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OFFICE OF THE SENATE COUNCIL

1. General Information

1a. Submitted by the College of: ENGINEERING

Date Submitted: 5/23/2014

1b. Department/Division: Computer Science

1c. Contact Person

Name: Jerzy Jaromczyk

Email: jurek@cs.uky.edu

Phone: (859)2571186

Responsible Faculty ID (if different from Contact)

Name: Zongming Fei

Email: fei@cs.uky.edu

Phone: (859)2573202

1d. Requested Effective Date: Semester following approval

1e. Should this course be a UK Core Course? No

2. Designation and Description of Proposed Course

2a. Will this course also be offered through Distance Learning?: No

2b. Prefix and Number: CS 371

2c. Full Title: Introduction to Computer Networking

2d. Transcript Title:

2e. Cross-listing:

2f. Meeting Patterns

LECTURE: 3

2g. Grading System: Letter (A, B, C, etc.)

2h. Number of credit hours: 3

2i. Is this course repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester?

2j. Course Description for Bulletin: Introduction to the principles and concepts of the Internet; data communications and digital channel characteristics; networking applications and protocols, client-server paradigm and network programming; reliable data transfer, end-to-end transport; addressing, forwarding and routing, datagram networks; media access control, data link control; selected topics from cloud computing, network security and network management. Concepts are combined with programming and other hands-on assignments to enhance the learning of these topics.

2k. Prerequisites, if any: CS270, CS315

2l. Supplementary Teaching Component:

3. Will this course taught off campus? No

If YES, enter the off campus address:

4. Frequency of Course Offering: Spring,

Will the course be offered every year?: Yes

If No, explain:

5. Are facilities and personnel necessary for the proposed new course available?: Yes

If No, explain:

6. What enrollment (per section per semester) may reasonably be expected?: 25

7. Anticipated Student Demand

Will this course serve students primarily within the degree program?: Yes

Will it be of interest to a significant number of students outside the degree pgm?: No

If Yes, explain:

8. Check the category most applicable to this course: Traditional – Offered in Corresponding Departments at Universities Elsewhere,

If No, explain:

9. Course Relationship to Program(s).

a. Is this course part of a proposed new program?: No

If YES, name the proposed new program:

b. Will this course be a new requirement for ANY program?: No

If YES, list affected programs:

10. Information to be Placed on Syllabus.

a. Is the course 400G or 500?: No

b. The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from **10.a** above) are attached: Yes

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1.How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2.How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3.How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4.Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5.How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6.How do course requirements ensure that students make appropriate use of learning resources?

7.Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8.How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (http://www.uky.edu/UKIT/)?

9.Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10.Does the syllabus contain all the required components? NO

11.I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|SEALES|William B Seales|CS 371 NEW Dept Review|20131118

SIGNATURE|CHE202|Kimberly W Anderson|CS 371 NEW College Review|20140213

SIGNATURE|JMETT2|Joanie Ett-Mims|CS 371 NEW Undergrad Council Review|20141002

Courses | Request Tracking

New Course Form

https://myuk.uky.edu/sap/bc/soap/rfc?services=

Open in full window to print or save

Attachments:

Browse... No file selected.

	ID	Attachment
Delete	2455	CS371-Faculty-Support.pdf
Delete	3472	cs371syl_052304.pdf

First 1 Last

Select saved project to retrieve...

(*denotes required fields)

1. General Information

a. * Submitted by the College of: ENGINEERING Submission Date: 5/23/2014

b. * Department/Division: Computer Science

c.
* Contact Person Name: Jerzy Jaromczyk Email: jurek@cs.uky.edu Phone: (859)2571186
* Responsible Faculty ID (if different from Contact) Zongming Fei Email: fei@cs.uky.edu Phone: (859)2573202

d. * Requested Effective Date: ◉ Semester following approval OR ○ Specific Term/Year [1]

e.
Should this course be a UK Core Course? ○ Yes ◉ No
If YES, check the areas that apply:

☐ Inquiry - Arts & Creativity	☐ Composition & Communications - II
☐ Inquiry - Humanities	☐ Quantitative Foundations
☐ Inquiry - Nat/Math/Phys Sci	☐ Statistical Inferential Reasoning
☐ Inquiry - Social Sciences	☐ U.S. Citizenship, Community, Diversity
☐ Composition & Communications - I	☐ Global Dynamics

2. Designation and Description of Proposed Course.

a. * Will this course also be offered through Distance Learning? ○ Yes [4] ◉ No

b. * Prefix and Number: CS 371

c. * Full Title: Introduction to Computer Networking

d. Transcript Title (if full title is more than 40 characters):

e. To be Cross-Listed [2] with (Prefix and Number):

f. * Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours[3] for each meeting pattern type.

3	Lecture	Laboratory[1]	Recitation	Discussion
	Indep. Study	Clinical	Colloquium	Practicum
	Research	Residency	Seminar	Studio
	Other	If Other, Please explain:		

g. * Identify a grading system:
◉ Letter (A, B, C, etc.)
○ Pass/Fail
○ Medicine Numeric Grade (Non-medical students will receive a letter grade)
○ Graduate School Grade Scale

h. * Number of credits: 3

i. * Is this course repeatable for additional credit? ○ Yes ◉ No
If YES: Maximum number of credit hours:
If YES: Will this course allow multiple registrations during the same semester? ○ Yes ○ No

j. * Course Description for Bulletin:

Introduction to the principles and concepts of the Internet; data communications and digital channel characteristics; networking applications and protocols, client-server paradigm and network programming; reliable data transfer, end-to-end transport; addressing, forwarding and routing, datagram networks; media access control, data link control; selected topics from cloud computing, network security and network management. Concepts are combined with programming and other hands-on assignments to enhance the learning of these topics.

k. Prerequisites, if any:
CS270, CS315

l. Supplementary teaching component, if any: ○ Community-Based Experience ○ Service Learning ○ Both

3. * Will this course be taught off campus? ○ Yes ● No

If YES, enter the off campus address:

4. Frequency of Course Offering.

a. * Course will be offered (check all that apply): ☑ Fall ☑ Spring ☐ Summer ☐ Winter

b. * Will the course be offered every year? ● Yes ○ No

If No, explain:

5. * Are facilities and personnel necessary for the proposed new course available? ● Yes ○ No

If No, explain:

6. * What enrollment (per section per semester) may reasonably be expected? 25

7. Anticipated Student Demand.

a. * Will this course serve students primarily within the degree program? ● Yes ○ No

b. * Will it be of interest to a significant number of students outside the degree pgm? ○ Yes ● No

If YES, explain:

8. * Check the category most applicable to this course:

☑ Traditional – Offered in Corresponding Departments at Universities Elsewhere
☐ Relatively New – Now Being Widely Established
☐ Not Yet Found in Many (or Any) Other Universities

9. Course Relationship to Program(s).

a. * Is this course part of a proposed new program? ○ Yes ● No

If YES, name the proposed new program:

b. * Will this course be a new requirement [5] for ANY program? ○ Yes ● No

If YES [6], list affected programs::

10. Information to be Placed on Syllabus.

a. * Is the course 400G or 500? ○ Yes ● No
If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in **10.b**. You must include: (i) identification of additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See SR 3.1.4.)

b. ☑ * The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from **10.**a above) are attached.

[1] Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.
[2] The chair of the cross-listing department must sign off on the Signature Routing Log.
[3] In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, represents at least two hours per week for a semester for one credit hour. (from SR 5.2.1)
[4] You must also submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.
[5] In order to change a program, a program change form must also be submitted.

Rev 8/09

UNIVERSITY OF KENTUCKY

College of Engineering
Department of Computer Science
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Davis Marksbury Building
Lexington, KY 40506-0633
859 257-3961
www.cs.uky.edu

October 15, 2013

MEMORANDUM

TO: Zongming Fei
FROM: Brent Seales
SUBJECT: New Course Proposal CS 371

The new course proposal for CS371: Introduction to Computer Networking was vetted by the Computer Science faculty on Monday, 14 October 2013. After discussion by the faculty, the proposal was approved by unanimous vote for submission to the next level in the approval process.

Handout 1 **Fall 2012**

CS371: Introduction to Computer Networking

Syllabus *Auguest 23, 2012*

Location: 257 FPAT (F. Paul Anderson Tower)
Time: TR 9:30 am - 10:45 am
URL: `http://voip.netlab.uky.edu/~fei/teaching/cs371/index.html`

Instructor

Zongming Fei
Office: 227 James F. Hardymon Building
Phone: (859)257-3202
email: fei@cs.uky.edu
Office hours: TR 1:00 - 2:00 pm (or by appointment)

Course Description

Introduction to the principles and concepts of the Internet; data communications and digital channel characteristics; networking applications and protocols, client-server paradigm and network programming; reliable data transfer, end-to-end transport; addressing, forwarding and routing, datagram networks; media access control, data link control; selected topics from cloud computing, network security and network management. Concepts are combined with programming and other hands-on assignments to enhance the learning of the topics.

Prerequisites

CS270, CS315

Students Learing Outcomes

At the conclusion of the course, the successful student will be able to:

1. Describe the operation of common systems and protocols used in the Internet.

2. Analyze and explain the factors affecting performance (throughput and delay) in systems that communicate over the Internet.

3. Explain approaches and protocols for implementing reliable data transfer over an unreliable channel.

4. Describe the organization of the Internet infrastructure, and explain the principles and algorithms related to routing and forwarding in large-scale networks.

5. Describe and explain principles and approaches of sharing a transmission channel among multiple stations.

6. Implement an application-level communication protocol from a given specification.

Required Materials/Textbooks

James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet (6th Edition), Addison Wesley, 2012. (required)

Michael J. Donahoo and Kenneth L. Calvert, TCP/IP sockets in C: Practical Guide for Programmers, Morgan Kaufmann, 2000. (recommended)

Course Activities, Assignments and Grading

The grade will be determined by your performance on homework, programming assignments, participation in class, a midterm exam and a final exam. The tentative weights are as follows:

Class participation	5%
Homework	25%
Programming Assignments	25%
Midterm exam	20%
Final exam	25%

Programming assignments will implement some non-trivial client-server programs using common network API.

Final grades will be assigned according to the following scale:

A=90-100%, B=80-89%, C=70-79%, D=60-69%, E=0-59%.

No incomplete grades will be assigned unless there exist exceptional, extenuating circumstances.

Final Exam Information

Final exam: December 11, 2012 at 8:00 am (Tuesday)

Mid-term Grade

Mid-term grades for undergraduate students will be posted in myUK by the deadline established in the Academic Calendar (http://www.uky.edu/Registrar/AcademicCalendar.htm).

Course Policies

Submission of Assignments:

Late submissions of homework and projects will not be accepted with the exception of excused absences.

Make-up Policy for Missed Work with an Excused Absence: Students have one week following an excused absence to make up any missed graded work or exams.

Attendance Policy:

Attendance is mandatory. For each unexcused absence, two points will be deducted from the final average.

Excused Absences:

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Verification of Absences:

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Academic Integrity:

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: http://www.uky.edu/Ombud. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of Student Rights and Responsibilities (available online http://www.uky.edu/StudentAffairs /Code/part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone elses work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a students assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability:

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you

must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Additional Resources

The text will be supplemented with additional materials. Among them, RFCs (RFC stands for *Request for Comments*) will be used most frequently.

Here are some other textbooks:

- Behrouz A. Forouzan, TCP/IP Protocol Suite, Fourth Edition, McGraw-Hill, 2009.
- Larry L. Peterson and Bruce S. Davie, Computer Networks: A Systems Approach, Fifth Edition, Morgan Kaufmann Publishers, 2011.
- Richard W. Stevens, TCP/IP Illustrated, Volume 1, Addison Wesley, 1994.
- William Stallings, Data and Computer Communications, Prentice Hall, 8th Edition, 2006.
- Douglas Comer, Internetworking with TCP/IP: Principles, Protocols, and Architecture, Prentice Hall, Fifth Edition, 2006.

Tentative Course Schedule

This schedule is tentative and subject to change.

Please be advised that you are supposed to read the corresponding sections in the textbook and other listed materials before each class. Some of the contents will not be covered during the class meeting.

Week	Start from	Topics
1	08/23	Introduction, Digital channels, delay, bandwidth
2	08/28	Network applications, HTTP
3	09/04	FTP, SMTP, DNS, P2P
4	09/11	Socket Programming
5	09/18	Transport layer, UDP, Reliability
6	09/25	TCP, sliding window, flow and congestion control
7	10/02	Network layer, VC vs Datagram, routers
8	10/09	flexible and midterm exam (date to be determined)
9	10/16	IP forwarding and addresing
10	10/23	Routing protocols
11	10/30	Link layer, error detection, framing
12	11/06	MAC addresses, ARP, Ethernet, CSMA/CD
13	11/13	Wireless and mobile networks
14	11/20	Network Security
15	11/27	Cloud Computing
16	12/04	flexible and review
17		Final Exam at 8:00am on Dec. 11, 2012, Tuesday