

Name of Department:- Computer Science and Engineering

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| 1. | Subject Code: | TDM 881 | Course Title: | Disaster Management | |
| 2. | Contact Hours: | L: 2 | T: - | P: - | |
| 3. | Semester: | VIII | | | |
| 4. | Pre-requisite: | None | | | |
| 5. | Course Outcomes: | After completion of the course students will be able to | | | |
| | <ul style="list-style-type: none"> 1- Study and investigate the various types of Hazards and disasters and create awareness in the community to effectively prevent and react to such incidents. 2- Investigate and analyze hazards, disasters and measure their interrelationships with the developing humanitarian activities for solving future disaster problems. 3- To study, analyze and build skills to respond to disasters and hazards with community participation for controlling climate change. 4- To develop skills by training disaster forces and communities for successful Disaster Risk Reduction. 5- Understand the Disaster Management Laws and Policies and effectively apply for prevention and building the Disaster management system. 6- Building robust reaction and response systems by Technological innovations and skill building. | | | | |
| 6. | Detailed Syllabus | | | | |

| UNIT | CONTENTS | Contact Hrs |
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| Unit – I | <p>Introduction, Definitions and Classification:</p> <p>Concepts and definitions - Disaster, Hazard, Vulnerability, Resilience, Risks Natural disasters : Cloud bursts, earth quakes, Tsunami, snow, avalanches, landslides, forest fires, diversion of river routes (ex. Kosi river), Floods, Droughts Cyclones, volcanic hazards/ disasters(Mud volcanoes): causes and distribution, hazardous effects and environmental impacts of natural disasters, mitigation measures, natural disaster prone areas in India, major natural disasters in India with special reference to Uttarakhand. Man-induced disasters: water logging, subsidence, ground water depletion, soil erosion,, release of toxic gases and hazardous chemicals into environment , nuclear explosions</p> | 9 |
| Unit – II | <p>Inter-relationship between Disasters and Development</p> <p>Factors affecting vulnerabilities, differential impacts, impacts of development projects such as dams, embankments, changes in land use etc. climate change adaption, relevance of indigenous knowledge, appropriate technology and local resources, sustainable development and its role in disaster mitigation, roles and responsibilities of community, panchayat raj institutions/urban local bodies, state, centre and other stake holders in</p> | 8 |

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| | disaster mitigation. | |
| Unit – III | Disaster Management (Pre-disaster stage, Emergency stage and Post Disaster Stage) 1. Pre-disaster stage (preparedness): Preparing hazard zonation maps, predictably/forecasting and warning, preparing disaster preparedness plans, land use zoning, preparedness through information, education and communication (IEC), disaster resistant house construction, population reduction in vulnerable areas, awareness 2. Emergency Stage: Rescue training for search & operation at national & regional level, immediate relief, assessment surveys 3. Post Disaster stage: Rehabilitation and reconstruction of disaster affected areas; urban disaster mitigation: Political and administrative aspects, social aspects, economic aspects, environmental aspects. | 9 |
| Unit – IV | Disaster Management Laws and Policies in India Environmental legislations related to disaster management in India: Disaster Management Act, 2005; Environmental policies & programs in India- Institutions & national centers for natural disaster mitigation: National Disaster Management Authority (NDMA): structure and functional responsibilities, National Disaster Response Force (NDRF): Rule and responsibilities, National Institute Of Disaster Management (NIDM): Rule and responsibilities. | 8 |
| | Total | 34 |

Text Books:

- M M Sulphey," Disaster Management", PHI, 2016

Name of Department:- Computer Science and Engineering

1. Subject Code: **TCS 851** Course Title: **Storage Networks**

2. Contact Hours: L: **3** T: **-** P: **-**

3. Semester: VIII

4. Pre-requisite: Knowledge of Database and Networking is required

5. Course Outcomes: After completion of the course students will be able to

1. Understand the different aspects of storage management
2. Describe the various applications of RAID
3. Compare and contrast the I/O Techniques
4. Categorize virtualization on various levels of storage network
5. Estimate the various requirements of storage management systems
6. Design a complete data center and enhance employability in this field

6. Detailed Syllabus

| UNIT | CONTENTS | Contact Hrs |
|-------------------|---|--------------------|
| Unit - I | <p>Introduction to Storage Technology</p> <p>Introduction to storage network, Five pillars of IT, parameters related with storage, data proliferation, problem caused by data proliferation, Hierarchical storage management, Information life cycle management (ILM), Role of ILM, Information value vs. time mapping, Evolution of storage, Storage infrastructure component, basic storage management skills and activities, Introduction to Datacenters, Technical & Physical components for building datacenters</p> | 10 |
| Unit - II | <p>Technologies for Storage network</p> <p>Server centric IT architecture & its limitations, Storage centric IT architecture & advantages, replacing a server with storage networks, Disk subsystems, Architecture of disk subsystem, Hard disks and Internal I/O channel, JBOD, RAID& RAID levels, RAID parity, comparison of RAID levels, Hot sparing, Hot swapping, Caching : acceleration of hard disk access, Intelligent Disk subsystem architecture</p> <p>Tape drives: Introduction to tape drives, Tape media, caring for Tape& Tape heads, Tape drive performance, Linear tape technology, Helical scan tape technology</p> | 9 |
| Unit – III | I/O techniques | 10 |

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| | <p>I/O path from CPU to storage systems, SCSI technology – basics & protocol, SCSI and storage networks, Limitations of SCSI</p> <p>Fibre channel: Fibre channel, characteristic of fibre channel, serial data transfer vs. parallel data transfer, Fibre channel protocol stack, Links, ports & topologies, Data transport in fibre channel,</p> <p>Addressing in fibre channel, Designing of FC-SAN, components, Interoperability of FCSAN, FC products</p> <p>IP Storage: IP storage standards (iSCSI, iFCP, FCIP, iSNS), IPSAN products, Security in IP SAN, introduction to InfiniBand, Architecture of InfiniBand</p> <p>NAS – Evolution, elements & connectivity, NAS architecture</p> | |
| Unit – IV | <p>Storage Virtualization</p> <p>Introduction to storage virtualization, products, definition, core concepts, virtualization on various levels of storage network, advantages and disadvantages, Symmetric and asymmetric virtualization, performance of San virtualization, Scaling storage with virtualization</p> | 9 |
| Unit – V | <p>Management of storage Networks</p> <p>Management of storage network, SNMP protocol, requirements of management systems, Management interfaces, Standardized and proprietary mechanism, In-band& Out-band management, Backup and Recovery</p> | 8 |
| | Total | 46 |

Text/ Reference Books:

1. "Storage Networks: The Complete Reference", R. Spalding, McGraw-Hill
2. "Storage Networking Fundamentals: An Introduction to Storage Devices, Subsystems, Applications, Management, and Filing Systems", Marc Farley, Cisco Press.
3. "Designing Storage Area Networks: A Practical Reference for Implementing Fibre Channel and IP SANs, Second Edition", Tom Clark Addison Wesley

Name of Department:- Computer Science and Engineering

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| 1. Subject Code: | TOE 811 | Course Title: | Mobile Computing |
| 2. Contact Hours: | L: 3 | T: - | P: - |
| 3. Semester: | VIII | | |
| 4. Pre-requisite: | TIT 704, TCS 703 | | |
| 5. Course Outcomes: | After completion of the course students will be able to | | |
| | <ol style="list-style-type: none"> 1. Explain the concepts, techniques, protocols and architecture employed in wireless local area networks, cellular networks, and Adhoc Networks 2. Describe and analyze the network infrastructure requirements to support mobile devices and users. 3. Interpret data management issues and distributed file system. 4. Assess the important issues and pertaining to clustering in wireless networks. 5. Value assessment of mobile agent in mobile computing environment. 6. Investigate Adhoc Routing Protocol. | | |

6. Detailed Syllabus

| UNIT | CONTENTS | Contact Hrs |
|-------------------|---|--------------------|
| Unit - I | Introduction, issues in mobile computing, overview of wireless telephony: cellular concept, GSM: air-interface, channel structure, location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS | 9 |
| Unit - II | Wireless Networking, Wireless LAN Overview: MAC issues, IEEE 802.11, Blue Tooth, Wireless multiple access protocols, TCP over wireless, Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications | 8 |
| Unit – III | Data management issues, data replication for mobile computers, adaptive clustering for mobile wireless networks, CODA File system, Disconnected operations | 9 |
| Unit – IV | Mobile Agents computing, security and fault tolerance, transaction processing in mobile computing environment. | 8 |
| Unit – V | Ad Hoc networks, localization, MAC issues, Routing protocols, global state routing (GSR), Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), Optimized link state routing protocol (OLSR), QoS in Ad Hoc Networks, applications | 9 |

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| | Total | 43 |
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Text/ Reference Books:

1. D.P. Agarwal, Qing Amazing "Introduction to wireless and Mobile systems" , Cengage learning India
2. J. Schiller," Mobile Communications", Addison Wesley.
3. Raj Pandya "Mobile and personal communication systems and services" IEEE press.
4. Kukumgarg , "Mobile computing – Theory and practice ", pearson.