


Course Outline	
COMP6113 Network Design (2)	
Effective Date 01 February 2016	Study Program Computer Science Revision 0

1. Course Description

The objective of the course is helping student to design networks that meet a customer's business and technical goals. After completing this course, a student will be equipped to design enterprise networks that meet a customer's requirements for functionality, capacity, performance, availability, scalability, affordability, security, and manageability.

2. Graduate Competency

Each course in the study program contributes to the graduate competencies that are divided into employability and entrepreneurial skills and study program specific outcomes, in which students need to have demonstrated by the time they complete their course.

BINUS University employability and entrepreneurial skills consist of planning and organizing, problem solving and decision making, self management, team work, communication, and initiative and enterprise.

2.1. Employability and Entrepreneurial Skills

Aspect	Key Behaviour

2.2. Study Program Specific Outcomes

Study Program Specific Outcomes
Able to classify problems and to apply design and development principles for specific problems
Able to depict trend technologies in the future
Able to classify criteria and specifications appropriate to specific problems, plan strategies for their solution and construct software system development

3. Topics

- Analyzing Business Goals and Constraints
- Analyzing Technical Goals and Tradeoffs
- Characterizing the Existing Internetwork
- Characterizing Network Traffic
- Designing a Network Topology
- Designing Models for Addressing and Numbering
- Selecting Switching and Routing Protocols
- Developing Network Security Strategies
- Developing Network Management Strategies
- Selecting Technologies and Devices for Campus Networks
- Selecting Technologies and Devices for Enterprise Networks
- Testing Your Network Design
- Optimization and Documentation

4. Learning Outcomes

- On successful completion of this course, student will be able to:
- LO 1: Describe Business and Technical goals and constraints
 - LO 2: Identify Existing Network and its traffic

- LO 3: Design a Network Topology and Addressing models
- LO 4: Select Network Devices and Technologies
- LO 5: Describe Network Security and Management Strategies

5. Teaching And Learning Strategies

In this course, the lecturers might deploy several teaching learning strategies, including case studies, Lecture, and Presentation.

6. Textbooks and Other Resources

6.1 Textbooks

1. Priscilla Oppenheimer. (2011). *Top-Down Network Design*. 03. Cisco Press. Indianapolis, IN 46240 USA. ISBN: 978-1-58720-283-4.

The book in the first list is a must to have for each student.

6.2 Other Resources

1. <http://www.youtube.com/watch?v=CCTUZ3C52TY>

7. Schedule

Theory

Session/ Mode	Related LO	Topics	References
1 F2F	LO 1	Analyzing Business Goals and Constraints - Using Top-Down Network Design Methodology - Analyzing Business Goal - Analyzing Business Constraint	- Analyzing Business Goals and Constraints - Top-Down Network Design, Chapter 1 - Analyzing Business Goals and Constraints, http://www.youtube.com/watch?v=CCTUZ3C52TY
2 F2F	LO 1	Analyzing Technical Goals and Tradeoffs - Scalability - Availability - Network Performance - Security - Manageability - Usability - Adaptability - Affordability - Making Network Design Tradeoffs	- Analyzing Technical Goals and Tradeoffs - Top-Down Network Design, Chapter 2
3 F2F	LO 2	Characterizing the Existing Internetwork - Characterizing the Network Infrastructure - Checking the Health of the Existing Internetwork	- Characterizing the Existing Internetwork - Top-Down Network Design, Chapter 3
4 GSLC	LO 2	Characterizing Network Traffic - Characterizing Traffic Flow - Characterizing Traffic Load - Characterizing Traffic Behavior - Characterizing Quality of Service Requirements	- Characterizing Network Traffic - Top-Down Network Design, Chapter 4
5 F2F	LO 3	Designing a Network Topology - Hierarchical Network Design - Redundant Network Design Topologies - Modular Network Design - Designing a Campus Network Design Topology - Designing the Enterprise Edge Topology - Secure Network Design Topologies	- Designing a Network Topology - Top-Down Network Design, Chapter 5
6 F2F	LO 3	Designing Models for Addressing and Numbering - Guidelines for Assigning Network Layer	- Designing Models for Addressing and Numbering

		Addresses - Using a Hierarchical Model for Assigning Addresses - Designing a Model for Naming	- Top-Down Network Design, Chapter 6
7 F2F	LO 4	Selecting Switching and Routing Protocols - Making Decisions as Part of the Top-Down Network Design Process - Selecting Switching Protocols - Selecting Routing Protocols	- Selecting Switching and Routing Protocols - Top-Down Network Design, Chapter 7
8 F2F	LO 5	Developing Network Security Strategies - Network Security Design - Security Mechanisms - Modularizing Security Design	- Developing Network Security Strategies - Top-Down Network Design, Chapter 8
9 GSLC	LO 5	Developing Network Management Strategies - Network Management Design - Network Management Architectures - Selecting Network Management Tools and Protocols	- Developing Network Management Strategies - Top-Down Network Design, Chapter 9
10 F2F	LO 4	Selecting Technologies and Devices for Campus Networks - LAN Cabling Plant Design - LAN Technologies - Selecting Internetworking Devices for a Campus Network Design - Example	- Selecting Technologies and Devices for Campus Networks - Top-Down Network Design, Chapter 10
11 F2F	LO 4	Selecting Technologies and Devices for Enterprise Networks - Remote-Access Technologies - Selecting Remote-Access Devices for an Enterprise - WAN Technologies - Example of a WAN Design	- Selecting Technologies and Devices for Enterprise Networks - Top-Down Network Design, Chapter 11
12 GSLC	LO 3	Testing Your Network Design - Using Industry Tests - Building and Testing a Prototype Network System - Writing and Implementing a Test Plan for Your Network Design - Tools for Testing a Network Design	- Testing Your Network Design - Top-Down Network Design, Chapter 12
13 F2F	LO 3	Optimization and Documentation - Optimizing Bandwidth Usage with IP Multicast Technologies - Reducing Serialization Delay - Optimizing Network Performance to Meet Quality of Service - Responding to a Customer's Request for Proposal - Contents of a Network Design Document	- Optimization and Documentation - Top-Down Network Design, Chapter 13-14

8. Evaluation

Theory

Assessment Activity	Weight	Learning Outcomes				
		1	2	3	4	5
Assignment	20%	√	√	√	√	√
Mid Exam	30%	√	√	√	√	
Final Exam	50%	√	√	√	√	√

Practicum

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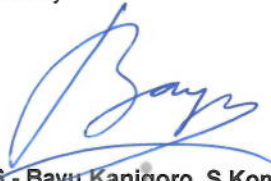
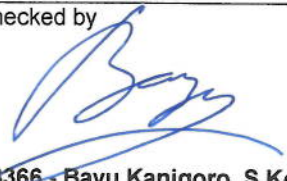


Final Evaluation Score

Aspects	Weight
Theory	100%
Practicum	0%

9. A. Assessment Rubric (Study Program Specific Outcomes)

LO	Indicators	Proficiency Level			
		Excellent (85 – 100)	Good (75 – 84)	Average (65 – 74)	Poor (<= 64)
LO 1	1.1. Ability to describe Business and Technical Goals	The descriptions are complete and clearly stated	The descriptions are complete but not clearly stated	The descriptions are incomplete but clearly stated	The descriptions are incomplete and not clearly stated
	1.2. Ability to describe Business and Technical Constraints	The descriptions are complete and clearly stated	The descriptions are complete but not clearly stated	The descriptions are incomplete but clearly stated	The descriptions are incomplete and not clearly stated
LO 2	2.1. Ability to Identify Existing Network	The identifications are complete and clearly stated	The identifications are complete but not clearly stated	The identifications are incomplete but clearly stated	The identifications are incomplete and not clearly stated
	2.2. Ability to Identify Existing Network Traffic	The identifications are complete and clearly stated	The identifications are complete but not clearly stated	The identifications are incomplete but clearly stated	The identifications are incomplete and not clearly stated
LO 3	3.1. Ability to Design Network Topology	The design is complete and clearly stated	The design is complete but not clearly stated	The design is incomplete but clearly stated	The design is incomplete and not clearly stated
	3.2. Ability to Design Addressing Model	The design is complete and clearly stated	The design is complete but not clearly stated	The design is incomplete but clearly stated	The design is incomplete and not clearly stated
LO 4	4.1. Ability to Select Network Devices and Technologies	The selection is correct and its reasons are clearly	The selection is correct but its reasons are not	The selection is correct but its reasons are not	The selection is incorrect

		stated	clearly stated	stated	
LO 5	5.1. Ability to describe Network Security Strategies	The descriptions are complete and clearly stated	The descriptions are complete but not clearly stated	The descriptions are incomplete but clearly stated	The descriptions are incomplete and not clearly stated
	5.2. Ability to describe Network Management Strategies	The descriptions are complete and clearly stated	The descriptions are complete but not clearly stated	The descriptions are incomplete but clearly stated	The descriptions are incomplete and not clearly stated

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