shiva Bhupathiraju 326 Russ Engineering Center E-mail: bhupathiraju.2@wright.edu Office hours: 3:00-4:00 pm, T, Th; Lab: Russ 346, 6:10-8:00pm M
<b>Prerequisites</b>	The contents covered are self-contained. Background in networking is not required. CEG 3310 (Computer Org) and proficient in Java, C, C++; Programming experience in Java, C, C++; Program development tools: editors, compilers, linkers, debuggers; Data structures: arrays, stacks, queues, lists, and binary trees.
<b>Textbooks</b>	<i>Required:</i> Computer Networking: A top-down approach, 5th Ed. Or 6 <sup>th</sup> Ed. Kurose & Ross, Pearson. <i>References:</i> Computer Networks, 4th Ed, Andrew S. Tanenbaum, Prentice Hall, 2002 <i>References:</i> Data Communications and Networking, 5 <sup>th</sup> Ed, Behrouz A. Forouzan, McGraw Hill, 2012
<b>Webpage</b>	<a href="http://pilot.wright.edu">http://pilot.wright.edu</a>
<b>News Group</b>	Check daily Pilot for announcements, assignments, homework, questions and answers.
<b>Course Objectives</b>	This course provides an introduction to basic concepts of communication networks and network security, different types of networks, protocols over different layers, applications, and security issues, through lectures, labs, homework, and reading on relevant materials. You will <ul style="list-style-type: none"><li>• Understand networking principles, protocols, and technologies.</li><li>• Understand design and performance issues involved in providing network services.</li></ul>

- Acquire background for supporting e-commerce, e-government, and e-education.
- Gain hands-on experiences through implementation of simple network protocols.
- Preparation for research or taking advanced courses in computer networks and security.

**Students' Responsibilities**

You are expected to:

- 1) read assigned materials **prior to class** and come up with questions. Reading materials will be assigned in advance.
- 2) attend classes on a regular and timely basis. Regular class attendance is mandatory and is essential to success in the course. You are responsible for all contents, handouts, and announcements distributed/made in class.
- 3) complete and turn in your assignments timely. You are expected to write your own programs. **Do not** copy from or give your work to others, and **do not** make it possible for others to copy any portions of your work. Violators will receive a **zero** credit on the assignment.
- 4) be present for exams at the scheduled times. If there is a catastrophic event that prevents you from taking an exam, please contact the instructor as soon as possible.
- 5) not disturb/disrupt the class.
- 6) consult with the instructor and/or graduate teaching assistant if you have questions regarding course contents, lectures, handouts, or other problems.

**Course Evaluation**

You will receive a final course grade comprised of the weighted scores earned on all required course assignments and exams.

Methods:	% of final grade
1. Participation(show up, in class discussion, in class quizzes, etc):	4%
2. Labs and Projects:	30%
3. Homework:	16% (6 homework)
4. Middle term exam:	20% (10/14, Monday in class)
5. Final exam:	30% (12/9, Monday, 5:45-7:45pm)
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Total	100%

**Grading scale:**

4400		6400
90-100	A	93-100
80-89.9	B	83-92.9
70-79.9	C	73-82.9
60-69.9	D	63-72.9
Below 60	F	<63

Undergraduates and graduates will be graded separately.

**Re-grading policy:** If you have questions about the way an assignment or exam is graded, you must detail the rationale for re-grading.

**Late Submission of Assignments**

You may discuss assignments with classmates but all solutions must be original and individually prepared.

You will lose 10% of the total points for an assignment for each 24-hour period (or fraction of a 24 hour period) the assignment is late. Late assignments will be accepted up to 4 days after the due date as specified in the assignment handout. Late penalty is accrued on weekends just as during the week. Partial credits will be given to students who turn in partially completed assignments.

Special considerations will be given for students who have a medical excuse for late submission (written proof of illness is required). These considerations may extend to medical emergencies involving children or other family members. Such consideration is at the discretion of the instructor, and will be as reasonable and fair as possible. Special consideration may also be given for employment conflicts (e.g. military duty, travel) if brought to the attention of the instructor prior to the due date for an assignment.

Course requirements for other courses are **NOT** a valid reason for special consideration.

**Missed Exams**

Missed quizzes cannot be made up. Missed exams can be made up only under extenuating circumstances such as medical emergencies and work conflicts as mentioned above. Please see the instructor as soon as possible if you know you will be unable to attend an exam. You are expected to schedule your departure for any end of quarter travel after your final exam.

**Plagiarism**

Students are members of a learning community committed to the search for knowledge and truth. Essential to that search is the faithful adherence by all students to the highest standards of honesty and integrity. A grade of "0" or "F" will be assigned to examinations or assignments on which cheating, plagiarism or any other form of academic dishonesty is committed or determined to have occurred. For the detail, see Wright State University Student Handbook under "Academic Dishonesty".

**Lecture Outline**

The following is the tentative lecture schedule.

Week	Topics/Activities	Text Reading
1	Introduction: computer networks and the Internet	Chapter 1
2	Basic networking concepts (Lab 1)	Chapter 1
3	Application layer protocols: principles and QoS requirements, representative application layer protocols (DNS, HTTP) (Lab 2)	Chapter 2
4	Representative application layer protocols (ftp, email, p2p, etc) (Lab 3)	Chapter 2
5	Transport layer: UDP (Project 1 due; estimated)	Chapter 3
6	Transport layer: principle of reliable transfer (sliding window protocol; selective repeat) (Lab 4)	Chapter 3
7	Transport layer: TCP, reliability, flow control (midterm exam)	Chapter 3
8	Transport layer: TCP, congestion control (Lab 5)	Chapter 3
9	Network layer and routing: IP, IP addressing; Routing algorithm: link state routing (Lab 6)	Chapter 4

10	Routing algorithm: distance vector; IP packet forwarding	Chapter 4
11	Link layer: Error detection and correction techniques; Media access control (multiple access) protocols (Lab 7) (Project 2 due; estimated)	Chapter 5
12	LAN: LAN addresses and ARP, Ethernet, Hubs, Bridges, Switches; PPP, wireless LAN (Lab 8)	Chapters 5,6
13	Network security: Symmetric key, public key cryptography, hash function, MAC, digital signatures (Lab 8)	Chapter 8
14	Network security applications: secure E-mail, PGP, SSL, IPsec, VPN, WEP, 802.11i	Chapter 8
15	Firewalls and intrusion detection (course review, evaluation of instruction)	Chapter 8
16	Final exam	