New Undergraduate Course Proposal Form

1. Department and Contact Information

<table>
<thead>
<tr>
<th>Tracking Number</th>
<th>Date &amp; Time Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>2008-08-06 14:29:04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department</th>
<th>College</th>
<th>Budget Account Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science &amp; Engineering</td>
<td>Engineering</td>
<td>2108-000-00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact Person</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed Kellner</td>
<td>4-0909</td>
<td><a href="mailto:ekellner@cse.usf.edu">ekellner@cse.usf.edu</a></td>
</tr>
</tbody>
</table>

2. Course Information

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Number</th>
<th>Full Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNT</td>
<td>4201</td>
<td>Computer Networks I</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the course title variable?</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a permit required for registration?</td>
<td>N</td>
</tr>
<tr>
<td>Are the credit hours variable?</td>
<td>N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Section Type</th>
<th>Grading Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Class Lecture (Primarily)</td>
<td>Regular</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Clock Hours</th>
<th>Abbreviated Title (30 characters maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>Networks I</td>
</tr>
</tbody>
</table>

5. Prerequisites

| COP 4530 or EEL 4851C |

6. Corequisites

7. Co-Prerequisites

8. Course Description

An introduction to the design and analysis of computer communication networks. Topics include application layer protocols, Internet protocols, network interfaces, local and wide area networks, wireless networks, bridging and routing, and current topics.

9. Justification

A. Indicate how this course will strengthen the Undergraduate Program. Is this course necessary for accreditation or certification?

This is a fundamental course in most Computer Science curricula. This request is to move the course from an EEL prefix (Electrical Engineering discipline) to a COP (Computer Science) prefix. The course also provides a skill set for use in application development courses.
B. What specific area of knowledge is covered by this course which is not covered by courses currently listed?

This course establishes a foundation in Network design, protocol and operation. Computer network operation is fundamental to most businesses, and is the foundation upon which the Internet is built.

C. What is the need or demand for this course? (Indicate if this course is part of a required sequence in the major.) What other programs would this course service?

This is a fundamental course in most Computer Science programs. Network knowledge is one of the areas sought by prospective employers. Networks are vital to the operation of most businesses. The enrollment of the course indicates the desire of the undergraduate majors for this vital area. This course is also applicable to Electrical Engineering majors.

D. Has this course been offered as Selected Topics/Experimental Topics course? If yes, what was the enrollment?

This course is currently listed as EEL 4781C. This is an old prefix, from the period when Computer Science was a part of Electrical Engineering. The course has been offered yearly for 4 year, with enrollment of 30-40 each offering.

E. How frequently will the course be offered? What is the anticipated enrollment?

Yearly. 35-40

F. Do you plan to drop a course if this course is added? If so, what will be the effect on the program and on the students? (Please forward the nonsubstantive course change form regarding the course to be deleted to the Council secretary.)

EEL 4781C will be removed from the inventory and replaced with this course. This is not a drop; it is a replacement with a Computer Science prefix.

G. What qualifications for training and/or experience are necessary to teach this course? (List minimum qualifications for the instructor.)

Master's Degree and 18 hours of computer science courses minimum, with a background in Network design and/or administration courses or real world experience. Ph.D. prefered.

10. Other Course Information

A. Objectives / Outcomes
1. Become familiar with layered communication architectures (OSI and TCP/IP).
2. Understand the client/server model and key application layer protocols.
3. Learn sockets programming and how to implement client/server programs.
4. Understand the concepts of reliable data transfer and how TCP implements these concepts.
5. Know the principles of congestion control and trade-offs in fairness and efficiency.
6. Learn the principles of routing and the semantics and syntax of IP.
7. Understand the basics of error detection including parity, checksums, and CRC.
8. Know the key protocols for multimedia networking including IntServ and DiffServ for IP.
9. Familiarize the student with current topics such as security, network management, sensor networks, and/or other topics.

B. Major Topics

- Protocol layers and service models
- Application layer protocols and client-server model
- Sockes programming (using "C" language)
- Data Transfer - TCP
- Congestion Control
- Routing
- IEEE 802.3 and 802.11 protocols
- Switching and bridging
- Wireless and mobile networks
- Multimedia streaming
- Network security
- Network management

C. Textbooks


11. Syllabus

Your college will forward an electronic copy of your syllabus to Undergraduate Studies when your course is approved for submission.
Proposed Syllabus: CNT 4201

Current course: EEL 4781C - Distributed Processing and Computer Networks
Fall 2008
Class meeting time and location: Tuesday and Thursday, 9:30am to 10:45am in ENG 3
Class website: http://www.csee.usf.edu/~christen/class2/class2.html

Instructor: Dr. Ken Christensen
Office Hours: Monday through Thursday, 4pm to 5pm. Call or email to schedule an appointment.
Email: christen@csee.usf.edu
Homepage: http://www.csee.usf.edu/~christen

Teaching Assistant: TBD
Office Hours: TBD
Email: TBD
Homepage: TBD

Location: ENB 319
Phone: 974-4761


Course Description: An introduction to the design and analysis of computer communication networks. Topics include application layer protocols, Internet protocols, network interfaces, local and wide area networks, wireless networks, bridging and routing, and current topics.

Course Objectives: As a result of successfully completing this course, students will:
1. Become familiar with layered communication architectures (OSI and TCP/IP).
2. Understand the client/server model and key application layer protocols.
3. Learn sockets programming and how to implement client/server programs.
4. Understand the concepts of reliable data transfer and how TCP implements these concepts.
5. Know the principles of congestion control and trade-offs in fairness and efficiency.
6. Learn the principles of routing and the semantics and syntax of IP.
7. Understand the basics of error detection including parity, checksums, and CRC.
8. Know the key protocols for multimedia networking including IntServ and DiffServ for IP.
9. Familiarize the student with current topics such as security, network management, sensor networks, and/or other topics.

Course Topics: This course will cover the following topics:
Week 1: Protocol layers and service models. The OSI model.
Week 2: History of the Internet. Concepts of delay and Quality of Service (QoS) in the Internet.
Week 3: Application layer protocols and client-server model.
Week 4: Sockets programming in C (client-server and web server programs).
Week 5: Reliable data transfer. Semantics and syntax of TCP.
Week 6: Principles of congestion control: reactive and proactive, efficiency and fairness.
Week 7: Principles of routing: link-state and distance vector. Semantics and syntax of IP.
Week 8: Error detection including checksums and CRC.
Week 9: Multiple access protocols including wired IEEE 802.3 and wireless IEEE 802.11.
Week 10: ATM. Switching and bridging.
Week 12: Multimedia: overview of streaming video and voice.
Week 14: Network management including SNMP.
Week 15: Overflow from previous weeks. Discussion of current research areas. Review for final exam.
Week 16: Comprehensive final exam during the approved final exam period.

**Detailed Course Outline**: A detailed course outline that includes chapter reading suggestions, assignment and project deadlines, and exam dates is here, [http://www.csee.usf.edu/~christen/class2/outline2.html](http://www.csee.usf.edu/~christen/class2/outline2.html).

**Grading**: Students will earn a grade based on assignments, project, midterm exam, and a comprehensive final exam. The grade breakdown is:
- Assignments: 15% (six assignments - lowest grade dropped - due on 09/09/08, 09/23/08, 10/07/08, 10/28/08, 11/18/08, and 12/02/08 at the beginning of class)
- Project: 20% (due on 12/05/08 at 5pm)
- Midterm exam: 25% (held on 10/21/08)
- Final exam: 30% (held during the approved final exam period)

The grading scale is (no "+" or "+" grades will be given):
- A = 90% through 100%
- B = 80% through 89%
- C = 70% through 79%
- D = 60% through 69%
- F = Less than 60%

**Course Policies**: We will be observing all university policies regarding religious holidays and disability policies. Any student with a disability who needs special accommodations must bring a current Memorandum of Accommodations from the Office of Student Disability Services (this is the prerequisite for receiving accommodations). Accommodated examinations through the Office of Student Disability Services require two weeks notice. For information regarding religious holidays, please see [http://isis.fastmail.usf.edu/usfgc/gc_pp/acadaf/gc10-045.htm](http://isis.fastmail.usf.edu/usfgc/gc_pp/acadaf/gc10-045.htm).

Please note that you may tape my lectures and take notes for personal use, but you may not make monetary profit from the tapes and/or notes.

Please make sure that your turn off, or place in silent model, your cell phone.

**Submission of Late Work**: If you must submit work late you need to talk to me at least one-week before the due date in questions. Otherwise, late work cannot be accepted except in cases of verifiable emergencies.
**Academic Integrity/Academic Dishonesty**: I expect students to be honest and not cheat on their assignments, project, and exams. Students may work together on assignments and the project, but must submit individual work. The exams must be completed with giving or accepting assistance from other students. In light of this, I expect you to know the University's policies on student conduct, academic dishonesty, etc. Please see the University's Undergraduate Catalog regarding these policies at [http://www.ugs.usf.edu/catalogs/0708/adadap.htm](http://www.ugs.usf.edu/catalogs/0708/adadap.htm). Students found cheating in any form will receive an FF grade for the course.

**Getting an Incomplete**: Incomplete ("I") grades will only be given in the case of severe hardship including verifiable medical emergencies or legal troubles. Simply being "overloaded" and unable to complete your work is not grounds for an "I" grade.