

University of Puerto Rico
 Mayagüez Campus
 College of Engineering
 Department of Electrical and Computer Engineering
 Bachelor of Science in Computer Engineering

Course Syllabus

1. General Information:	
Alpha-numeric codification: ICOM/INEL 4308 Course Title: Networking and Routing Fundamentals Number of credits: 3 Contact Period: 3 hours of lecture per week Elective in INEL and ICOM	
2. Course Description:	
English: The terminology of computer networks and its protocols, IP protocol addressing, network design introduction, and networking standards will be studied. Several routing protocols will be introduced, studied, and configured.	
Spanish: Se estudiará la terminología de redes de computadoras y sus protocolos, direccionamiento del protocolo IP, introducción al diseño de redes y estándares de redes. Se presentará, estudiará y configurará varios protocolos de enrutamiento.	
3. Pre/Co-requisites and other requirements:	
Co-requisite: MATE 3063 Calculus III or equivalent for Engineering majors, or COMP 4006 Systems Organization and Programming for Arts and Sciences majors Pre-requisite: SICI 4088 Analysis, Design, and Management of an Information Network or equivalent for Business Administration majors.	
4. Course Objectives:	
After successfully completing this course, the student will be able to: apply the fundamentals of computer networks by designing a small network, configuring the devices and routing protocols to implement it, and test it in the laboratory.	
5. Instructional Strategies:	
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input type="checkbox"/> computation <input checked="" type="checkbox"/> laboratory	
<input type="checkbox"/> seminar with formal presentation <input type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop	
<input type="checkbox"/> art workshop <input type="checkbox"/> practice <input type="checkbox"/> trip <input type="checkbox"/> thesis <input type="checkbox"/> special problems <input type="checkbox"/> tutoring	
<input type="checkbox"/> research <input type="checkbox"/> other, please specify:	
6. Minimum or Required Resources Available:	
A computer lab is required in order to administer the online assessments. Materials and tools such as CAT5 or above UTP cable, RJ45 connectors, wire strippers, wire cutters, crimping tools, cable testers, both male and female V.35 cables, and any other appropriate cables are also required. A computer that can be opened for show and tell is also needed. A working computer projector and a working computer are required in the classroom. A computer projector is also required in the lab. The networking lab requires at least six (6) routers, three (3) switches, and at least six (6) computer workstations. The routers need a minimum of one (1) FastEthernet interface and two (2) type V.35 serial cable interfaces. The routers need the capacity to run several routing protocols such as RIP v1 and v2, EIGRP, IS-IS, BGP, and OSPF and to handle at least the 801.1q standard. The switches must be able to handle at least the 801.1q standard and have no less than 12 ThinEthernet and two (2) FastEthernet LAN interfaces.	
7. Course time frame and thematic outline	
Outline	Contact Hours
Networking Fundamentals	2
Networking Media	3
Networking Standards	3
Ethernet Switching	3
TCP/IP Protocol Suite	2
IP Addressing and Routing	3
WANs and routers	3
Routing and routing protocols	10

Distance and Link state routing protocols	5
Controlling access to the router	5
Exams	6
Total hours: (equivalent to contact period)	

8. Grading System

Quantifiable (letters) Not Quantifiable

9. Evaluation Strategies (Suggested): The faculty member teaching the course will provide the student with the evaluation strategy he/she will be using throughout the semester. This will be done within the first week of classes.

	Quantity	Percent
<input checked="" type="checkbox"/> Exams	At least 3	40
<input checked="" type="checkbox"/> Final Exam	1	20
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input checked="" type="checkbox"/> Projects	At least 1	10
<input type="checkbox"/> Journals		
<input checked="" type="checkbox"/> Other, specify: Practical Exam	At least 1	30
TOTAL:		100%

10. Bibliography:

Peterson, Larry L., and Davie, Bruce B., (2003) Computer Networks: A Systems Approach 3rd Edition. San Francisco, CA: Morgan Kaufmann Publishers.

Comer, Douglas, (2004) Computer Networks and Internets with Internet Applications 4th Edition. Upper Saddle River, NJ. Prentice Hall

Tannenbaum, Andrew, (2003) Computer Network 4th Edition. Upper Saddle River, NJ, Prentice Hall PTR

Kurose, James F., and Ross, Keith W., (2004) Computer Networking : A Top-Down Approach Featuring the Internet 3rd Edition. Addison Wesley.

Stallings, William, (2004) Data and Computer Communications 7th Edition. Upper Saddle River, NJ, Prentice Hall

11. According to Law 51

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

12. Contribution of Course to meeting the requirements of Criterion 5:

Math	Basic Science	General	Engineering Topic
			√

13. Course Outcomes

Map to Program Outcomes

- | | |
|---|-----|
| 1. Use basic procedures to design and implement a computer network. | (a) |
| 2. Configure the set of protocols needed for Internet connection | (c) |
| 3. Use basic procedures to test an Internet connection | (e) |

Person (s) who prepared this description and date of preparation: Isidoro Couvertier. Submitted by: Miguel Vélez, julio 07