SYLLABUS

IT 263-420
Applied Networks and Security
Fall Quarter 2015/16

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Course site:	https://d2l.depaul.edu
E-Text:	Introduction to Networks: Cisco Networking Academy, https://www.netacad.com.

In this course, students will utilize the scientific method to explore packet-switched network and security technologies that support all Internet communications. Utilizing software-based network simulators and packet data captured from operational networks, students will explore packet flows while testing hypotheses about Internet Protocol (IP) data services and behaviors. Network topics will include client/server, network connectivity, operations of intermediate network connection devices such as IP routers, firewalls and Ethernet switches, basic IP addressing, subnetting and network address translation. Security topics will include typical threats and responses, firewalls, host hardening, password management and virtual private networks (VPNs).

This is a fully online course. That is, there is no classroom and there are no physical class meetings. Course materials will be organized into six Content Modules. Each Content Module will have associated reading materials, notes, tutorials and video presentations for students to study to learn the course topics. Each Content Module has three graded deliverables: an associated discussion forum, homework assignment and lab exercise. Schedules and due dates for module deliverable are below.   Students will write a short research paper. At the end of the course there will be a proctored comprehensive final exam.

Required coursework components and their contribution to the final grade will be:

a) 6 discussion contributions (10%)

b) 6 homework assignments (30%)

c) 6 lab exercises (25%)

d) 1 paper (15%)

e) Final Exam (20%)

Further details on each assignment will be distributed in class. All assignments are due by 11:59 pm on the due date unless otherwise specified. The lowest score in Discussions, Homework and Labs will be dropped from the final grading. Assignments received late will be penalized as follows: up to 1 day late is 20% penalty; 1-2 days late is 30% penalty, 2-3 days late is 40%

penalty, 3-7 days late is 50% penalty. No assignments will be accepted more than 7 days late. All assigned work must be completed individually. I expect all students to read and understand DePaul's policy on Academic Integrity

Course Module Schedule

	Module Name	Content Available	Discussion Due	Homework Due	Lab Due
1	Network Basics	Sep. 9	Sep. 17	Sep. 22	Sep. 25
2	Ethernet and WiFi LANs	Sep. 17	Sep. 26	Sep. 29	Oct. 5
3	IPv4 and IPv6	Sep. 25	Oct. 7	Oct. 12	Oct. 16
4	TCP/IP Applications	Oct. 7	Oct. 19	Oct. 26	Oct. 30
5	Network Security	Oct. 16	Oct. 27	Nov 2	Nov. 5
6	Designing Secure Networks	Oct. 27	Nov. 6	Nov. 11	Nov. 16

All students will be notified by e-mail if any changes to this schedule are made. The Calendar tool on the course D2L web site will always show the most up-to-date schedule of course dates.

The paper will be due on Monday, Nov. 9th. The paper assignment will be handed out in the 3rd week of the quarter.

The final exam will be taken during a time slot scheduled by each student during finals week. Exam scheduling and proctoring will be handled by the CDM OnLine Learning office. A comprehensive final exam review guide will be handed out and a live review session will be held during the first week of November.

Letter grades will be assigned according to the following grade scale based on the final course score percentage.

A = 90%-100%, A- = 88%-90%, B+ = 86%-88%, B = 80%-86%, B- = 78%-80%, C+ = 76%-78%, C = 70%-76%, C- = 68%-70%, D+ = 66%-68%, D = 60%-66%, F = 0-60%

This scale may be curved to the students' advantage (that is, grades may be higher than indicated), but these are minimum letter grade assignments.

Learning Domain Description

IT 263 is included in the Liberal Studies program as a course with credit in the Scientific Inquiry domain. Courses in the Scientific Inquiry domain are designed to provide students with an opportunity to learn the methods of modern science and its impact on the world around us. Courses are designed to help students develop a more complete perspective about science and the scientific process, including: an understanding of the major principles guiding modern scientific thought; a comprehension of the varying approaches and aspects of science; an appreciation of the connection among the sciences; the fundamental role of mathematics in practicing science; an awareness of the roles and limitations of theories and models in interpreting, understanding, and predicting natural phenomena; and a realization of how these theories and models change or are supplanted as our knowledge increases.

Learning Outcomes

1. Students will understand the major principles guiding modern scientific thought. Students will demonstrate a mastery of the science content knowledge of their SID courses.
2. Students will know that science, technology, and math serve as mechanisms for inquiry into the nature of the universe. Students will:
   a. identify questions that can be answered through scientific investigations;
   b. design and conduct a scientific investigation to test a scientific hypothesis;
   c. use appropriate tools and techniques together, analyze, and interpret data to support or refute a scientific hypothesis;
   d. develop descriptions, explanations, predictions, and models using evidence;
   e. describe relationships between evidence and explanations using critical and logical thinking;
   f. recognize and analyze alternative explanations and predictions;
   g. communicate scientific procedures and explanations;
   h. use mathematics in all aspects of scientific inquiry.
3. Students will understand and appreciate the interrelationships among science, technology and math. Students will:
   a. use technology and mathematics to identify a problem or design a solution to a problem;
   b. give examples of how science and technology inform and influence each other.
4. Students will understand and appreciate the role of science in society and in their lives. Students will:
   a. Provide examples of how science and technology impact our lives, and how social needs and concerns impact our development of technology and scientific investigation;
   b. develop positive attitudes towards science, technology, and mathematics;
   c. establish an ongoing experiential/service-learning interest in science, technology, and mathematics.
5. Students will understand the nature of science, technology, and mathematics. Students will:
   a. provide examples of the abuse of science, including the representation of unfalsifiable claims as science and other forms of pseudoscience;
   b. explain the strengths and limits of scientific inquiry;
   c. explain the difference between evidence and inference, and the   provisional nature of scientific explanations by providing examples of how our understanding of the workings of the world has changed in the past;
   d. explain the difference between probability and certainty, and describe what is meant by uncertainty in the context of science, technology, and mathematics.

How Learning Outcomes Will Be Met

1. Through homework assignments, students will demonstrate a mastery of the science content knowledge.
2. Through lab assignments, students will design and conduct investigations to test hypotheses regarding network protocols and behaviors.
3. Using tools such as network simulations and by analyzing data packet traces from actual network interactions, students will analyze and interpret data, development predictions and explanations, analyze alternate explanations, communicate scientific procedures, and describe relationships between evidence and explanations using critical and logical thinking.

4. Students will use mathematics to construct solutions to problems regarding network performance and delays, IP address subnetting, and data encryption.
5. By completing lab assignments on their own home computers, laptops or mobile devices, students will understand and appreciate the role of the Internet in society and their lives.
6. By contributing to required discussions about Internet uses, access, security and net neutrality, students will understand and appreciate the role of science in society and in their lives.

Writing Expectations

Writing is integral for communicating ideas and progress in science, mathematics and technology. The form of writing in these disciplines is different from most other fields and includes, for example, mathematical equations, computer code, figures and graphs, lab reports and journals. Courses in the SI domain must include a writing component where that component takes on the form appropriate for that course (eg, *lab reports, technical reports, etc.)*

How Writing Expectations Will Be Met

Students will be required to write short lab reports explaining results from lab exercises. Students will be required to write a research paper from multiple external sources on an issue concerning the role and impact of the Internet in society.

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at http://academicintegrity.depaul.edu/. If you have any questions be sure to consult with your professor.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at: cdm.depaul.edu/enrollment.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.
To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu.
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