University of Wisconsin-Whitewater
Curriculum Proposal Form #3

New Course

Effective Term: 2141 (Spring 2014)

Subject Area - Course Number: COMPSCI 460 **Cross-listing: N/A**
(See Note #1 below)

Course Title: (Limited to 65 characters) Computer Networking

25-Character Abbreviation: Computer Networking

Sponsor(s): Dr. Jiazhen Zhou and Dr. Athula Gunawardena

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 and Dr. Athula Gunawardena
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:	3	Total lecture hours:	45
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 credits in major:
No of times in degree: No of credits in degree:

Proposal Information: (***Procedures for form #3***)

Course justification:

Internet is the information infrastructure of the society and Computer networking is the underlying technique. The revolutionary companies like Google, Facebook and Twitter are all driven by networking technology, and traditional market leaders like Microsoft also shift their focus into networking related product development. We should get our students ready for this area with large amount of career opportunities. No wonder computer networking is such a first course to allow them to understand the networking technology and explore exciting chances in terms of both technique and entrepreneurship.

In addition, the computer science major plans to offer a networking emphasis area. Computer networking is the fundamental course in the networking area.

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 and Dr. Athula Gunawardena 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 the cornerstone course for the networking emphasis to be proposed.

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 introduces the principles, applications, protocols, and architectures of data networks. It places an equal emphasis on practical experience as well as theoretical foundations. There will be abundant network programming and lab activities around application layer, transportation layer, and routing.

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

COMPSCI 460: Computer Networking

Required Texts:

Computer Networking: A Top-Down Approach, James Kurose and Keith Ross, Addison Wesley, 6th Edition, ISBN-13: 978-013-285620-1

Course Description

This course introduces the principles, applications, protocols, and architectures of data networks. It places an equal emphasis on practical experience as well as theoretical foundations. There will be abundant network programming and lab activities around application layer, transportation layer, and routing.

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

Course Objectives

1	To understand the architecture, protocol, and underlining principle of computer networks.
2	To learn Network Programming through practical projects.

Tentative Course Schedule

WEEK	READINGS Assignment	Description	Presentation/Project/Exams
1	Chapter 1	Introduction to networking	
2	Chapter 2	Principles of network applications	
3	Chapter 2	Web and HTTP	Project 1
4	Chapter 2	Socket Programming	
5	Chapter 2	Peer-to-peer services	
6	Chapter 2	DNS, FTP, and Email	Project 2
7	Chapter 3	Transportation layer services, UDP	
8	Chapter 3	TCP and flow control	
9	Chapter 3	Principle of congestion control	Project 3
10	Chapter 4	Interworking and Routers	
11	Chapter 4	The Internet Protocol	
12	Chapter 4	Routing algorithms	Project 4

13	Chapter 4	Routing in Internet	
14	Chapter 8	Security in computer networks	
15		Project presentations	Presentation

Grading Policy

GRADABLE	Percentage
Project development	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