CPIT-375 Syllabus

Catalog Description

CPIT-375 Data Network Design and Evaluation
Credit: 3 (Theory: 3, Lab: 0, Practical: 1)
Prerequisite: CPIT-370
Classification: Elective

The objective of this course is to study the concepts and practical skills to design and evaluate data networks. Topics include technical concepts related to the data networks design, managerial aspects of the design, and technical skills needed to evaluate different network technologies, thereby enabling students to compare and contrast different alternatives for network designs.

Class Schedule

Lab/Tutorial 90 minutes 1 times/week

Meet 50 minutes 3 times/week or 80 minutes 2 times/week

Textbook

James D. McCabe, , "Network Analysis, Architecture, and Design", Morgan Kaufmann Pub; 3 edition (2007)

ISBN-13 9780123704801   **ISBN-10** 0123704804

Grade Distribution

Week	Assessment	Grade %
3	Quiz 1	2.5
5	Homework Assignments 1	1.5
6	Exam 1	15
10	Quiz 2	2.5
11	Homework Assignments 2	2
12	Exam 2	15
14	Homework Assignments 3	1.5
15	Group Project	15
15	Formal Presentation	5
16	Exam	40

Last Articulated

December 18, 2017

Relationship to Student Outcomes

a	b	c	d	e	f	g	h	i	j	k	l	m	n
		x								x	x	x	

Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. Describe what is required of a network in supporting its customers and their applications and devices. (l)
2. **Determine problems you are trying to address with the new network. (k)**
3. **Determine the service and performance objectives needed to tackle problems. (l)**
4. Collect and manage user, application, device, and network requirements. (l)
5. Consider and examine your customer's expectations about the network. (k)
6. **Develop service descriptions for networks and to identify and/or derive network requirements from the system. (m)**
7. Develop performance requirements for capacity, delay, and RMA, including developing performance thresholds and limits (m)
8. Develop both a requirements specification and an applications map. (k)
9. Identify the requirements for geographic locations, and identify and characterize traffic flows. (k)
10. Describe flow specifications, where performance requirements are combined in a flow or group of flows. (l)
11. Identify the network architecture: what is contained within the architecture of a network and how to develop this architecture. (k)
12. **Design the architecture for addressing and routing. (c)**
13. Describe the network management architecture. (l)
14. Describe the performance architecture based on user requirements. (k)
15. Describe the security architecture based on user requirements. (k)
16. Describe the network design process. (l)
17. **Develop a set of design decisions that are traceable back to your architectural decisions, requirements, and problem statements. (l)**

Coordinator(s)

Dr. Sabeen Tahir, Associate Professor

CPIT-375 Syllabus

Topics Coverage Durations

Topics	Weeks
Overview of Analysis, Architecture, Design Processes, and System approach applied to the network.	1
Compare the traditional and the new view of networks, service description offered by the network, and performance characteristics of these services.	1
Definition of requirements, user requirements, and application requirements.	1
Device requirements and network requirements.	1
Gather and list requirements and develop service metrics.	1
Characterize behavior, develop requirements and map requirements.	1
Flows definition, benefits, types, and models.	1
Flow prioritization and specification.	1
Definition of network architecture and component architectures.	1
Architectural models (Topological models, Flow based-models, and Functional model).	1
Network management hierarchy and functions.	1
Network protocols.	1
Network Management Mechanisms.	1
Determining Goals for Performance.	1
Prioritization, scheduling and queuing.	1