- The four key constraints (4C's) – Power, Cooling, IT Infrastructure and Space

Unit 4: Managing the Data Centre **[6Hrs]**

- Regulations, best practices and operational processes
- Move, adds and change processes
- Efficient energy management
- Decommissioning processes
- Logical, IT & physical security

Unit 5: The Data Centre Industry and Market **[5Hrs]**

- The size of the market
- Market drivers and trends
- Powering the internet
- Case Study
-

Unit 6: Cloud Data Center **[4 Hrs]**

Unit 7: Disaster Recovery Center **[8Hrs]**

- Disaster Recovery Plan
- Business continuity and Disaster Recovery
- Data Backup
- Cloud Disaster Recovery
- Disaster Recovery Site
-

Notes: Students need to formulate planning document of DR center to secure 20 marks in practical.

Reference Books:

1. Scott D. Lowe, James Green and David Davis, Building a Modern Data Center Principles and Strategies of Design, ActualTech Media, 2016, New York
2. Mauricio Arregoces and Maurizio Portolani, Data Center Fundamental, Cisco Press, 2004, USA
3. Samee Ullah Khan and Albert Y. Zomaya, Handbook on Data Centers, Springer, 2015
4. Philip Jan Rothstein, IT Disaster Recovery Planning For Dummies, Wiley Publishing Inc, 2007

Principles of Management and Entrepreneurship in IT
BIT 451MS

Year: IV Semester: II

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal		Final		Total
			Theory	Practical	Theory	Practical	
3	1	0	20		80	-	100

Course Objectives:

The primary objective of this course is to present and explore current trends and changes in the nature, process and practice of management and entrepreneurship and innovation in the development, implementation and application of information technology.
The secondary objectives ofThe IT Entrepreneurship track prepares students to identify, select, and launch new IT innovations, products, and services, for enterprises in global market in new and existing organizations.

Course Contents:

1. **Introduction to Management** **3Hrs**
   Concept and scope of management.levels, principles, functions, of management, roles and skills of managers, women in organizational hierarchy**.**

2. **Organization Design** **3Hrs**
   Concept, principles, and benefits of organizing, Approaches to organization, organization design, departmentation, formal and informal organization, authority and responsibility, decentralization of authority**.**

3. **The Foundation of Entrepreneurship** **5Hrs**
   The world of entrepreneur, what is entrepreneur, the benefits of entrepreneurship, the potential drawbacks of entrepreneurship, behind the boom: what's feeding the entrepreneurial fire? The cultural diversity of entrepreneurship, The ten deadly mistakes of entrepreneurship, and how to avoid the pitfalls.

4. **Conducting a Feasibility Analysisand Crafting Winning Business Plan 5Hrs**
   Conducting a feasibility analysis, why develop a business plan, the elements of business plan, making the business plan presentation, conclusion and business plan format.

5. **Forms of Business Ownership, Franchisingand the Entreprenuer** **4Hrs**
   The sole proprietorship, partnership and corporation.Other forms of ownership. Types of franchising, the benefits of buying a franchise, the drawbacks of buying franchise, the right way to buy a franchise

6. **Building a Powerful Marketing Plan** **4Hrs**

   Building a guerrilla marketing plan, pinpointing the target market, determine customer needs and wants through market research, plotting a guerrilla marketing strategy, marketing on the WWW and the marketing mix.

7. **Choosing the right location and Layout** **4Hrs**

   A source of competitive advantage, location criteria and option for service business, the location decision for retail, manufactures and service business, layout: maximizing revenues, increasing efficiency and reducing costs.

8. **E-commerce and the Entrepreneur** **5Hrs**

   Benefits of selling on the web, factors to consider before launching into E-commerce, twelve Myths of E-commerce, strategies for E-commerce, designing a killer web site, tracking web results, and ensuring web privacy and security.

9. **Entrepreneur of IT** **8Hrs**

   Marketing information of Technology Products, technological lifecycle, classification of buyers in information technology market, technological SWOT, techno ready marketing, how and why customers adopt information technology, issues in technology management, mechanism and modes of technology transfer, information technology transfer to developing countries, information technology as the wealth of nation.

Note: Case study and Presentation on the basis of chapter 8, 9. **4Hrs**

References Books:

1. Essential of Management, Harold Koontz and Heinz Weihrich, Tata McGraw Hill Publishing Company Limited
2. Essential of entrepreneurship and Small Business Management, Thomas W. Zimmer and Norman M. Scarborough, PHI
3. Principles of Marketing, Philip Kotler and Gary Armstrong, Pearson Education Asia

Apprentice Project
BIT453CO

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal Assessment		Final		Total
			Theory	Practical	Theory	Practical	
-	-	3	-	60	-	40	100

Course Objective:

After finishing this project, students will be able to develop 2-tire or 3-tire or n-tire application using any RDBMS tool.

Course Contents:

A total of 45 lab hours covering all features Client side scripting; Server Side scripting (2-tire or 3-tire or n-tire application) using any RDBMS tool will be assigned to every student. Students must develop the assigned application software.

Project Evaluation Criteria for Internal assessment:

The marks allocated for the project should be evaluated based on the following criteria:

- Title identification and Proposal Writing— 10 Marks
- Mid-term Presentation — 20 Marks
- Pre-final Submission and final Presentation — 30 Marks

Project Evaluation Criteria for External assessment:

The marks allocated for the project should be evaluated based on the following criteria:

- Project Documentation— 20 Marks
- Final Presentation — 10 Marks
- VIVA--- 10 Marks

Note: Final Project Documentation should be in APA Format.

Natural Language Processing
BIT471CO

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal		Final		Total
			Theory	Practical	Theory	Practical	
3	1	2	20	50	80	-	150

Course Objective:
To understand the basics of speech and language processing, apply conventional techniques in NLP and to design a TTS and ASR system.

Contents:

Unit 1
Introduction to NLP: Definition, issues and strategies, application domain, tools for NLP, Linguistic organisation of NLP, NLP vs PLP, Word Classes review of Regular Expressions, CFG and different parsing techniques

Unit 2
Morphology: Inflectional, derivational, parsing and parsing with FST, Combinational Rules, Phonology: Speech sounds, phonetic transcription, phoneme and phonological rules, optimality theory, machine learning of phonological rules, phonological aspects of prosody and speech synthesis.

Unit 3
Pronunciation, Spelling and N-grams: Spelling errors, detection and elimination using probabilistic models, pronunciation variation (lexical, allophonic, dialect), decision tree model, counting words in Corpora, simple N-grams, smoothing (Add One, Written-Bell, Good-Turing), N-grams for spelling and pronunciation.

Unit 4
Syntax: POS Tagging: Tagsets, concept of HMM tagger, rule based and stochastic POST, algorithm for HMM tagging, transformation based tagging

Module 5
Sentence level construction & unification: Noun phrase, co-ordination, sub-categorization, concept of feature structure and unification Semantics, Representing Meaning: Unambiguous representation, canonical form, expressiveness, meaning structure of language, basics of FOPC, Semantic Analysis: Syntax driven, attachment & integration, robustness

Module 6
Lexical Semantics: Lexemes (homonymy, polysemy, synonymy, hyponymy), WordNet, internal structure

of words, metaphor and metonymy and their computational approaches, Word Sense Disambiguation: Selectional restriction based, machine learning based and dictionary based approaches.

Module 7

Pragmatics: Discourse: Reference resolution and phenomena, syntactic and semantic constraints on Co-reference, pronoun resolution algorithm, text coherence, discourse structure, Dialogues: Turns and utterances, grounding, dialogue acts and structures, Natural Language Generation: Introduction to language generation, architecture, dicourse planning (text schemata, rhetorical relations.

Reference Books:

1.D. Jurafsky& J. H. Martin – "Speech and Language Processing – An introduction to Language processing, Computational Linguistics, and Speech Recognition", Pearson Education

2. Allen, James – "Natural Language Understanding". Benjamin/Cummings, 2nd Edn.,1995
3. Bharathi, A., Vineet Chaitanya and Rajeev Sangal., Natural Language Processing- "A Pananian Perspective", Eastern Economy Edition, PHI, 1995
4. Eugene Cherniak: "Statistical Language Learning", MIT Press, 1993.

5. Manning, Christopher and Heinrich Schutze, "Foundations of Statistical Natural Language Processing". MIT Press, 1995

Supply Chain Analytics
BIT472MS

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal		Final		Total
			Theory	Practical	Theory	Practical	
3	1	2	20	50	80	-	150

Course Objective:

The main objective of course is to introduce how data analytics and machines learning can be applied in the supply chain management field to provide meaningful insights in decision making.

Course Contents:

Unit 1:Introduction **[5 Hrs]**

Definition of Supply chain, Need of Supply Chain, Structure of Supply Chain, Supply Chain Process, Supply Chain Flows, Supply Chain Management, Business Analytics, Supply Chain Analytics, SMART Goals of Supply Chain Analytics

Unit 2:Data driven Supply Chain **[6 Hrs]**

Data and its value in supply Chain Management, Data Source in supply chains, Big Data,Introduction to Python

Unit 3:Data Manupulation **[4 Hrs]**

Data loading and writing,Data Indexing and selection, data Merging and Combination, Data Cleaning and Preparation, Data Computation and aggregation

Unit 4:Data Visualization **[6 Hrs]**

Data Visualization in Python, Creating a figure in Python, Formatting a figure, Plotting simple charts, Plotting with Seaborn, Geographic mapping with Basemap, Visualizing wiStarbucks Location

Unit 5:Customer Management **[5 Hrs]**

Customers in Supply Chain, Benefits of Customer-Centric Supply Chain, Building Customer Centric Supply chain, Cohort Analysis, RFM Analysis, Clusturing Algorithms

Unit 6:Supply Management **[5 Hrs]**

Procurement in Supply Chains, Supplier Selection, Supplier Evaluation, Supplier Relationship Management, Supplier Risk Management, Supplier Selection Examples, Regression Algorithms

Unit 7:Warehouse and inventory Management [5 Hrs]

Warehouse Management, Inventory Management, Warehousing Optimization, Classification Algorithms

Unit 8:Demand Management [5Hrs]

Demand Management, Demand Forecasting, Time Series Forecasting, Machine learning Methods

Unit 9:Logistics Management [5 Hrs]

Definition of Logistics Management, Mode of Transports in Logistics, Logistics Service providers,Global Logistics Management, Logistics Network design, Route Optimization

Laboratory Work:

There shall be laboratory classes on data visualization as applied to supply chain analytics using Python.

Reference Books:

1. Kurt Y. Liu, "Supply Chain Analytics : Concepts, Techniques and Applications", Palgrave macmillan

2.Nicoleta Tipi," Supply Chain Analytics and Modelling Quantitative Tools and Applications", Kogan Page Ltd.

Big Data
BIT478CO

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal		Final		Total
			Theory	Practical	Theory	Practical	
3	1	2	20	50	80	-	150

Course Objectives:

The objective of this course is to familiarize the concept of big data in business intelligence and big data analytics and perform map-reduce analytics.

Course Contents:

Unit 1: Introduction **[5 Hrs]**

- Overview of Big Data
- Background of Data Analytics
- big data use in Distributed system
- development of big data,
- Current Trend in Big Data Analytics
- benefits of Big data, Applications of Big data

Unit 2: MapReduce Applications **[8 Hrs]**

- Map reduce fundamentals
- MapReduce workflows
- anatomy of Map Reduce job run,
- Fault tolerance
- Real world problems
- Scalability goal
- Optimization and data locality
- Parallel Efficiency of Map-Reduce

Unit 3: Data Management **[12 Hrs]**

Structured and Unstructured Data

- Taxonomy of NoSQL Implementation

- Schemaless databases
- Basic architecture of Hbase, Cassandra and MongoDb
- Partitioning and combining, composing map-reduce calculations

Unit 3: Fundamentals of HADOOP **[10 Hrs]**

- Analyzing data with Hadoop,
- Hadoop streaming,
- Hadoop pipes and design of Hadoop ,
- distributed file system (HDFS) ,
- HDFS concepts, Hadoop I/O,
- data integrity,
- compression,
- serialization,
- file-based data structures

Unit 5: HADOOP Tools

[10 Hrs]

- Data model and implementations
- Hbase examples
- Cassandra data model with examples
- Cassandra clients, pig data model
- developing and testing Pig Latin scripts
- Hive
- data types and file formats
- HiveQL data definition
- HiveQL data manipulation
- HiveQL queries.

Laboratory Works:

The practical work consists of all features of big data.

Reference Books:

1. Jeffrey Dean, Sanjay Ghemawat, Map reduce, "simplified data processing on large clusters
2. Michael Minelli, Michelle Chambers, and AmbigaDhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley, 2013.
3. P. J. Sadalage and M. Fowler, "NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence", Addison-Wesley Professional, 2012.
4. Tom White, "Hadoop: The Definitive Guide", Third Edition, O'Reilley, 2012.
5 . Eric Sammer, "Hadoop Operations", O'Reilley, 2012.

Mobile App development
BIT479CO

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal		Final		Total
			Theory	Practical	Theory	Practical	
3	1	2	20	50	80	-	100

Course Objective:

The main objective of this course is concerned with the development of applications on mobile and wireless computing platforms. Android will be used as a basis for teaching programming techniques and design patterns related to the development of standalone applications and mobile portals.

Course Contents:

Unit 1: Introduction **[5 Hrs]**

- History of mobile devices
- Modern mobile operating systems and their architecture
- Wireless communications standards
- Data transmission standards
- Software distributions systems for mobile devices
- Preparing programming tools for a mobile application developer

Unit2 2: Mobile Platforms **[5 Hrs]**

- Mobile programming languages
- Challenges with mobility and Wireless communication
- Location-aware applications
- Mobile platform constraints
- Emerging technologies

Unit 3: Introduction to Android: **[4 Hrs]**

- Introduction to Android platform:
    - virtual machine,

    - development tools,
    - Java packages,
    - emulators,
    - services
- Folder structure of an android project
- Anatomy of Android Application,
- Android Manifest File and its common settings

Unit 4: Android Application Design Essentials [8 Hrs]

- User Interface Screen elements,
- Designing User Interfaces with Layouts,
- Android View Hierarchy system
- Linear and Relative Layout elements and essential attributes
- Building responsive layout with constraint Layout
- Adding motion to layout using Motion Layout
- Creating List with Recycler View
- Styling layout elements with style assets
- Drawing and Working with Animation.

Unit 5: Writing basic application in Android [8 Hrs]

- Android Context & Application Context
- Hello world application in android
- Activities and Activity Life Cycle
- Event Handling
- Services & Intents - Receiving and Broadcasting Intents,
- Using Intent Filter,
- Providing necessary permissions to application from manifest and run time permissions

Unit 6: Data handling in android [5 Hrs]

- Using Android Data and Storage APIs
- Data management using SQLite
- Using Android preferences,
- Sharing Data Between Applications with content providers

Unit 7: Developing real time application [5 Hrs]

- Using common android APIs
- Android Telephony APIs
- Application security and permissions: security architecture, application signing, user identification, file access, declaration and verification of permissions
- In app messaging using broadcast
- Consuming RESTful APIs in android application

Unit 8: Debugging, Testing & Deployment [3 Hrs]

- Testing Android applications,
- Localization of applications, application signing, version management, licenses, preparing for distribution

- Publishing Android application,

Unit 9: Recent Concepts & Trends **[2 Hrs]**

- Application Monetization
- Introduction to Location Kit
- Introduction to ML Kit

Laboratory work:

Laboratory work consists of following laboratory exercises.

Exercise 1

- Preparing environment for android studio
- Hello World Application in android
- Deploying in simulator & real device

Exercise 2

- Creating Applications with Multiple Activities
- Message passing with Intents
- Setting Permissions in manifest as well as real time permission

Exercise 3

- Menu driven applications and Parsing XML Files
- Using Recycler View for list of items

Exercise 4

- Graphics Support in Android
- Drawables& Assets
- Playing with animations in Android

Exercise 5

- Using SQLITE in Android
- State management using StoredPreferences

Exercise 6

- Content Providers
- Media Store

Exercise 7

- Location Services and Google Maps in Android
- Obtaining User Location
- Creating Status Bar Notifications

Exercise 8

- Distributing APK manually
- Distributing via Google Play Store
- Concept of App Monetization

Reference Books:

1. Mobile Computing: Technology, Applications, and Service Creation – Asoke K. Talukder, Roopa R. Yavagal - McGraw-Hill Communications Engineering 2007
2. Android Programming: The Big Nerd Ranch Guide (Big Nerd Ranch Guides) 4th Edition
3. Android in Practice - Charlie Collins, MichaleGalpin, Matthias Kaeppler –Manning publications 2012

Incident Response and Management System
BIT485CO

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal Assessment		Final		Total
			Theory	Practical	Theory	Practical	
3	1	1	20	20	60	-	100

Course Objective:

To provide the concepts of Incident Response and Management and can demonstrate and implement the ability, knowledge and skills to be competent managers in the rapidly changing incident management platform and be able to apply these in practical contexts.

Course Contents:

Unit 1: Introduction to Incident Response System **[5 Hrs]**

- Introduction to Incident Response System
- Incident Command Systems
  - National Emergency Operation Center
  - Regional Emergency Operation Center/Provincial Emergency Operation Center
  - District Emergency Operation Center
  - Crisis Management Centers etc.
- Crisis Management Now and then (Case Studies)

Unit 2: Functioning of IRS **[5 Hrs]**

- Primary management functions
- Management by Objectives
- Unity and Chain of Command
- Organizational flexibility
- Unified Command
- Span of control

Unit 3: Resources and Infrastructure Management [6 Hrs]

- Common terminology
- Personnel accountability
- Integrated communications
- Resources management
- Establishment and transfer of command
- The Incident Action Plan

Unit 4: Incident Decision System and Reporting [8 Hrs]

- Early Warning Systems or Pre-Alert Systems
  - Epidemic and Pandemic Alert System
  - Hydrological and meteorological stations
  - Flood forecasting
  - Road Condition Alert/Information System
  - Glacial Lake Outburst Flood (GLOF) warning systems
  - Lightning Warning Systems, forest fire alert systems etcs)
- Utilizing Mass Media platform
  - Push message/notifications,
  - Paper Media,
  - Radio
  - Television
  - Social Media Platform
  - Other new-media and online mediums
  - Community Chaining etc.
- Role of Nepal Police, Armed Police Force and Nepal Army, Nepal Scout, RedCross and other line agencies into incident response
-

Unit 5: Disaster Recovery Portals [8 Hrs]

- DRR Portal Fundamentals
- Verifying datas for Real Time Information Platforms
- Developing DRR Portals
- Food Stock, SAR Materials and Medical Stock Record Management
- Integrating Alert/Warning Systems, various National Database into NEOC or DRR Portals
- Case Studies and DRR Experience of Nepal

Unit 6: Phases of Disaster Management [7 Hrs]

- Four Phases of DM (Mitigation, Preparedness, Response, and Recovery),
- Five Phases of DM (Prevention, mitigation, preparedness, response and recovery).
- Components of DM (Hazard Assessment Mapping, Vulnerability Mapping, Demographic Distribution, Infrastructure Lifelines and critical Facilities, logistics and transportation routes, human and material response resources, communication facilities etc.)

Unit 7: Cyber threats and Disaster Management [6 Hrs]

- Recovery of Data from DR Site
- Managing Scams and Spams, Fake News and Hoax
- Securing and utilizing DR sites
- Connecting the risks: critical infrastructure, cyber security and cascading effects
- Cyber security and the Sendai framework for disaster risk reduction
- Holistic risk assessments – interconnected and interdependent

- Risk-informed strategies and sustainable investments
- Adapting risk management capacity to a changing risk dynamic

Notes: Students need to perform Software Requirement Specification and develop prototype of Incidence Response System to secure 20 marks in practical.

Reference Books:

1. Jamie Watters, Disaster Recovery, Crisis Response, and Business Continuity: A Management Desk Reference, APress, 2014
2. Gerard Blokdijk, Disaster Recovery 100 Success Secrets: IT Business Continuity, Disaster Recovery Planning and Services, Emereo Publishing, 2008
3. Michael Wallace, Lawrence Webber, The Disaster Recovery Handbook, Amacom, New York, 2018
4. Vincent Faggiano, John McNall and Thomas T. Gillespie, Critical Incident Management: A Complete Response Guide, Second Edition, CRC Press, New York, 2012
5. Louis N. Molino & Sr., Emergency Incident Management Systems: Fundamentals and Applications, John Wiley & Sons, Inc., New Jersey, 2006
6. Rob Schnepp, Ron Vidal, and Chris Hawley, Incident Management for Operations, O'Reilly Media, Inc., 2017

Climate Change Risk Management
BIT486CO

Year: IV **Semester: II**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal Assessment		Final		Total
3	1	1	Theory	Practical	Theory	Practical	100
			20	20	60	-	

Course Objective:

To provide the concepts of World Climate Change issues and risk management due to climate change in various areas. After completion of the course students can demonstrate and implement the ability, knowledge and skills to be competent managers in the rapidly changing Climate Change issues through Green Computing environments.

Course Contents:

Unit 1: Overview of Climate Change Science [4 Hrs]

- Overview
- Earth's climate is changing
- The extent of future climate change
- Climate change impacts on health, environment, and economy

Unit 2: Causes of Climate Change [4 Hrs]

- Earth's temperature: Green House Effect, Sun's Energy, Reflectivity affect
- Mountain Resources, Snow Packs, Water resources, Coastal zones, Agriculture, Rangelands and livestock, Human health, Energy, Forests, Biodiversity, Fisheries etc.

Unit 3: Future of Climate Change [5 Hrs]

- Increasing greenhouse gas (GHG) concentrations will have many effects
- Future temperature changes
- Future ice, snowpack, and permafrost
- Future sea level change
- Future precipitation and storm events
- Future ocean acidification

Unit 4: Climate Change Impacts **[5 Hrs]**

- Climate change impacts in Nepal
- Extreme Heat
- Climate change impacts on Human Health
- Climate impacts on Ecosystems
- Impacts by Sector: Energy, Agriculture, coasts, forests, Society, transportation, water resources, mountain resources, tourism etc.
-

Unit 5: Climate Change Indicators **[5 Hrs]**

- Greenhouse Gasses
- Weather and climate
- Precipitation (Heavy Precipitation, river flooding, drought)
- High and low temperature
- Snow level and depths, snowfalls, snow covers, glaciers, lake ice, snow packs etc.
- Sea Level, sea surface temperature, ocean acidity, coastal flooding
- Health and Society, heat related illness and deaths, Lyme diseases, length of growing season, ragweed pollen season
- Ecosystem, wildfires, streamflows, lake water levels and temperatures, birds wintering/migration ranges, species distributions, leaf and bloom dates

Unit 6: Climate Change and Extreme Weather **[4 Hrs]**

- Changes in Extreme Weather and Climate Events
- Trends in Specific Extreme Weather Events
- Adaptation: Reducing the Threat of Climate Change and Preparing for Impacts

Unit 7:ICT for Climate Change **[10 Hrs]**

- An Introduction to Climate Change and Green Growth
- World of Tomorrow: Computer Simulation Models
- ICT Trends and their Implications for Tackling Climate Change
- ICT Applications for Adapting to Climate Change
- ICT Applications for Mitigating Climate Change
- ICT for Green Growth and Sustainable Development

Unit 8: Climate Change Impacts and Risk Analysis (CIRA) **[8 Hrs]**

- CIRA Framework
- Temperature Projections
- Precipitation Projections
- Sea Level Rise Projections
- Other forecasting and projections

Notes: Students need to perform hazard/vulnerability area mapping using GIS application to secure Practical 20 Marks in practicals.

Recommended Readings

1. Sue Roaf, David Crichton and Fergus Nicol, Adapting Buildings and Cities for Climate Change, Architectural Press, 2009
2. Robert M. May, The Britannica Guide to Climate Change: An Unbiased Guide to the key issue of our age, Encyclopedia Britannica Inc, 2008

3. Leslie Lipper, Nancy McCarthy, David Zilberman and Solomon Asfaw, Giacomo BrancaClimate Smart Agriculture: Building Resilience to Climate Change, Springer, 2018
4. Jan F. Feenstra, Ian Burton, Joel B. Smith and Richard S.J. Tol, Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies, UNEP, 1998
5. O'Neill, M. , Green IT for Sustainable Business Practice. British Computer Society, 2010
6. Kuehr, R. and Williams, E. (eds)., Computers and the Environment: Understanding and Managing Their Impacts. Kluwer Academic Publishers, 2009

Disaster Governance
BIT487CO

Year: IV **Semester: I**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal Assessment		Final		Total
			Theory	Practical	Theory	Practical	
3	1	1	20	20	60	-	100

Course Objective:

The main objective of this course is to provide students with the concepts of Electronic and Digital Governance model to address Disaster/Incident Response and Management so that they can demonstrate and implement the knowledge and skills in practical context and can become competent policy makers regarding disaster risk reduction and incident management.

Course Contents:

Unit 1: Overview of Digital Governance [**[6 Hrs]**

- Introduction to Digital Governance
- Types of Interaction in Digital Governance
- Digital Governance Infrastructure
- E-Readiness of Government Services
- Government Data Center and Government Cloud
- ICT and Government Application

Unit 2: Knowledge Management in Digital Governance **[4 Hrs]**

- Introduction
- Types of Knowledge
- Disaster Knowledge Repository

Unit 3: Overview of Disaster **[5 Hrs]**

- Introduction
- The Environment and Disaster Risk
- Natural and Non-natural Disasters
- Disaster and Digital Divide
- Addressing Vulnerabilities
- Health Aspects
- Sendai Framework

Unit 4: Disaster Governance **[5 Hrs]**

- Introduction
- Measures of Effectiveness of Disaster Governance
- Disaster Management now and then
- Coping Climate Change Practices
- Determinants of Good Disaster Governance
- Urban Disaster Governance
- Sustainable Development Goals and Disaster

Unit 5: Governance in Disaster Mitigation **[7 Hrs]**

- Critical Infrastructure Planning
- Preparing Social Security Database
- Disaster Management Consortium and Expert Rosters
- Search and Rescue (SAR) Planning
- Policy Development for Disaster Risk Reduction

Unit 6: Governance in Disaster Preparedness **[7 Hrs]**

- Geo-Projections of Disaster
- Preparing Evacuation Plan
- Simulating Search and Rescue operation
- Public Awareness
- National Strategy for Disaster Risk Management in Nepal (NSDRM)
- Developing focal points, national and local platforms for Disaster Risk Reduction.

Unit 7: Governance in Disaster Response **[7 Hrs]**

- Activating Disaster Response team
- Relief Distribution
- Safe Evacuation of affected peoples
- Managing and Transforming Infrastructure and Resources
- Transforming of funds for Disaster, Early Distribution of Disaster Relief Fund
-

Unit 8: Governance in Disaster Recovery **[4 Hrs]**

- Post-Disaster Recovery Planning
- Restoration of Critical Infrastructure
- Developing Knowledge Repository from Disaster
- Updating Mitigation Plan referring recent disaster learning

Notes: Students need to formulate Planning Documents based on any phases of Disaster Management to secure 20 marks in practical.

Reference Books:

1. Melanie Gall, Susan L Cutter and KhaiHoan Nguyen, Governance in Disaster Risk Management, Technical Report, ResearchGate.net, 2014
2. Indrajit Pal and Rajib Shaw, Disaster Risk Governance in India and Cross Cutting Issues, Springer 2017
3. R. Subramanian, Disaster Management, Vikas Publishing House, India, 2018
4. Jeffrey B. Bumgarner, Emergency Management: A Reference Handbook, ABC-Clio., 2008
5. Kevin M. Cahill, More with Less: Disasters in an Era of Diminishing Resources, Fordham University Press, 2012

6. Thomas A. Birkland, Lessons of Disaster: Policy Change after Catastrophic Events, Georgetown University Press, 2006