

University of Wisconsin-Whitewater
Curriculum Proposal Form #3
New Course

Effective Term: 2147 (Fall 2014)

Subject Area - Course Number: **COMPSCI 462**
(See Note #1 below)

Cross-listing: N/A

Course Title:(Limited to 65 characters) Network Security

25-Character Abbreviation: Network Security

Sponsor(s): Dr. Jiazhen Zhou

Department(s): Mathematical and Computer Sciences

College(s): Letters and Sciences

Consultation took place: NA Yes (list departments and attach consultation sheet)
Departments:

Programs Affected: **Computer Science**

Is paperwork complete for those programs? (Use "Form 2" for Catalog & Academic Report updates)

NA Yes will be at future meeting

Prerequisites: COMPSCI 223 and COMPSCI 271, or Consent of Instructor

Grade Basis: Conventional Letter S/NC or Pass/Fail

Course will be offered: Part of Load Above Load
 On Campus Off Campus - Location

College: Letters and Sciences **Dept/Area(s):** Math and Computer Science

Instructor: Dr. Jiazhen Zhou

Note: If the course is dual-listed, instructor must be a member of Grad Faculty.

Check if the Course is to Meet Any of the Following:

Technological Literacy Requirement Writing Requirement
 Diversity General Education Option: Select one:

Note: For the Gen Ed option, the proposal should address how this course relates to specific core courses, meets the goals of General Education in providing breadth, and incorporates scholarship in the appropriate field relating to women and gender.

Credit/Contact Hours: (per semester)

Total lab hours: 0 Total lecture hours: 48
Number of credits: 3 Total contact hours: 48

Can course be taken more than once for credit? (Repeatability)

No Yes If "Yes", answer the following questions:

No of times in major:
No of times in degree:

No of credits in major:
No of credits in degree:

Proposal Information:(Procedures for form #3)

Course justification:

Security is a major issue in computer networking. There is a high need of technicians and scientists in this area to ensure a secure and reliable network in support applications going through the Internet. Providing education in network security will largely boost the career of students graduating from the Computer Science program, and it also benefit our community significantly. This course will also act as one course in the forthcoming networking emphasis area in our Computer Science program.

Relationship to program assessment objectives:

The following Computer Science program objectives are at least partially addressed by this course:
To provide students with:

- Technical, analytic, problem solving skills required for an entry-level position.
- Hands-on experience with appropriate technology.
- High level of adaptability to new technology and a commitment to continual learning.
- Group and individual communication skills.
- Professional and personal development skills.

Budgetary impact:

Staffing: Several members of the current Computer Science staff have the expertise necessary to staff this course. It is anticipated that Dr. Jiazhen Zhou a will initially be the instructors. Computer laboratory space on campus is already sufficient to run this course.

Academic unit library and service & supply budget:

It is not anticipated that this course will affect the department's service & supply or library budget.

Impact on campus instructional resource units: This course will serve as a emphasis area course in networking for our newly established Computer Science program.

Laboratory facilities: adequate lecture space is available. This course can be taught in any classroom or lab rooms such as McGraw 115 or Hyer 210. The networking lab of Dr. Jiazhen Zhou can provide space and equipment necessary for the hand-on experiments.

Course description:

This course covers the basic and fundamental cryptographic algorithms and security protocols for computer networks. Network vulnerabilities, attacks on Internet, network monitoring, security at the link, network and transport layers are also covered in the course.

Course Objectives and tentative course syllabus with [mandatory information](#)(paste syllabus below):

COMPSCI 462: Network Security

Required Texts:

Cryptography and Network Security: Principles and Practices, 5th Ed. -by William Stallings, Pearson Education, 2011 (ISBN 10: 0-13-609704-9)

Course Description

This course covers the basic and fundamental cryptographic algorithms and security protocols for computer networks. Network vulnerabilities, attacks on Internet, network monitoring, security at the link, network and transport layers are also covered in the course.

Prerequisite: COMPSCI 223 and COMPSCI 271, or Consent of Instructor

Course Objectives

1	To understand concepts related to applied cryptography, and the theory behind the security of different cryptographic algorithms.
2	To understand common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.

Tentative Course Schedule

WEEK	READINGS Assignment	Description	Presentation/Project/Exams
1	Chapter 1	Introduction; Networking basics and security issues	
2	Chapter 3	Classical encryption techniques	
3	Chapter 5,6	Block ciphers and the data encryption standard	
4	Chapter 7	Advanced encryption standard	Project 1
5	Chapter 8	Confidentiality using symmetric encryption	
6	Chapter 9, 10	Public-key cryptography and RSA	
7	Chapter 15	Key management and other public-key cryptosystems	
8	Chapter 11, 12	Message authentication and Hash functions	
9	Chapter 13, 14	Digital signatures and authentication protocols	

10	Chapter 16	Web security	Project 2
11	Chapter 17	Transport layer security	
12	Chapter 18	IP security	
13		Intrusion detection systems	
14		Firewalls	
15		Project presentations	Presentation

GradingPolicy

GRADABLE	Percentage
Projects	40%
Labs	15%
Quizzes	5%
Midterm	15%
Final Exam	25%
Total	100%

Letter Grade	Percentage	Letter Grade	Percentage
A	90 to 100%	A-	87 to 89.9%
B+	83 to 86.9%	B	80 to 82.9%
B-	77 to 79.9%	C+	73 to 76.9%
C	70 to 72.9%	C-	67 to 69.9%
D+	63 to 66.9%	D	60 to 62.9%
D-	50 to 60%	F	Less than 50%

Attendance and participation:

Class participation is very important and will be based on class attendance, punctuality, ability to contribute in class discussions, answer questions and coming prepared to class with assigned readings. All students are expected to prepare for and participate in all of classes except absences for university-sponsored events, absences caused by medical reasons in which cases, doctor's notes are required, or absences by family emergencies which will be determined on case-by-case basis.

Absence for University-Sponsored Events:

University policy adopted by Faculty Senate and the Whitewater Student Government states that students will not be academically penalized for missing class in order to participate in university-sanctioned events. They will be provided an opportunity to make up any work that is missed; and if class attendance is a requirement, missing a class in order to participate in a university-sanctioned event will not be counted as an absence. A university-sanctioned event is defined to be any intercollegiate athletic contest or other such event as determined by the Provost. Activity sponsors are responsible for obtaining the Provost's prior approval of an event as being university-sanctioned and for providing an official list of participants. Students are responsible for notifying their instructors in advance of their participation in such events.

Technology requirement

1. Java SDK and Eclipse
2. Wireshark for packet capturing and analysis