NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
ITN 213 – INFORMATION STORAGE AND MANAGEMENT (3 CR.)

Course Description

Focuses on advanced storage systems, protocol, and architectures including Storage Area Networks (SAN), Network Attached Storage (NAS), Fiber Channel Networks, Internet Protocol SANs (IPSAN), iSCSI, and Content Addressable Storage (CAS). Lecture 3 hours per week.

General Course Purpose

Cloud storage is one of the cloud computing pillars. Business enterprises and government entities are moving on-primes data centers to the cloud. Cloud computing and cloud storage are becoming part of the global information technology infrastructure. Most companies are using the cloud systems and the cloud storage either as the main IT system or at minimum the backup system for failover and redundancy.
In this course students will learn the fundamental of various computer file systems, basic and dynamic disk systems, various technologies of RAID systems for redundancy the performance implementation. Students will learn different type of backup systems and backup types such as full backup, incremental and differential backup systems. Students will learn different database types such as relational and non-relational database. Database management systems DBMS. Cloud database concepts and technologies., Students will study and practice some of primary   database vendor and their footprint in databases design and implementation.

Course Prerequisites/Corequisites

Prerequisites: ITN 257 and ITD 256.

Course Objectives

Upon completing the course, the student will be able to:

a) Describe computer file system such as FAT, FAT32, DFS, NTFS, etc

b) Describe different types of storage media.

c) Define different types of disk systems, volume, partition, RAIDS.

d) Define different types of backup systems and database management systems.

e) Define different types of DBMS technologies used in the cloud by different vendors such Amazon, Microsoft and

Google.

Major Topics to be Included

Data storage, availability, and redundancy (SAR).
1.   Cloud design and architecture principles.
2.   Cloud storage scalability, load balancing, elasticity, and redundancy.
3.   Cloud service types: IaaS, SaaS, PaaS, DaaS
4.   Storage type:
     a.   Physical storage
     b.   Database logical storage
     c.   Network storage
     d.   Cloud storage
5.   Database type:

      a. Relational database

      b. Non-relational database

6. Vendors Cloud database implementation

    a. AWS case study

        i. Amazon Simple Storage Service (Amazon S3)

        ii. Amazon Glacier Storage

        iii. Amazon Elastic Compute Cloud (Amazon EC2)

        iv. Amazon Virtual Private Cloud (Amazon VPC)

        v. Amazon Elastic Block Store (Amazon EBS)

    b. Microsoft Azure case study

        i. Resource group

        ii. Web front end

        iii. Microsoft Databases and processes.

        iv. Microsoft Cognitive Services

7. Cloud Solution Architecture best practices

8. Storage design and implementation best practices

9. Discuss trending implementation of cloud computing in both public (government state and federal) and private sector (business enterprise).

Required Time Allocation per Topic

In order to standardize the core topics of this course so that a course taught at one campus is equivalent to the same course taught at another campus, the following student contact hours per topic are required. Each syllabus should be created to adhere as closely as possible to these allocations. The course can be given in the standard 16-week, 12-week, or 8-week section format. All format offering should meet the same number of contact hours. The final exam time is not included in the timetable.

Topics	Hours	Percent
Overview of operating systems, files systems, disk and media types	3	7%
Storage and backup systems	9	20%
Databases types and DBMS	9	20%
Cloud design and architecture principles and best practices	9	20%
Best practice in cloud computing, storage, database, and current trending vendors technology implementation	9	20%
Exams, quizzes, and assignments to demonstrate knowledge	6	13%
Total	45	100

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