

**III Semester**  
**MTCE-701A**  
**KNOWLEDGE BASED SYSTEM DESIGN**

<b>Theory Marks</b>	<b>:</b>	<b>100</b>	<b>L</b>	<b>T</b>	<b>P</b>
<b>Sessional</b>	<b>:</b>	<b>50</b>	<b>4</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>:</b>	<b>150</b>			
<b>Time</b>	<b>:</b>	<b>3 hrs</b>			

1. Introduction of Logic, Propositional Logic concepts, Semantic Tableaux and Resolution in Propositional logic, FOPL, Semantic Tableaux and Resolution in FOPL, Logic Programming in Prolog.
2. Knowledge representation, semantic nets, partitioned nets, parallel implementation of semantic nets. Frames, Common Sense reasoning and thematic role frames, Architecture of knowledge based system, Rule based systems, forward and backward chaining, Frame based systems.
3. Search techniques. Uninformed Search, DFS, BFS, Iterative deepening Heuristic Search, A\*, Hill Climbing etc.
4. Uncertainty management in Expert Systems, Fuzzy Logic, Probabilistic Methods, Bayesian Theory, Dempster Shafer Theory, Bayes Network, introduction to agents and their application to intelligent systems.

**Text Books:**

1. "Artificial Intelligence – Structures and Strategies for Complex Problem Solving", George F. Luger, Pearson Education.
2. "Artificial Intelligence", Elaine Rich and Kevin Knight, Tata McGraw Hill
3. "Artificial Intelligence" by Nilis J Nilson
4. "Artificial Intelligence: a Modern Approach" Russell & Norvig, Pearson Education

**Note:**

1. In the semester exam., the examiner will set 08 questions in all covering the entire syllabus. Students will be required to attempt any five questions.
2. Use of scientific calculator will be allowed in the exam. However, Pager, Programmable Calculator & Cellular Phone etc. will not be allowed.

**MTIT- 703A**  
**DATA WAREHOUSING AND DATA MINING**

<b>Theory Marks</b>	<b>:</b>	<b>100</b>	<b>L</b>	<b>T</b>	<b>P</b>
<b>Sessional</b>	<b>:</b>	<b>50</b>	<b>4</b>	<b>0</b>	<b>0</b>
<hr/>					
<b>Total</b>	<b>:</b>	<b>150</b>			
<b>Time</b>	<b>:</b>	<b>3 hrs</b>			

- 1. Introduction:** Introduction to Data Warehousing and data mining, basic elements of data warehousing, Data warehousing vs. OLAP.
- 2. Data model development for Data Warehousing:** business model, selection of the data of interest, creation and maintaining keys, modeling transaction, data warehousing optimization, Data warehousing methodologies, type and comparisons.
- 3. Data Mining:** Data mining techniques, data mining algorithms, classification, Decision, Tree based Classifiers clustering, Association, Rule Mining Information Extraction using Neural Networks, Knowledge discovery, KDD environment.
- 4. Visualization:** data generalization and summarization, based characterization, Analytical characterization: analysis of attribute relevance, mining class Comparison, Discriminating between classes, mining descriptive statistical measures in large database.
- 5. Data mining primitives, languages & system architectures:** data mining primitives, Query language, designing GUI based on a data mining query language, architectures of data mining systems.
- 6. Application and trends in data mining:** Applications, systems products and research prototypes, multimedia data mining, indexing of multimedia material, compression, space modeling.
- 7. Advanced topics:** Web mining: web content mining, web structure mining, web usage mining, spatial mining, temporal mining.

**Text books:**

1. Paulraj ponniah, "Web warehousing fundamentals" – John Wiley.
2. M. H. Dunham, "Data mining introductory and advanced topics" – Pearson education
3. Han, Kamber, "Data mining concepts and techniques", Morgan Kaufmann
4. Imhoff, Galemme, Geiger, "Mastering data warehouse design", Wiley Dreamtech

**Note:**

1. In the semester exam., the examiner will set 08 questions in all covering the entire syllabus. Students will be required to attempt any five questions.
2. Use of scientific calculator will be allowed in the exam. However, Pager, Programmable Calculator & Cellular Phone etc. will not be allowed.

**MTCE- 705A**  
**SYSTEM AND NETWORK ADMINISTRATION**

<b>Theory Marks</b>	<b>:</b>	<b>100</b>	<b>L</b>	<b>T</b>	<b>P</b>
<b>Sessional</b>	<b>:</b>	<b>50</b>	<b>4</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>:</b>	<b>150</b>			
<b>Time</b>	<b>:</b>	<b>3 hrs</b>			

1. **N/w Administration:** Introduction to networks, TCP/IP model, IP addressing, Subnetting NAT, VLAN. Basic Concepts of proxy server, web server, DNS, Firewall, Router, Mail Server and their respective configuration settings. Various Interconnecting Devices; Hub, Switch, Bridges, Routers, Gateway, repeater, brouter. Knowledge about various network related commands : ping, netstat, tracer, traceroute, ifconfig, ipconfig etc. Steps followed in establishing a network.
2. **Security:** Concept of Security, its need, issues, cryptography techniques :ciphers, substitution cipher, transposition, symmetric key algorithms like AES, DES, public key algo's like RSA, Authentication algorithms IPSEC, VAN, Digital Signatures, IDS, Firewall. Types of attacks, access control list, filtering rules.
3. **Host Administration:** Introduction to system Administration, what are the necessary issues to be tackled in host management, installation of Unix, Linux, windows OS, formatting file systems like FAT, NTFS, etc., Booting process in various OS, User accounts, group accounts, passwords, shadow passwords, directory structure of analysis of host machine and how to improve the systems performance.
4. **Unix Commands:** Knowledge of UNIX commands, administration based commands, Shell scripting, AWK, Perl.

**Text Books:**

1. Brain Kemighen & Rob Pike “The unix programming environment”
2. Maurice Bach “Design of the Unix operating system”
3. Stephen Prato “Advanced Unix programmer's Guide”
4. Sumitabha Das “ Unix Concepts and applications-Featuring SCO Unix and Linux”

**Note:**

1. In the semester exam., the examiner will set 08 questions in all covering the entire syllabus. Students will be required to attempt any five questions.
2. Use of scientific calculator will be allowed in the exam. However, Pager, Programmable Calculator & Cellular Phone etc. will not be allowed.

### ELECTIVE-III

#### MTIT- 707A SOFTWARE QUALITY ASSURANCE

Theory Marks	:	100	L	T	P
Sessional	:	50	4	0	0
		<hr/>			
Total	:	150			
Time	:	3 hrs			

1. **Introduction:** Introduction to software quality, challenges, objectives, quality factors, components of SQA, contract review, development and quality plans, SQA components in project life cycle, SQA defect removal policies, Reviews
2. **Basics of software testing:** Basics of software testing , test generation from requirements , finite state models , combinatorial designs , test selection, minimization and prioritization for regression testing , test adequacy, assessment and enhancement
3. **Test Strategies:** Testing strategies , white box and black box approach , integration testing , system and acceptance testing , performance testing , regression testing , internationalization testing , ad,hoc testing , website testing , usability testing , accessibility testing Test plan , management , execution and reporting , software test automation , automated testing tools
4. **Software Quality:** Hierarchical models of software quality , software quality metrics ,function points , Software product quality , software maintenance quality , effect of case tools , software quality infrastructure , procedures , certifications , configuration management , documentation control.
5. **Project process control:** Project progress control , costs , quality management standards , project process standards , management and its role in SQA , SQA unit

#### Text Books:

1. Daniel Galin, Software quality assurance , from theory to implementation , Pearson education.
2. Aditya Mathur, Foundations of software testing, Pearson Education
3. Srinivasan Desikan and Gopalaswamy Ramesh, Software testing , principles and practices , Pearson education

#### Reference Books:

1. Ron Patton, Software testing , Pearson education
2. Alan C Gillies, "Software Quality Theory and Management", Cengage Learning

#### Note:

1. In the semester exam., the examiner will set 08 questions in all covering the entire syllabus. Students will be required to attempt any five questions.
2. Use of scientific calculator will be allowed in the exam. However, Pager, Programmable Calculator & Cellular Phone etc. will not be allowed.

**MTCE- 707A**  
**SECURITY IN INFORMATION SYSTEM**

<b>Theory Marks</b>	<b>:</b>	<b>100</b>	<b>L</b>	<b>T</b>	<b>P</b>
<b>Sessional</b>	<b>:</b>	<b>50</b>	<b>4</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>:</b>	<b>150</b>			
<b>Time</b>	<b>:</b>	<b>3 hrs</b>			

1. **Encryption and De-encryption:** Terminology and Background: cryptosystems, Plain Text and cipher.  
Encryption algorithms, crypt analysis. introduction to ciphers, Monoalphabetic, substitutions, polyalphabetic.
2. **Secure encryption systems:** Hard problems : complexity NP-complete problems, characteristics of NP complete, the meaning of NP completeness, NP completeness and cryptography, properties of arithmetic operations, inverse, primes, GCD, modular arithmetic, properties of modular arithmetic, computing the inverse, Fermat's theorem, algorithms for computing inverses, random number generation.
3. **Public key encryption systems:** concept and characteristics, introduction to merkle-hellman knapsacks, RSA, Digital signatures, DSS.
4. **Hash Algorithms :** hash concept, description of hash algorithms, MD4,MD5,SHA1,SHA2  
Secure Secret key systems : DES, AES Applied cryptography, protocols, practices, key management protocols Operating system, database, program security, Network Security

**Text Books:**

1. Security in Computing -Charles P Pfleeger, Prentice-Hall International, Inc
2. Applied Cryptography Protocols, Algorithms and Source Code in C, Bruce Schneier, John Wiley.
3. Security Technologies for the World Wide Web, Rolf Oppliger, Artech House, Inc.
4. Digital Certificates Applied Internet Security, Jala Feghhi, Jalli Feghhi and Peter Williams, Addison Wesley Longman.

**Note:**

1. In the semester exam., the examiner will set 08 questions in all covering the entire syllabus. Students will be required to attempt any five questions.
2. Use of scientific calculator will be allowed in the exam. However, Pager, Programmable Calculator & Cellular Phone etc. will not be allowed.

**MTCE-709A  
AILAB**

<b>L</b>	<b>T</b>	<b>P</b>
<b>0</b>	<b>0</b>	<b>4</b>

Practicals based on theory paper Knowledge based system design

**MTIT-711A  
MINORPROJECT**

<b>L</b>	<b>T</b>	<b>P</b>
<b>0</b>	<b>0</b>	<b>4</b>

**Student required to complete a running project.**

**MTIT-713A  
SEMINAR**

<b>L</b>	<b>T</b>	<b>P</b>
<b>0</b>	<b>0</b>	<b>2</b>

**On the latest topic**

**IV Semester  
MTIT-702A  
Dissertation & viva**

The student will submit a synopsis at the beginning of the semester for the approval from the project committee in a specified format. Final Synopsis must be submitted within two weeks. Dissertation report must be submitted in a specified format to the project committee for evaluation purpose at the end of semester.