

Eastern Illinois University
NEW/REVISED COURSE PROPOSAL FORMAT
(Approved by CAA on 9/29/11 and CGS on 10/18/11, Effective Fall 2011)

This format is to be used for all courses submitted to the Council on Academic Affairs and/or the Council on Graduate Studies.

Please check one: ☐ New course ☒ Revised course

PART I: CATALOG DESCRIPTION

1. **Course prefix and number, such as ART 1000:** TEC 5313
2. **Title (may not exceed 30 characters, including spaces):** Networking Communications
3. **Long title, if any (may not exceed 100 characters, including spaces):** Networking and Advanced Data Communications
4. **Class hours per week, lab hours per week, and credit [e.g., (3-0-3)]:** 2-2-3
5. **Term(s) to be offered:** ☐ Fall ☐ Spring ☐ Summer ☒ On demand
6. **Initial term of offering:** ☒ Fall ☐ Spring ☐ Summer **Year:**
7. **Course description:** Study of advanced data communications and networking hardware and software for applications in industry including standards, architecture, operations, systems maintenance, and management.
8. **Registration restrictions:**
 - a. **Equivalent Courses**
 - **Identify any equivalent courses** (e.g., cross-listed course, non-honors version of an honors course).
None
 - Indicate whether coding should be added to Banner to restrict students from registering for the equivalent course(s) of this course. ☐ Yes ☒ No
 - b. **Prerequisite(s)**
 - **Identify the prerequisite(s)**, including required test scores, courses, grades in courses, and technical skills. Indicate whether any prerequisite course(s) MAY be taken concurrently with the proposed/revised course. Graduate standing (required).

Experience with and access to current computer technology
 - Indicate whether coding should be added to Banner to prevent students from registering for this course if they haven't successfully completed the prerequisite course(s). ☐ Yes ☒ No

If yes, identify the minimum grade requirement and any equivalent courses for each prerequisite course:
 - c. **Who can waive the prerequisite(s)?**
☐ No one ☒ Chair ☐ Instructor ☐ Advisor ☐ Other (Please specify)

d. Co-requisites (course(s) which **MUST** be taken concurrently with this one):

e. Repeat status: ☒ **X** Course may not be repeated.

☐ Course may be repeated once with credit.

Please also specify the limit (if any) on hours which may be applied to a major or minor.(3 C. U.s)

f. Degree, college, major(s), level, or class to which registration in the course is restricted, if any: Master of Science in Technology

g. Degree, college, major(s), level, or class to be excluded from the course, if any:

9. Special course attributes [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive]

10. Grading methods (check all that apply): ☒ **X** Standard letter ☐ CR/NC ☐ Audit ☐ ABC/NC (“Standard letter”—i.e., ABCDF—is assumed to be the default grading method unless the course description indicates otherwise.)

Please check any special grading provision that applies to this course:

☐ The grade for this course will not count in a student’s grade point average.

☐ The credit for this course will not count in hours towards graduation.

If the student already has credit for or is registered in an equivalent or mutually exclusive course, check any that apply:

☐ The grade for this course will be removed from the student’s grade point average if he/she already has credit for or is registered in (insert course prefix and number).

☐ Credit hours for this course will be removed from a student’s hours towards graduation if he/she already has credit for or is registered in (insert course prefix and number).

11. Instructional delivery method: (Check all that apply.)

☒ **X** lecture ☒ **X** lab ☐ lecture/lab combined ☐ independent study/research
☐ internship ☐ performance ☐ practicum or clinical ☐ study abroad
☒ **X** Internet ☒ **X** hybrid ☐ other (Please specify)

PART II: ASSURANCE OF STUDENT LEARNING

1. List the student learning objectives of this course:

- a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:**
 - **EIU graduates will write and speak effectively.**
 - **EIU graduates will think critically.**
 - **EIU graduates will function as responsible citizens.**
- b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:**
 - **Depth of content knowledge**
 - **Effective critical thinking and Problem Solving**
 - **Advanced scholarship through research or creative activity**
 - **Effective oral and written communication.**

At the end of the course, Students will be able to:

1. Explain the principles of data communications including standards used, topologies available, and hardware necessary to implement local and wide area networking used in industry.
2. Operate networking hardware and software as it applies to industrial situations.
3. Assess the characteristics of wide area networks and technologies that could be used by industries to create an industrial data communications system.
4. Apply the principles of wide area networks including the topology, hardware, and software needed to create an industrial data communications system.
5. Apply the principles of optimizing and troubleshooting local and wide area networks.
6. Evaluate the principles of switching, routing, and security that are necessary for wide area networking to exist in an industrial environment.
7. Analyze the latest advanced networking concepts and management techniques necessary for a worldwide industrial operation.
8. Develop problem solving and communication skills for dealing with integrating networking and advanced data communications technologies into industrial settings.

OBJECTIVE	Depth of Content Knowledge	Effective critical Thinking and Problem Solving	Advanced Scholarship research or.....	Effective oral and Written Communication
1	X			
2		X	X	
3	X	X	X	X
4		X	X	
5	X		X	
6	X			X
7		X	X	X
8		X		X

2. Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives: Quizzes, Homework Assignments, laboratory Activities, Final Exam

3. Explain how the instructor will determine students' grades for the course:

- Each activity will weight a specific number of points; the totality of points at the end of the course will determine their grade based on a predetermined scale.

OBJECTIVE	3 QUIZZES (30% Total)	LABORATORY SIMPLE PROJECTS 15%	HOMEWORK ASSIGNMENTS 20%	LABORATORY COMPLEX PROJECTS 20%	FINAL EXAM 15%
1	X		X		X
2	X	X		X	X
3		X		X	
4	X	X	X	X	X
5	X	X	X	X	X
6	X	X	X	X	X
7			X	X	
8		X		X	

4. For technology-delivered and other nontraditional-delivered courses/sections, address the following:

a. Describe how the format/technology will be used to support and assess students' achievement of the specified learning objectives:

- Students will be guided by EIU's Learning Management System (LMS) applications as well as traditional student-professor contact methods (e-mail, telephone calls)
- Student will have world wide access to the laboratory facilities (This will be the first of its kind at EIU)

b. Describe how the integrity of student work will be assured:

- Students will have personalized projects for the "Laboratory Simple Projects". Each student will submit a detailed report with experimental results and conclusion.

- Student will have to take online quizzes. The questions in each exam will come from a database of questions which will ensure that no two students have more than 10% of the same questions for a particular quiz (Question options also will be randomized).
 - Each student will have his/her own credentials and her/his own particular file when authenticating remotely to the laboratory. Laboratory activities will be monitored (logs) closely (online).
 - Responses for all laboratory activities, quizzes, and final exam will be tested using TURNITIN.
- c. Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.):** e-mail, LMS, Skype, telephone calls, Worldwide Internet access to the laboratory facilities will be monitored by the instructor and/or the GA when “lab . Open hours are announced” giving the instructor the chance to interact with students while connected.
- 5. For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit. These include:**
- a. course objectives;
 - b. projects that require application and analysis of the course content; and
 - c. Separate methods of evaluation for undergraduate and graduate students.
- 6. If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified. (See Appendix *.)**

PART III: OUTLINE OF THE COURSE

Provide a week-by-week outline of the course’s content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content “units” are sufficiently equivalent to the traditional on-campus semester hour units of time described above.

	Subjects	Activities	Total* Hours
MODULE 1	<u>INTRODUCTION TO TELECOMMUNICATIONS:</u> <ul style="list-style-type: none"> - Bandwidth - Noise - Modulation and encoding - The OSI model - Media: Optical Fiber, Cable, Copper 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - Textbook reading Assignments	8

MODULE 2	<u>LAN TECHNOLOGIES</u> <ul style="list-style-type: none"> - ETHERNET protocol - VLANs - Other LAN protocols - LAN design and troubleshooting - Switches, Hubs, Bridges - Networking Cables 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - LAB Simple projects (2) - LAB Complex Project (2) -- Textbook reading Assignments - QUIZ 1 	8
MODULE 3	<u>SUBNETTING</u> <ul style="list-style-type: none"> - Subnetting a Class C IP address - Subnetting a Class B IP address - IPV6 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - LAB Simple projects (2) - LAB Complex Project (1) -- Textbook reading Assignments 	5
MODULE 4	<u>ROUTING</u> <ul style="list-style-type: none"> - Static Routing - Dynamic Routing (OSPF, EIGRP, RIP) 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - LAB Simple projects (2) - LAB Complex Project (2) - Textbook reading Assignments - QUIZ 2 	8
MODULE 5	<u>TCP/IP PROTOCOL</u> <ul style="list-style-type: none"> - Routed Protocols vs. Routing protocols - Connection oriented vs. Connectionless protocols 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - LAB Simple projects (2) - Textbook reading Assignments 	5
MODULE 6	<u>WIDE AREA NETWORKS</u> <ul style="list-style-type: none"> - WAN DESIGN - WAN TROUBLESHOOTING - WAN INTERCONNECTIONS 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - LAB Simple projects (2) - LAB Complex Project (2) - Textbook reading Assignments - Discussion - QUIZ 3 	8
MODULE 7	<u>SPECIAL TOPICS</u> <ul style="list-style-type: none"> - Issues with Integration - Problem WAN Solving and troubleshooting - WAN/LAN management - State of the art technologies 	<ul style="list-style-type: none"> - Internet Videos - PP presentation (reading) - LAB Simple projects (2) - LAB Complex Project (2) - Textbook reading Assignments - Discussion - FINAL EXAM 	8

PART IV: PURPOSE AND NEED

1. Explain the department's rationale for developing and proposing the course.

a. If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment.

b. If the course or some sections of the course may be technology delivered, explain why.

Purpose and need: The purpose of the course is to introduce graduate students to the information and skills of networking and data communications. Communication within our society depends heavily upon electronic communications, which are network oriented. The Internet and other communication technologies are using more and more applications of networking techniques to support commerce, industry, and various other sectors. A critical need exists locally and nationwide for people with the knowledge and skills as proposed here. This course is currently taught in a hybrid format and the school is proposing to update the course format from Hybrid to Internet delivered.

2. Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions.

A graduate level course is suitable for students who are preparing to become managers in industry. This course will provide graduate students with knowledge and skills to effectively solve problems and manage computer networks and data communications systems in industry. They also will have the foundation to gain additional skills and practical experiences in the field to become accomplished leaders.

3. If the course is similar to an existing course or courses, justify its development and offering.

This course was created and has been taught for more than a decade at EIU and was the first of its kind. We are proposing to change the format from Hybrid to Internet delivered.

a. If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal.

b. Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.

4. Impact on Program(s):

a. For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective.

b. For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective. This will be an elective course for the Master of Science in Technology

If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted.

PART V: IMPLEMENTATION

1. Faculty member(s) to whom the course may be assigned: Dr. Rigoberto Chinchilla and other qualified faculty in the School of Technology as assigned by the chair. Sections taught in online or hybrid formats

will be taught by faculty who have completed an EIU-approved training that qualifies him/her to teach online.

If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.

2. Additional costs to students: None

Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President's Council.)

3. Text and supplementary materials to be used (Include publication dates):

- Cisco Networking Simplified" (3rd Edition, 2012) Jim Doherty/Neil Anderson/ Paul Maggiora
- Web references and e-materials provided by the instructor.

PART VI: COMMUNITY COLLEGE TRANSFER

If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.

PART VII: APPROVALS

Date approved by the department or school: 2/28/14

Date approved by the college curriculum committee: 4/21/14

Date approved by the Honors Council (*if this is an honors course*):

Date approved by CAA: CGS:

***In writing-active courses**, frequent, brief writing activities and assignments are required. Such activities -- some of which are to be graded -- might include five-minute in-class writing assignments, journal keeping, lab reports, essay examinations, short papers, longer papers, or a variety of other writing-to-learn activities of the instructor's invention. Writing assignments and activities in writing-active courses are designed primarily to assist students in mastering course content, secondarily to strengthen students' writing skills. In **writing-intensive courses**, several writing assignments and writing activities are required. These assignments and activities, which are to be spread over the course of the semester, serve the dual purpose of strengthening writing skills and deepening understanding of course content. At least one writing assignment is to be revised by the student after it has been read and commented on by the instructor. In writing-intensive courses, students' writing should constitute no less than 35% of the final course grade. In **writing-centered courses** (English 1001G, English 1002G, and their honors equivalents), students learn the principles and the process of writing in all of its stages, from inception to completion. The quality of students' writing is the principal determinant of the course grade. The minimum writing requirement is 20 pages (5,000 words).

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