Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal(M.P.)

Scheme of Examination

Third Semester- M.E./M.Tech. (*Computer Sc. & Engg./Computer Sc.*)

S.No.	Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory Slot)			Maximum Marks (Practical Slot)		Total Marks
			L	T	P		End Sem. Exam.	Tests (Two)	Assign ments /Quiz	End Sem. Practic al/Viva	Practical Record/ Assignm ent/Quiz /Present ation	
1.	MCSE 301	Elective I	3	1	-	4	70	20	10	-	-	100
2.	MCSE 302	Elective II	3	1	-	4	70	20	10	-	-	100
3.	MCSE 303	Seminar	-	-	4	4	-	-	-	-	100	100
4.	MCSE 304	Dissertation Part- I (Literature Review/Problem Formulation/ Synopsis)	-	-	8	8	-	-	-	120	80	200
		Total	6	2	12	20	140	40	20	120	180	500

L: Lecture -   T: Tutorial -   P: Practical   *w.e.f. July-2010*

Elective –I (MCSE 301)

    (A) Data Warehousing & Mining

Elective-II (MCSE 302)

    (C) Network Security
    (D) Simulation and Modeling

MCSE 301 (A) – Data Warehousing & Mining

Introduction : Data Mining: Definitions, KDD v/s Data Mining, DBMS v/s Data Mining , DM techniques, Mining problems, Issues and Challenges in DM, DM Application areas.

Association Rules & Clustering Techniques: Introduction, Various association algorithms like A Priori, Partition, Pincer search etc., Generalized association rules. Clustering paradigms; Partitioning algorithms like K-Medioid, CLARA, CLARANS; Hierarchical clustering, DBSCAN, BIRCH, CURE; categorical clustering algorithms, STIRR, ROCK, CACTUS.

Other DM techniques & Web Mining: Application of Neural Network, AI, Fuzzy logic and Genetic algorithm, Decision tree in DM. Web Mining, Web content mining, Web structure Mining, Web Usage Mining.

Temporal and spatial DM: Temporal association rules, Sequence Mining, GSP, SPADE, SPIRIT, and WUM algorithms, Episode Discovery, Event prediction, Time series analysis.
Spatial Mining, Spatial Mining tasks, Spatial clustering, Spatial Trends.

Data Mining of Image and Video : A case study. Image and Video representation techniques, feature extraction, motion analysis, content based image and video retrieval, clustering and association paradigm, knowledge discovery.

Reference Books :
1. Data Mining Techniques ; Arun K.Pujari ; University Press.
2. Data Mining; Adriaans & Zantinge; Pearson education.
3. Mastering Data Mining; Berry Linoff; Wiley.
4. Data Mining; Dunham; Pearson education.
5. Text Mining Applications, Konchandy, Cengage

MCSE 302 (A) – Network Security

Conventional Encryption

Convention Encryption : Conventional Encryption Model , Steganography , Classical Encryption Techniques, Simplified DES , Block Cipher Principles , The Data Encryption Standard, The Strength of DES , Differential and Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Modes of operation, Conventional Encryption algorithms
          Public Key Encryption And Hash Functions
Public Key Cryptography , Principles of Public Key Cryptosystems , The RSA Algorithm , Key Management , Diffie Hellman Key Exchange , Elliptic Curve Cryptography
Message Authentication and Hash Functions
Authentication Requirements, Authentication Functions, Message Authentication Codes , Hash Functions , Security of Hash Functions

Hash And Mac Algorithms
MD5 Message Digest Algorithm , Secure Hash Algorithm (SHA-I) , RIPEMD , HMAC
Digital Signatures and Authentication Protocols
Digital Signatures , Authentication Protocols -Digital Signature Standard

Authentication Applications , IP Security , Web Security

Intruders, Viruses and Worms
Intruders , Viruses and Related Threats
Firewalls
Firewall Design Principles , Trusted Systems

Reference Books :

1. William Stallings, " Cryptography and Network Security", Second edition, Prentice Hall, 1999.

2. Atul Kahate, " Cryptography and Network Security," TMH

3. William Stallings,"Cryptography and Network Security",Third Edition, Pearson Ed

4. Introduction to network security, Krawetz, Cengage

MCSE- 302 (B) Simulation and Modeling

Introduction to modeling and simulation: Modeling and simulation methodology, system modeling , concept of simulation, continuous and discrete time simulation.

Basic concept of probability and random variables continuous and discrete random variables, distribution of random variables: discrete and continuous, Compartmental models: linear, nonlinear and stochastic models.

Introduction to Queuing Theory: Characteristics of queuing system, Poisson's formula, birth-death system, equilibrium of queuing system, analysis of M/M/1 queues. Application of queuing theory in computer system like operating systems, computer networks etc.

System Dynamics modeling: Identification of problem situation , preparation of causal loop diagrams and flow diagrams, equation writing, level and rate relationship. Simulation of system dynamics models.

Verification and validation: Design of simulation experiments, validation of experimental models, testing and analysis. Simulation languages comparison and selection, study of Simulation sw -SIMULA, DYNAMO, STELLA, POWERSIM.

Reference Books :
1. Gorden G., System simulation, Printice Hall.
2. Payer T., Introduction to system simulation, McGraw Hill.
3. Seila, Applied Simulation Modeling, Cengage
4. Spriet, Computer Aided Modeling and Simulation, W.I.A.
5. Sushil, System Dynamics, Wiley Eastern Ltd. 23
6. Shannon R.E., System simulation, Prentice Hall