

SYLLABUS
IT 263-401
Applied Networks and Security
Fall Quarter 2016/2017

Instructor: Greg Brewster
Class Time: Tu/Th 1:30 pm – 3:00 pm
Class Location: CDM 224
Office Hours: 1:00 – 1:30 pm before each class
3:00 – 3:30 pm after each class
Office CDM 850
E-mail: gbrewster@cdm.depaul.edu
E-Text: Introduction to Networks: Cisco Networking Academy,
<https://www.netacad.com>.

Course Overview

This course introduces the networking and security technologies required to build and maintain a home or small-office network. Networking topics will include client/server application software configuration, network connectivity (cabling, switch and router configuration), basic IP addressing, network address translation and options for public Internet access services. Security topics will include typical threats and responses, firewalls, host hardening, password management and virtual private network (VPNs). The course has a lab component where students apply wired and wireless technologies to design and administer a small network with various applications. PREREQUISITE(S): None.

Coursework, Exams, & Grading

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

- 4 homework assignments (25%)
- 4 lab exercises (25%)
- midterm exam (15%)
- technology report (10%)
- class participation (5%)
- final exam (20%)

Further details on each assignment will be distributed in class. Assignments received late will be penalized as follows: up to 1 day late is 20% penalty; between 1 day and 2 days late is 30% penalty; between 2 days and 1 week late is 40% penalty; more than 1 week late results in no credit for the particular assignment. Homework assignments, papers and exams must be completed individually. The strongest of sanctions will be imposed

on anyone who submits as his/her own any work which has been prepared by someone else. I expect all students to read and understand DePaul's policy on Academic Integrity.

Course topics expected to be covered in each class and the corresponding readings in the Network Academy Introduction to Networks (ItN) course are listed in the table below.

Note: **you are not required to do any Activities or Labs within the ItN course** unless specifically stated, but you are encouraged to complete them for extra practice if you wish.

Class Schedule

<i>Date</i>	<i>Topics</i>	<i>NetAcad ItN Readings</i>	<i>Assignments</i>
Sep. 8	Course Goals and Overview	1.1-1.5	
Sep. 13	Network Basics, Cabling	3.1-3.3, 4.1-4.2	
Sep. 15	Wired Ethernet and Switching	4.3-4.4, 5.1-5.3	Lab 1 out; HW 1 out
Sep. 20	Wi-Fi Networks		
Sep. 22	IP addressing and DHCP	2.1, 2.2.1, 2.3, 6.1, 7.1, 7.3	HW 1 due
Sep. 27	TCP and packet analysis	9.1, 9.2	Lab 2 out
Sep. 29	IP subnets and routing	6.2	HW 2 out
Oct. 4	Subnetting	8.1-8.3	
Oct. 6	Routers and Switches	6.3-6.4	HW 2 due
Oct. 11	Midterm Review		Labs 1, 2 due
Oct. 13	Midterm Exam		
Oct. 18	NAT		Lab 3 out
Oct. 20	IPv6	6.1.4, 7.2, 8.3	HW 3 out
Oct. 25	DNS, Internet Applications	10.1-10.2, 11.1	
Oct. 27	Privacy and Network Security	1.4.3	Lab 4 out; HW 3 due
Nov. 1	Integrity, Encryption, Authentication		HW 4 out
Nov. 3	Network Vulnerabilities	11.2	
Nov. 8	Firewalls		HW 4 due
Nov. 10	Virtual Private Networks (VPNs)		Labs 3, 4 due
Nov. 15	Wrapup and Review		Tech Report due
Nov. 17	Final Exam: 11:30 AM – 1:45 PM		

The Technology Report will consist of an individual report on a relevant information security topic. More details on this assignment will be provided in Week 3.

The Class Participation grade will be earned as follows: students gain 0.25% credit towards their final grade for each lecture actively attended (total of up to 5.0% of final grade for 20 class sessions). Active attendance means that you will respond if I call on you.

Liberal Studies Domain Information

IT 263, Applied Networks and Security, 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 in understanding 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 and 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

After completing this course, students will be able to:

- Understand foundational networking topics and concepts
- Analyze and maintain Local Area Networks
- Plan IP address assignments through subnetting
- Discuss various types of security attacks and how to mitigate them
- Understand how to secure a network from common attacks
- Use tools such as Wireshark to analyze network traffic

These learning outcomes will be met through homework and lab assignments that will include: short answer questions that will require the application of networking concepts covered in class, labs in which the student will observe and analyze how traffic passes through a network, situational problem-solving, and researching recent security hacks and vulnerabilities.

Writing Expectations

Writing is integral for communicating ideas, progress, and instructions in technology. Writing in technology-based fields is different from most other fields and includes, for example, mathematical equations, computer code, device configurations, and implementation instructions. In this course, students will be given a writing assignment in the form of a Technology Report, where they will be expected to research a recent security breach or hack, and discuss how this attack was performed and how it could be mitigated.

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 students 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 students have any questions, they should consult their 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.