

Prince Sultan University
College of Computer & Information Sciences
Department of Computer Science
PSU CiscCoVersity Networking Program:
A Suggested Program for Maher-12-12

Objective:

PSU CiscCoVersity Networking Program is a professional one year program designed to prepare industry-ready network field engineers who can start practicing their jobs from day 1. The program provides a balanced blend of conceptual and hands-on material that covers all common aspects of networking. The program will be managed and implemented by highly experienced experts and academia who use state-of-the-art labs and high quality pedagogy approaches to deliver highly trained engineers to the market.

Target Audience:

The program is targeted towards fresh university graduates seeking to improve their career and employment opportunities. Students with engineering or science backgrounds will be preferred.

Admission to the Program:

Admission to the program is based on the following:

- Student GPA
- Passing the MaherNet tests
- Passing the personal interview

The Admission Process:

After advertising for the program, applicants will go through the following process:

- 1- Fill the application form before the specified deadline.
- 2- The Program Admission Committee will review applications and prepare a short list, based on the academic background, foundations, GPA and recommendations.
- 3- The short listed applicants will be invited for a short interview
- 4- Based on the interview the final list of accepted students will be announced.

Program Structure:

Table 1 below shows the main structure of the program with a brief description for each module:

Module Code	Module Name	Hours	Description
Net100	Introduction to computers	8 weeks	
Net101	Fundamentals of Programming	12 weeks	
Net102	Network Fundamentals	8 weeks	
Net103	Computer Networks: Routing and Switching: (Part I)	12 weeks	
Net 04	Computer Networks: Routing and Switching: (Part II)	12 weeks	
Net105	Network Design (Part I)	12 weeks	
Net106	Network Design (Part II)	12 weeks	
Net107	Windows 2008 Server and Active Directory	8 weeks	
Net108	Internet & Web Technologies	12 weeks	
Net109	Network Security	12 weeks	
Eng010	General English	12 weeks	
Eng020	English for Special Purposes	12 weeks	
SKS101	Soft Skills	8 weeks	
Net110	Coop Training		

Suggested Schedule:

The suggested schedule below is based on the assumption that the maximum number of teaching hours is 6. Implying 30 contact hours per week.

Session	Duration	Modules Covered	Dates
Quarter 1	12 weeks	Eng010: General English	17/3/1430H – 3/6/1430H Corresponding to 14/3/2009 – 27/5/2009
Quarter 2	12 weeks	Eng020: English for Specific Purposes (ESP) <i>(English for Information Technology, English for Computing)</i> SKS101: Personal Skills	6/3/1430H – 19/8/1430H 30/5/2009 – 19/8/2009
Vacation		Ramadan and Eid Al-Fitr	29/8/1430H –

			7/10/1430H 20/8/2009 – 26/9/2009
Quarter 3	12 weeks	Net100: Introduction to computers Net101: Fundamentals of Programming Net102: Network Fundamentals Net103 Routing and Switching: Part I	7/10/1430 – 1/12/1430H 26/9/2009 – 18/11/2009
		Eid AlAdha Vacation	1/12/1430 – 18/12/1430 18/11/2009 – 5/12/2009
		Finish Quarter 3 stuff	5/12/2009 – 16/12/2009
At this stage students are advised to proceed for the CCNA EXAM. All Students should take the CCNA exam before the end of the next quarter			
Quarter 4	12 weeks	Net104: Computer Networks Routing and Switching (Part II) Net105: Network design (Part I) Net107: Windows Server	19/12/2009 – 10/3/2010
At this stage students are advised to proceed for the CCDA and CCNP EXAM. All Students should take the CCDA exam before the end of the next quarter. The CCNP Exam is optional, but it is strongly recommended to take it.			
Quarter 5	12 weeks	Net106: Network design (Part II) Net108: Internet and Web Technologies Net 109 Network Security	13/3/2010 - 2/6/2010
At this stage students are advised to proceed for the CCDP EXAM and even the CCIE. Although both exams are optional, but students should not miss the golden opportunities provided by the program.			
Coop	4 weeks	Coop Period	5/6/2010 – 7/7/2010
		Graduation Ceremony at PSU	

As can be seen from the above table, there are five sessions. The first session is an introductory session during which some light introductory material is given. The first session is followed by three serious sessions that require hard work. It is suggested that a short break is given after each session. The students may use this break to prepare for the session examinations.

After session 4, students are advised to proceed for CCNA and CCDA Certification (take the Examinations).

Program Cost:

As may be anticipated, the two major components that affect the program cost are:

- 1- Labs and equipment
- 2- Instruction and Management

The tables below show the estimated cost for each component. Note that the labs and equipment cost is a one-time cost needed only for the first year. Accordingly, the second component represents the running program cost, which may be updated based on the actual experience.

Program Cost:

A- The Labs

Item	Cost Per Unit	Number of Units	Total Cost for Item
Cisco Router, Model 2811	9500	12	114000
Cisco Switches Model 2960	7600	12	91200
Access Server	10000	1	10000
PC's	4000	50	200000
Miscellaneous	20000	N/A	20000
Total Lab Cost			435200

B- Instruction and Management

	Cost Per Unit	Number of Units	Total Item Cost
Total Number of Hours	600	1720	1032000
Books and Stationary	2500	40	100000
Certification Exam Fees	5000	40	200000
Management, Advertizing and Coordination	400000	N/A	400000
Total Instruction and Management Cost per group			1732000
Total Program Estimated Cost			2167200

Budget:

Based on the program cost computed above, and assuming that the number of students is 40, it is suggested that the minimal fees per student should be 50,000 Riyals.

The first part of the fees is expected to be paid at the beginning of the program. The second part should be paid 4 weeks after the beginning of the program

Course Contents:

Net100: Introduction to Computers

The main objective of this course is to introduce students to the basics of Computers and Information Technology world. The course will introduce students to computing with emphasis on hardware and software components, operating systems, Databases, and Networking. Selected OFFICE applications (Word, Excel, and PowerPoint) will also be covered.

Suggested Textbooks:

- 1- Computing Essentials 2008 complete edition, by [Timothy J O'Leary](#), [Linda I O'Leary](#) Irwin/McGraw-Hill.
- 2- "Office 2007 Word Brief Edition" by: Timothy j. O'LEARY and Linda I. O'LEARY.
Publisher: McGraw Hill Year: 2008 ISBN: 978-0-07-329449-0
- 3- "Office 2007 Excel Brief Edition" by: Timothy j. O'LEARY and Linda I. O'LEARY.
Publisher: McGraw Hill Year: 2008 ISBN: 978-0-07-329451-3
- 4- "Office 2007 PowerPoint Brief Edition" by: Timothy j. O'LEARY and Linda I. O'LEARY. Publisher: McGraw Hill Year: 2008 ISBN: 978-0-07-329456-8

Net 101: Fundamentals of Programming:

This is a comprehensive introductory course targeted towards students who have no previous background in computer programming. The course starts by introducing the fundamentals of programming and then proceeds towards advanced features. In the beginning the courses concentrates on simple programming using simple data types. The use of loops and other control structures will be covered using practical examples. After that the courses introduces advanced concepts and compound data structures. Object oriented programming will be covered in depth. The last module of the course should introduce visual program development using any of the popular IDE systems such as Visual Studio. Any popular programming language may be used to implement the course.

Suggested Textbook:

The choice of the book is left to the instructor and the steering committee

Net102: Network Fundamentals

An overview of computer networks, their evolution, architectures, transmission media, layering models. Fundamentals of data communication protocols, error and flow control, network layer, the IP protocol, IP addressing, routing algorithms, internetworking, the TCP / UDP protocols, and application layer protocols.

Suggested Textbooks:

Mark Dye, [Network Fundamentals, CCNA Exploration Companion Guide](#), Cisco Press, 2008

Net103: Computer Networks: Routing and Switching (Part I)

This course provides introductory and intermediate skill level topics for configuring networked routers and switches. Covered topics include: Variable Length Subnetting, Basic router and switches configurations, Vlans , Network Address Translation, details on distance vector and link state routing protocols; Access List based security, WAN connections and troubleshooting a TCP/IP network.

Suggested Textbook:

Todd Lammle, [CCNA: Cisco Certified Network Associate Study Guide: Exam 640-802](#), 6 edition, Sybex, 2007.

Net104: Computer Networks: Routing and Switching (Part II)

Overview of Campus Network Design, building a campus network, layer 3 switching, campus network services (including IP telephony and security services), Wireless LANs, scenarios for final preparation.

Suggested Textbook:

David Hucaby: CCNP BCMSN Official Exam Certification Guide, 4th Edition, Cisco Press, 2007

Net 105: Network Design (Part I):

Network design methodology, network structure models, LAN and WAN design: enterprise LAN design, wireless LAN design, WAN technologies, WAN design. Internet protocols and routing protocols, security, convergence and network management, scenarios.

Suggested Textbook:

A. Bruno and S. Jordan, CCDA Official Exam Certification Guide, third edition, Cisco press, 2007

Net 106: Network Design (Part II):

Network design methodology, Basic concepts and terminology, Identifying customer needs, characterizing the existing network, characterizing network traffic, logical network design: designing a network topology, designing models for naming and addressing, selecting bridging, switching and routing protocols, developing network security and network management strategies, Physical network design: selecting technologies and devices for campus networks, selecting technologies and devices for enterprise networks, testing optimizing and documenting the network design.

Suggested Textbook:

Amir Ranjbar and Keith Hutton: CCDP Self Study Guide, Cisco Press 2005

Net107: Fundamentals of Windows server 2008

The fundamentals of an enterprise networking environment. the typical roles of IT Professionals in an enterprise environment, TCP/IPv4 configurations, protocols, and tools, the fundamentals of communication technologies, Create an IPv4 address range and subnet, Configure IPv6 addresses, Administer a Windows 2008 server, basic security concepts for server roles, how to secure network traffic by using certificates, Configure Windows Firewall, Configure and troubleshoot remote access, routing concepts, protocols, and quality of service, Configure and test network load balancing, Configure network print resources and printing pools, the functions included with Windows Server Virtualization (WSV).

Net 108: Internet and Web Technologies:

The web environment, HTML basics, Cascading Style Sheets, scripting, web design, interface design, building web applications, ASP.NET, ADO.NET, applications and examples.

Suggested Textbook:

Deitel & Deitel: Internet and Web Technologies: How to Program

Net 109: Network Security

This course is designed to provide a fundamental understanding of the various components of network security architecture and to demonstrate how each component can be implemented to achieve a secure system. The course focuses on identifying weaknesses and vulnerabilities in traditional networks along with an overview of the traditional defenses used to thwart attacks. Most widely used security technologies and key emerging security technologies will be discussed.

Topics covered include the design, adoption, and enforcement of security policies, secure network design, securing HTTP traffic, firewalls, Routing policies, virtual Private Networks, PKI Technologies, Secure wireless design techniques. Using logging and auditing tools, such as syslog, SNMP, RMON, and SAA, to manage network traffic.

Suggested Text Book:

[Gert DeLaet](#), [Gert Schauwers](#), Network Security Fundamentals (2004), Cisco press, ISBN-10: 1587051672