UTAH VALLEY UNIVERSITY
COURSE SYLLABUS
CS 2600 COMPUTER NETWORKS I

SEMESTER: Fall 2013
Section 1 Tu/Th 1:00 – 2:15 CS504
Section 601 M/W 5:30 – 6:45 CS502

INSTRUCTOR: Dave Heldenbrand
Office: CS 520R Orem Campus
Office Hours: M 2:00 – 3:00; Tu 2:30 – 4:00; Th 2:30 – 4:00 &
5:30 – 6:00; or by appointment
Email: heldenda@uvu.edu or send a Canvas message
Phone: (801)863-8306
Skype: heldenda (by appointment)

TUTOR: Dakota Gardner
Email dakotakgardner@gmail.com to schedule an appointment

ATTENTION STUDENTS WITH DISABILITIES

If you have any disability which may impair your ability to successfully complete this course, please contact the Accessibility Services Department at (801)863-8747, room WB146 or asd@uvu.edu. Academic accommodations are granted for all students who have qualified documented disabilities. All services are coordinated with the Accessibility Services Department.

COURSE DESCRIPTION

CS 2600 is a rigorous introduction to computer networks and data communications. It is the first in a sequence of three theoretical courses. The second is CS 2690 Computer Networks II. The third, which is only required for the BS in CS Networking Specialization, is CS 4610 TCP/IP Internet Architecture. As with many networking courses, the content of this course lies at the intersection of Computer Science, Electrical Engineering and Information Systems. The class is designed to provide an understanding of data communications standards, transmission methods, media, communication software, hardware and network systems. A good deal of practical and career-related information will be included.

PREREQUISITE COURSES AND COMPETENCIES

CS 2810 Computer Organization and Architecture, or the combination of INFO 1200 Computer Programming I and IT 1600 Computer Architecture and Systems Software, are the prerequisites for this course. Competency in college algebra (MATH 1050) and some general science background are assumed.

COURSE OBJECTIVES

Upon completion of the course, you should have a basic or intermediate level understanding of the following topics and technologies:

1. How computer networks are used
2. Models for network architectures
3. Data communications standards (protocols), and the organizations that create them
4. Data transmission media (wire, optical fiber and wireless systems)

5. Digital and analog signaling and error detection (different ways of transmitting bits across the media)
6. Data link control (standards for effective communication between directly-connected computers)
7. Local Area Network architectures and switches (Ethernet and WiFi)
8. Wide area wireless communication (WiMAX and cellular networks)
9. Packet switching & Wide Area Network architectures (how data finds its way through a network)
10. IP (the Internet Protocol), at an introductory level

COURSE MATERIALS

The textbook is Computer Networks - A Systems Approach by L. Peterson and B. Davie 5th Edition, Morgan Kaufmann publ., 2012, ISBN 978-0-12-385059-1. This text is also used in CS 2690 Computer Networks II. The cost is approximately $100. This text includes a license to the OPNET IT Guru network simulator that will be used for some of the lab exercises. Purchasing a used copy won't prevent you from obtaining an OPNET license. There is also a Kindle edition. You can read the text online (but not download it) through the UVU Library Safari Books subscription at `http://proquest.safaribooksonline.com/9780123850591`. *I do not recommend the Kindle edition because it lacks page numbers and some of the figures are missing.*

The PowerPoint slides used in the lectures were created using PowerPoint 2010 (.pptx format), and are available in the Canvas course management system. There is a separate .pptx file for each lecture's slides. Slides are often updated a day or so before the lecture. The revision date is shown at the lower left-hand corner of each slide, and will be updated each time a significant modification is made to the slides. You can view and print the slides from within Canvas (click *Files* and *preview*). To print the slides, download them to PowerPoint or obtain the free PowerPoint viewer/printer from `www.microsoft.com/en-us/download/search.aspx?q=powerpoint%20viewer%202010`. If you don't have PowerPoint, use this viewer. Other presentation applications (such as LibreOffice) do not display subscripts and superscripts in numeric formulas properly, which may cause you to miss homework questions.

Supplemental readings are located in the *Reading Assignments* folder. They are in .pdf format, so you'll need a copy of a PDF reader such as Adobe Acrobat Reader, which can be obtained at `http://get.adobe.com/reader/`.

LAB ACCESS FEE

Dedicated lab facilities for this course are located in CS 517 (the "Network Lab"). You have paid a lab access fee for this course. This fee is used for the computer hardware in the labs, servers, printers, paper, toner, upgrade and maintenance of hardware and other software that applies to all users. It also entitles you access to resources as required by your course. This fee also entitles you to print 100 pages (black and white) in the lab. Additional print credits may be purchased.

CLASS PROCEDURES

We will cover the first half of the Peterson & Davie text in this course. CS 2690 covers the second half, so don't sell your text if you intend to take CS 2690. The text provides well-organized introductory material on most course topics. *Reading the assigned material prior to the relevant lecture may be the most important thing you can do to improve your performance in this class.* The course moves quickly in order to cover the required material, so it is *essential* to keep up with the reading. Many lectures will cover a topic in greater detail than it is covered in the text. Some topics are covered *only in lectures*, so attending the lectures is essential. Feel free to record the lectures for your personal use.

Illustrations used in the lectures are contained in the PowerPoint slides described in the Course Materials section. You may wish to print the slides or bring them to class on a laptop or tablet so that you can annotate the illustrations during lecture. Download and/or print out a few lectures-worth of slides at a time, in case changes are made during the semester.

Messages of general interest to the class, along with last minute changes and updates, will be communicated using the Announcements page in Canvas. Feel free to use the Canvas Discussions page for communication of general interest to the class.

Please be considerate of your peers in class. Use of cell phones (including texting), gaming and other distracting activities are not permitted in class. If you have a special need, see me and I will be happy to accommodate you.

EMERGENCY COURSE CANCELLATION DELIVERY

In the event of an extended campus closure, instruction will continue using lecture notes and other materials provided through Canvas. Emergency closure notification will be made through UVU's "Opt In" text messaging system. You will find Opt In instructions at `www.uvu.edu/oit/campus/etxtmsg.html`. Consider subscribing to this unobtrusive system, which will also alert you to campus security issues and weather-related campus closures. During this time, course assignments will be submitted via Canvas. Tests will be deferred until campus reopens.

GRADING

Your achievement of the course objectives is evaluated based on the following criteria:

Test 1 (37 multi-choice questions)	22.2%	(222 points)
Test 2 (37 multi-choice questions)	22.2%	
Test 3 (37 multi-choice questions)	22.2%	
7 Quizzes	10.0%	
Homework Questions	10.0%	
7 Lab Exercises	13.4%	
TOTAL	100.0%	

Up to 25 extra credit points (2.5%) will be awarded for attendance (see Attendance Policy). At the end of the semester you will also be allowed to petition for full credit on one missed or low-scoring homework assignment or lab exercise. (Petitions are not allowed for quizzes.)

Final grades will be assigned based on the following scale, as shown in the "Total" column of the Canvas Grades form:

93.0% and above	A
90.0% and above	A-
87.0% and above	B+
83.0% and above	B
80.0% and above	B-
77.0% and above	C+
73.0% and above	C
70.0% and above	C-
67.0% and above	D+
63.0% and above	D
60.0% and above	D-
below 60.0%	E

Semester grades will not be adjusted or rounded up because they are "close" to a higher grade. For example, a 92.9% in the Canvas "Total" column will be an A-. (A 93.0% is required for an A.) You can check your current status at any point during the semester by viewing the "Total" column on the Canvas Grades page. The percentage shown will reflect your current standing, based on assignments and tests that have been graded at that point in the semester.

ATTENDANCE POLICY

Attendance will be taken at each session. If you are receiving financial aid, you must attend class. *I will not sign financial aid forms that misrepresent your attendance or course standing.* Lectures are the focal point of this course, so to incentivize students to attend regularly, up to 25 extra-credit points (2.5%) are available toward your final grade. You can miss two lectures without penalty. Five points will be subtracted from the 25 possible extra credit points for each lecture missed beyond two. (So if you miss seven or more lectures, you won't receive any extra credit points). *DO NOT sign the class roll for a previous date without discussing the reason with me first. Students who do so will receive no extra credit for attendance.* You may sign the roll if you arrive late or leave early (within reason).

HOMEWORK

Homework questions are assigned in class. Occasionally, assignment and due dates may vary from the course schedule listed in Canvas. Changes will be announced in class and communicated in a Canvas announcement. Homework questions are found at the end of the PowerPoint slides for the lecture in which they are assigned, *not in the textbook*. (Numbered homework questions are based on questions at the end of each chapter in the textbook. However, the versions of those questions found in the PowerPoint slides have been modified. Homework questions referenced by letter are listed only in the PowerPoint slides.)

Some homework questions will be graded. Those questions are due at the start of the next class meeting after they are assigned. Graded homework questions are listed as assignments in Canvas and are shown in boldface in the course schedule. You will see point totals associated with these questions on the PowerPoint slides.

Additional homework questions will be assigned for class discussion, but not graded, due to limitations in grading resources. *It is in your best interest to complete all homework questions before class, because the tests contain many questions which are variations on homework questions.* If you simply copy down my solution for a non-graded homework question, you aren't likely to be able to do the work on the test (where a significant number of points are at stake).

Graded homework assignments will be submitted to Canvas as pdf, doc, docx, odt, or rtf files. You must show your work on all calculations. Submissions must be in word processed format, except for illustrations, which may be created with a computer-based drawing tool or hand drawn, scanned and embedded in one of the aforementioned file formats. *Canvas occasionally experiences delays and brief outages, so submit your work at least 10 minutes before the deadline.* Late homework assignments will not be graded.

Graded homework assignments are scored using a 10-point system. You will receive a total of 10 "raw" points if all questions are answered correctly and your submission meets the above requirements. You will receive less than 10 points if you meet the requirements listed above but the work contains significant errors or is incomplete. If none of these requirements are met, no credit will be given. Homeworks left in my mailbox or emailed to me will not be graded.

At the end of the semester, your "raw" homework points will be totaled and divided by the total available "raw" homework points to yield a percentage. That percentage will be multiplied (weighted) by the percentage of total homework points available (as described in the Grading section above) to yield the homework percentage applied to your final grade. For example, if you submit 6 out of 6 homework assignments, but only receive 5 of 10 possible points for each, you would receive 30 "raw" points, out of a possible 60 (50%). If 10% of your final grade is based on homework questions, that would yield 5% toward your final grade.

LAB EXERCISES

Lab exercises are due before the start of class on the due date, which is specified at the beginning of the lab exercise, on the course schedule, and in Canvas Assignments. To receive credit for lab exercises, lab reports must be submitted in word processed format by the specified date and time. Acceptable file formats are pdf, doc, docx, odt, and rtf. Lab exercises may be completed in the Network Lab in CS 517 or (in most cases) on your own system. The door key code for entry to the Network Lab will be provided in class. CS 517 is used as both a teaching facility and the Network Lab. When a class is in session in 517, please check to see whether the instructor is lecturing or helping the class with lab work. If the instructor is lecturing, please wait until the lecture is finished before entering.

Lab reports are scored on a 10 point scale, similar to homework questions. You will receive 10 "raw" points if all questions are answered in word processed format (not handwritten), and the answers are reasonable. You will receive less than 10 points if the lab is not complete, graphs or other screenshots are missing, some of the questions are unanswered, etc. No credit will be given unless these requirements are met. The method used to calculate the lab exercise portion of your semester grade is as described for homework questions above. Late lab exercises and lab exercises left in my mailbox or emailed to me will not be graded.

QUIZZES

Quizzes will be announced in the preceding lecture, and are usually given at the beginning of class. Tentative quiz dates are listed in the schedule, however the quiz schedule may occasionally be changed. If you are not present when the quiz is given, you won't be allowed to take it for credit. You may obtain a copy of a quiz for study purposes after it has been given. The method used to calculate quiz points at the end of the semester is as described for homework questions above. Quizzes may be taken in advance by prior arrangement, given a reasonable excuse (business travel, etc.)

TESTS

Tests 1 and 2 will be administered by UVU Testing Services in the Testing Center. The test dates are given in the course schedule. Tests will be available in the Testing Center for three days, allowing you to take the test at your convenience. Scratch paper may be used, but it will not be returned to the instructor. Students are urged to take the test at the earliest possible time, as the Testing Center tends to get backed up, especially at night. Check `www.uvu.edu/testingservices/` for Testing Services hours of operation and other information.

The new Testing Services Policy dictates that tests which run for three days will include *two* late testing days. Students taking the test on a late testing day will be charged a $4 fee, payable to Testing Services. The late testing option should be used only in emergencies such as illness or transportation problems. *If you are unable to take the test on the late testing days for any reason (including too few test forms, long lines, transportation problems, technical problems at Testing Services or illness), you will not be permitted to make up the test. In other words, the late testing dates are the makeup dates.* Students unable to take the test during the scheduled testing period must make arrangements in advance with the instructor to take the test early. Tests 1 and 2 are

untimed, so you will have as long as you need to complete them. Be sure you allow enough time to finish before Testing Services closes for the day.

"Post mortem" discussion of tests will be done during the designated lectures (see course schedule). Unless there are extenuating circumstances, I won't discuss tests with students who fail to attend the post mortem. Students present during the post mortem are welcome to schedule appointments to ask follow-up questions or pursue unresolved issues. Some test questions will pertain to material which is covered in the lectures, but not in the text, and vice versa.

Test 3 (the final exam) will be given in class during final exam week (see course schedule). If you have more than three finals on a given day, you may request an exception. *Exception requests must be made by the date specified in the course schedule.* Check your final test schedules now to determine if you have a conflict.

DROPPING THE CLASS

The last day to drop the course without it showing on your transcript, to receive a 100% refund, or to add or audit the course is listed in the Student Timetable at `www.uvu.edu/schedule/index.html`. The last day to drop the class is also listed. Attempting to withdraw from the course after that date will be difficult, since the department chair's signature is required, along with a rationale for the late withdrawal request. *If you stop attending class without doing a formal drop or withdrawal, the instructor cannot do anything at the end of the semester except assign a grade based on the number of accumulated points (typically an E or a UW).* Subsequent appeals for grade change must be made to the UVU Academic Standards Committee.

WAIT LIST POLICY

If you are on a wait list for a Computer Science course, plan to attend the first day of class. There is no guarantee that you will be able to add the class, however it is important that you not fall behind. Should someone drop, the first student on the wait list will be sent an email through the UVLink system directing them to register for the class. If you receive this email, go to the "Add or Drop Classes" menu and locate your wait-listed class. Under the "Action" drop-down menu, select "Register," then click "Submit Changes." The screen will refresh and you will be registered for the course. You only have 24 hours to register for the course after your email notification is sent. Failure to do so will result in you losing the available spot. The last day for on-line registration and the date on which $10 Add Card registration begins are listed in the Student Timetable at `www.uvu.edu/schedule/index.html`.

OBJECTIVES AND OUTCOMES

In compliance with departmental accreditation by ABET, the Computing and Networking Sciences Department has established outcomes and objectives that apply to the Bachelor Degree in Computer Science. Those outcomes and objectives are posted on the CS Dept. website at `www.uvu.edu/cs/about/accreditation/objectives/index.html`.

ETHICAL BEHAVIOR

The CS Dept. ethics policy, "CS Imperatives of Ethics and Conduct" is posted at `www.uvu.edu/cs/csimperatives.html`. If you are not familiar with this policy, read it and *be sure that you understand it.* Schedule an appointment with me if you need to clarify anything in the policy. The policy contains guidelines that define cheating in the context of CS courses.

Note the following:

- Submitting material(s) obtained from the Internet and/or world wide web, or from another student, as one's own work, without proper acknowledgment of the source, is a flagrant offense.

- Disciplinary actions will depend upon the nature of the offense and are up to the instructor. Repeated or flagrant violations may result in permanent expulsion from the CS program.

- Academic dishonesty shall result in immediate expulsion from the course, possible expulsion from the program, and possible expulsion from the university.

Simply put, this means that in this course, if you submit someone else's work as your own, you will receive an 'E' as a final grade for the semester. This includes homework assignments and lab exercises.

HANDLING PROBLEMS

When problems occur, I will do my best to work out a reasonable solution. *The likelihood that we can find a solution is greatly increased if you communicate with me immediately, either in person, by email or phone.* It is not uncommon for a student to "disappear" sometime during the semester, only to reappear after final exams, asking "What can I can do to pass your class?" At that point, my answer will be "nothing". Unless you have a serious, documented medical problem, you won't be eligible for an Incomplete ("I"). Obviously, the "E" that is typically received in this situation can have a negative effect on GPA, financial aid and/or immigration status, so keep in touch if you are absent for multiple lectures.

A FINAL POINT

Classroom lecture time is the central focus of much outside preparation on the part of the instructor and the students. It is a scarce resource that should be used wisely. This course will be more valuable to you and to other students if you:

- Arrive on time
- Sit near the front of the classroom, when possible
- Do the assigned reading before class
- Get an early start on homework assignments and labs in case you need to obtain assistance
- Ask questions that help to clarify your understanding
- Avoid questions that are "off the topic" (I'll be happy to discuss anything after class)