

New Mexico State University
Dept. of Computer Science
CS 584: Computer Networks II
Spring 2009

Class Meeting: Monday / Wednesday 4:00 PM – 5:15 PM, Science Hall 115

Instructor: Dr. Amiya Bhattacharya

Office: Science Hall 172

Office Hours: Tuesday / Thursday, 11:00 AM – 12:00 PM, or by appointment.

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Course website: <http://www.cs.nmsu.edu/~amiya/cs584>

Prerequisites: CS 484/504 (Computer Networks I) or equivalent. Please refrain from registering unless you have taken a basic course in computer networks. CS 492/512 recommended for some topics and may be necessary for the project and term paper depending on your choice. You should be comfortable with programming—learning new scripting languages and APIs for a simulation/emulation software or remote operation on a testbed may be required.

Course Objective: The main purpose of the course is to develop a deeper understanding of the design principles of a global scale general-purpose computer communication network such as the Internet. Selected topics from the textbooks, as well as a number of classic and contemporary articles describing retrospective, design experiences, current trends, future directions and research problems, will be discussed. Instead of a strict layer-by-layer approach (either top-down or bottom-up), a holistic systems approach will be taken for discussions on topics such as the end-to-end protocols, switching and routing, and emerging applications such as multimedia communication, content distribution, distributed storage, global sensing, and security. At the end of the course, students should understand the driving forces behind the Internet today, and should have the breadth knowledge to take up a research/development professional career in computer networking. Note that network administration is not the focus of this course, although many relevant issues such as routing, security, virtualization, NAT and content distribution will be discussed.

Text: The recommended textbooks for the course are:

1. Larry L. Peterson and Bruce S. Davie, "Computer Networks: A Systems Approach," 4th edition, Morgan Kaufmann, 2007.
2. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach," 4th edition, Addison Wesley, 2007.

Students may develop a better understanding of the topics from one or more of the following books:

1. Mahbub Hassan and Raj Jain, "High Performance TCP/IP Networking: Concepts, Issues and Solutions," Prentice Hall, 2004.
2. A. Kumar, D. Manjunath and J. Kuri, "Communication Networking: An Analytical Approach," Morgan Kaufmann, 2004.
3. R. Perlman, "Interconnections," 2nd edition, Addison-Wesley, 2000.
4. G. Vergese, "Network Algorithmics," Morgan Kaufmann, 2005.

A number of classic and recent papers will be handed out as assigned reading material for the class.

Grading: The percentage distribution for final grade will be as follows:

Project, term paper and presentation	50%
End of unit quizzes	30%
Class presentation (by rotation)	10%
Class participation	10%

There will be no extra credit work for this class.

Project and term paper: Students should form groups and select a semester project from a list that will be handed out in the first week of February. The term paper submission will be in phases. An annotated bibliography, a one-page theme outline, an interim draft for peer-review, and individual peer-reviews will be due during the course of the semester. Details will be available in the project hand-out. Due dates will be available in the semester calendar along with the covered topics. There will be a peer review of the interim draft, and a final report in the form of a term paper is to be submitted during the finals week. Instead of the final examination, the class will meet for group presentation of the project.

Assigned work will be due at the beginning of the class on the due date. Late submissions will be accepted until a specified date (at most one week from the due date, typically less). All late submissions will be subject to a loss of 25% credit, except if it is due to an emergency (such as medical) or unavoidable circumstances. It is the responsibility of the student to notify the instructor about unavoidable circumstances in advance, and about emergencies as soon as possible, following the occurrence. The decision about whether a situation is unavoidable or not, lies entirely at the discretion of the instructor. Conflicts with assignments in other classes or starting late on an assignment are clearly not considered unavoidable. Note that, students on university business have an automatic right for reasonable extensions, but the responsibility of notifying the instructor still lies with the student.

Examinations: The classes are organized as a collection of small course units. Students will take turns to present a topic (based on one or more papers) in class, interleaved with the lectures by the instructor. Students will also participate in individual/group work and discussions in class to address critical issues from the assigned reading, which will contribute to the students class performance. There will be a short in-class open-book or take-home quiz after every unit. The exact dates and covered topics will be announced in the class and the class website. Zero credit will be awarded for missing a quiz, with the exclusion of the unavoidable circumstances and university business exceptions stated above. Unless specifically assigned as a group work, students may not collaborate on take-home quizzes (some open discussions about the underlying material is allowed, but no discussion on the solutions to the quiz questions) and must work independently.

Attendance: Due to the required collaborative work in class, students must attend all classes. One exception is that students who are passing a course and who are absent on documented university business have an automatic right to excused absences and to submit make up work. Other exceptions include health problems and other verifiable emergencies. Proper documents need to be produced in all circumstances. Students will be held responsible for the material covered, including class lectures, discussions and assignments.

Students will not be automatically dropped for persistent absence or persistent failure to turn in assignments. Timely withdrawal from the course is students' responsibility, without which an F grade will be assigned.

Communication: Official communication to students will often come through your NMSU e-mail box. Please access it regularly, or forward it to your current use address, as your success in college may ride on your ability to respond quickly. This also applies to mails and discussion through WebCT.

Academic misconduct: Please keep in mind that any form of academic dishonesty will be punished according to NMSU's regulations. Plagiarism is recognized as an academic misconduct. The current University definition of plagiarism can be found at

<http://www.nmsu.edu/~vpsa/SCOC/misconduct.html>,

which also identifies other forms of academic misconduct, such as cheating and knowingly assisting another student in committing an act of cheating or other forms of academic dishonesty. An excerpt from the web page goes as follows:

“Plagiarism is using another person's work without acknowledgment, making it appear to be one's own. Any ideas, words, pictures, or other intellectual content taken from another course must be acknowledged in a citation that gives credit to the source. This is irrespective of the origin of the material, including the Internet, other students' work, unpublished materials or oral sources. Intentional and unintentional instances of plagiarism are considered instances of academic misconduct. It is the responsibility of the student submitting the work in question to know, understand, and comply with this policy.

If no citation is given, then borrowing any of the following ¹ would be an example of plagiarism:

- an idea or opinion, even when put into one's own words (paraphrase)
- a few well-said words, if these are a unique insight
- many words, even if one changes most of them
- materials assembled by others, for instance quotes or a bibliography
- an argument
- a pattern of ideas
- graphs, pictures, or other illustrations
- facts
- all or part of an existing paper or other resource”

Non-discrimination: Please feel free to call Jerry Nevarez, Director of Institutional Equity, at 646-3635 with any questions you may have about NMSU's Non-Discrimination Policy and complaints of discrimination, including sexual harassment.

Disability: If you have or believe you have a disability and would benefit from any accommodations, you may wish to self-identify. Please feel free to call Michael Armendariz, Coordinator of Services for Students with Disabilities (SSD), at 646-6840 with any questions you may have on student issues related to the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act of 1973. All medical information will be treated confidentially. If you have already registered with SSD, please make sure that your instructor receives a copy of the accommodation memorandum from SSD within the first two weeks of classes. It is your responsibility to inform either your instructor or SSD representative in a timely manner if services/accommodations provided are not meeting your needs.

If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss any concerns with the instructor and/or Michael Armendariz, SSD Coordinator.

¹This list is not meant to include all possible examples of plagiarism.