

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

Program: B. Tech. (Information Technology)				Semester : VII	
Course : Data Warehousing and Mining				Code : BTIT07011 (Revised A.Y. 2016-17)	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	1	4.5	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Computer Programming-I (BTAB01006), Database Management Systems (BTIT03005), Data Structures and Algorithms (BTIT03003).					
Objectives: <ul style="list-style-type: none"> • To enable the students to understand the need for Warehouse, and how different it is from an operational system using DBMS. • To help them design data warehouse using dimension modeling. • To enable the students understand the role of data mining in today's perspective. • To help students understand the different data mining techniques. 					
Outcomes: <ul style="list-style-type: none"> • The students will learn the difference between databases designed for operational systems and data warehouse. • They will be able to design a data warehouse using dimensional modeling concepts. The outcome will be achieved by enabling the students to design dimension and fact tables. • The students will also learn Data Mining Techniques. The outcome will be achieved by enabling students to implement some of the Data Mining Algorithms. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction: Need for Data warehousing, basic elements of DW and trends in DW, Collecting the requirements.				3
2.	Architecture and Infrastructure & Data Representation: Architectural components, infrastructure and metadata, Principles of dimensional modeling, dimensional modeling advance topics, data extraction, transformation and loading, data quality				9
3.	Information access and delivery: Matching information to classes of users, OLAP in data warehousing, data warehouse deployment.				6

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

4.	Introduction to Data Mining: Basics of data mining, related concepts, data mining techniques, Classification, clustering, association rules, KDD Process.	5
5.	Classification: Issues in Classification, Statistical Based, Distance-Based, Decision-Based, Neural Network-Based and Rule Based Algorithms	8
6.	Clustering and Association Rules: Hierarchical and Partitional Algorithms. Clustering Large Databases, Basic Association Rule Algorithms	8
7.	Introduction to Web, Spatial and Temporal Mining	4
8.	Application and trends in data mining: Applications, systems products and research prototypes, additional themes in data mining, trends in data mining	2
	Total	45

Text Books:

1. Margaret Dunham, "Data mining: Introductory and Advanced Topics", 1st Edition, Pearson Education, 2008
2. PaulrajPonnian," Data warehousing Fundamentals: A Comprehensive Guide for IT Professionals", John Wiley India Pvt. Ltd., 2006

Reference Books:

1. Jiawei Han and MichelineKamber, "Data Mining Concepts and Techniques", 2nd Edition, Morgan Kauffmann, 2006
2. Berson Smith, "Data Warehousing, Data Mining, and OLAP", 1st Edition, Tata Mc-Graw Hill, 2004

Term Work: As per Department and Institute norms for termwork.

Signature
(Prepared by Concerned Faculty/HOD)

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. (Information) Technology				Semester : VII	
Course : Software Project Management				Code : BTIT07002	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
2	2	1	3.5	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Software Engineering(BTIT05002)					
Objectives This course provides understanding of software project management principles. This course provides in-depth understanding of initiating, controlling and termination of projects along with case studies.					
Outcomes: After successfully completion of this course, students should be able to <ul style="list-style-type: none"> • Understand the Top down and Bottom Up approach in the design of a software project. • Evaluate a project to provide accurate cost estimates and plan budgeting accordingly. • Apply risk management analysis techniques to find out the factors that put a project at risk and to quantify the likely effect of risk on project timescales. • Demonstrate the need to develop the skills for tracking and controlling software deliverables 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction to Software Project Management: Problems with Software Projects, Setting objectives, Stakeholders, requirement specification, management control, overview of Project Planning				2
2.	Project Planning: Integrated Project Planning, Work break down structure, Top-Down and Bottom-up Planning Approach for developing WBS, Scheduling, Time Estimating and Compressing the schedule				5
3.	Cost Estimating and Budgeting: Resource Planning, Cost Estimating, Project Cost System, Budgeting Cost, Typical Problems, Impact of Limited Resources				5
4.	Risk Management: The nature of risk, types of risk, managing risk, hazard analysis, risk planning and control, evaluating risks to the schedule.				5

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

5.	Resource Allocation: Nature of resources, resource requirements, scheduling resources, creating critical paths, counting the cost, cost schedules, the scheduling sequence	4
6.	Monitoring and Control: Creating the framework, cost monitoring, prioritizing monitoring, change control.	4
7.	Managing People and Organizing Team: Organizational Design for Delivering Projects, Building the Project Team, Organizing the Support Team	5
	Total	30

Text Books:

1. Milton D. Rosenau, Jr. & Gregory D. Githers, "Successful Project Management", 4th Ed., Wiley India Edition, 2006
2. Bob Hughes and Mike Cotterell, "Software Project Management", Tata McGraw Hill, 3rd Edition, 2004

Reference Books:

1. Kathy Schwalbe, "Project Management in IT", Cengage Learning, 2009
2. Clements, Gido, "Effective Project Management", Cengage Learning, 2011
3. Jack R. Meredith, Samuel J Mantel Jr., "Project Management", 5th Edition, Wiley India, 2006

Term Work:

As per Department and Institute norms for termwork.

Signature
(Prepared by Concerned Faculty/HOD)

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. (Information Technology)				Semester : VII (AY 2015-16 onwards)	
Course : Information Security				Code : BTIT07003	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	0	4	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Operating Systems (BTIT04004), Computer Networks (BTIT05005), Advance Computer Networks (BTIT06004)					
Objective: This course is an introduction to the field of Information Security. This course presents a balance of the managerial and the technical aspects of the discipline and addresses knowledge areas as specified in the CISSP (Certified Information Systems Security Professional) certification. Students will learn about the threats to information and ways to overcome it.					
Outcomes: After successfully completion of this course, students should be able to					
<ol style="list-style-type: none"> 1. Analyze threats to information security and understand various countermeasures. 2. Describe various security technologies and policies. 3. Compare and contrast symmetric and asymmetric key cryptography. 4. Understand various access control models. 5. Understand Risk Management and Business Continuity Planning. 6. Understand various legal and ethical issues related to cyber crime and computer forensics. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction: Basic Components of Computer security(CIA), Characteristics of Information, vulnerabilities, threats , Attacks and controls ,goals of security, NSTISSC security model, Security System development life cycle, Computer criminals, Internet Standards and RFC.				5
2.	Design Principles: Various Security attacks, method of defense, Design Principles, Security policies, types of security policies				4
3.	Cryptography: Cryptography basics, transposition ciphers, substitution ciphers, AES, Public key cryptography, streams and block ciphers, Key Management, Digital Signature.				7
4.	Program Security: Secure programs, Non malicious Program Errors,				4

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

	Viruses and other malicious code, types of viruses, attack mechanism of viruses, Targeted Malicious Code, Controls Against Program Threats.	
5.	Authentication: Authentication basics, Password, Challenge response, SSO, Two Factor Authentication, Biometrics	2
6.	Access Control: , Access control principles, ACL, DAC, MAC, and Role based Access Control, Access control models, Kerberos	4
7.	Firewall , Kinds of Firewalls, Filtering Services, DMZ, Implementing policies (Default allow, Default Deny) on proxy, IDS, types of IDS, Virtual Private Network, SSH	5
8.	Physical and Environmental Security: Introduction, Physical security Threats and measures	2
9.	Risk Management and Business Continuity planning: Risk analysis, various terminologies associated with risk management, Risk assessment techniques, managing risk, steps for risk management, Business impact analysis, various terminologies associated with BIA, Different types of continuity planning, testing and revising the plan	4
10.	Laws, investigations and Ethics: Introduction, types of computer crimes, modus operandi, computer forensics, ethical issues in computer security.	3
11.	Contemporary issues related to Information Security	5
	Total	45

Text Books:

1. M. Whitman, H. Mattford, " Principles of Information Security", 4th Ed. Cengage Learning, 2012
2. M. Bishop, S.S. Venkatramanayya, "Introduction to Computer Security", Pearson Education, 2009
3. C. Pfleeger, S. Pfleeger, " Security in Computing", 4th Ed. Pearson Education, 2009

Reference Books:

1. Kahate, "Cryptography & Network Security", 3rd Ed., TMH, 2013
2. B. A. Forouzan, Debdeep Mukhopadhyaya, "Cryptography & Network Security", 2nd Ed., TMH, 2010
3. Shah Deven, " Mark Stamp's Information Security: Principles and Practices", Wiley India Pvt Ltd, 2012
4. W. Stallings, "Cryptography & Network Security Practice and Principles", 5th Ed., Pearson Education, 2011
5. Brijendra Singh, " Network Security and Management", 3rd Ed. PHI, 2012

Term Work: As per Department and Institute norms for termwork.

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

Program: B. Tech. (Information Technology)				Semester : VII	
Course : Project - I				Code : BTIT07004	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory	Internal Continuous Assessment (ICA) As per Institute Norms (100 Marks)
-	8	-	4	-	Scaled to 100 marks
Pre-requisite: Research Methodology (BTIT05007), Software Engineering (BTIT05002), Object Oriented Modeling and Design (BTIT06002).					
Objectives:					
<ul style="list-style-type: none"> • The Objective of the Project is to make the student undergo the first part of a software project lifecycle of Literature Survey and Feasibility Study. • To provide students with the opportunity to synthesize the knowledge and skills acquired from their courses. • To encourage a multidisciplinary approach through the integration of material learned in a number of courses. • To allow students to develop problem solving, analysis, synthesis, evaluation and design skills. • To encourage teamwork. • To improve student's communication skills. 					
Outcomes :					
<p>Students will be able to :</p> <ul style="list-style-type: none"> • Work effectively in a team. • Understand Problem Definition, Scope and evaluate Feasibility. • Apply the Design Principles to architect a solution for the problem identified. • Analyze different solutions and select optimum solution. • Select the appropriate technology for implementation. • Perform independent learning of new technologies and concepts in order to complete the project. • Address a contemporary issue that is either centrally related to computing or represents an innovative application of computing. • Develop their oral & written communication skills by way of providing presentations and report throughout the course. • Research, select, and learn the necessary tools and techniques that are needed to complete the project. 					

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

Contents :

Project - Phase1 Activities to be done:

1. The Project group to be formed consisting of 2 to 3 students.
2. The Project area and topic is to be selected in consultation with Project Mentor.
3. The Names of the students and the topic of the Project to be submitted in the first week of the Semester VII.
4. The first phase of the project will involve Literature Survey and feasibility study.
5. Students are required to submit a 1-page weekly report on the work done to the mentor. There would continuous evaluation based on the weekly report submitted.
6. Report primarily containing Literature Survey and feasibility study is to be submitted at the end of the Semester VII. (Spiral Bound Report).

Term Work:

As per Department and Institute norms for termwork.

Signature
(Prepared by Concerned Faculty/HOD)

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. (Information Technology)				Semester : VII AY 2018-19 onwards	
Course : Ethics for IT Users and IT Organizations				Code: BTIT07013	
Teaching Scheme				Evaluation Scheme	
Lecture	Practical	Tutorial	Credit	Theory (3 Hrs, 100 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms
0	0	2	1	-	Weightage 100%
Pre-requisite: Nil					
Objectives: This course gives an introduction to Ethics in Information Technology. It covers ethics related to IT users and ethics applicable in an IT organization's context.					
Outcomes: After completion of the course, students will be able to : <ul style="list-style-type: none"> • Describe various approaches to ethical decision making • Understand ethical issues that arise at workplace • Understand copyrights, patents and laws needed in IT organizations • Illustrate the key ethical issues of an IT organization • Highlight the ethical concerns w.r.t online communities and emerging technologies 					
Detailed Syllabus:					
Unit	Description				Duration
1	An Overview of Ethics: Brief introduction to ethical theories - consequence based, duty based. Definition of ethics, the importance of integrity, the difference between morals, ethics and laws, ethics in the business world: forecasting business ethics, improving corporate ethics, creating an ethical work environment (prevention of sexual harassment act), decision making, ethics in information technology.				6
2	Ethics for IT Workers and IT Users: IT professionals: professional business industry, managing professional relationships, professional code of ethics, professional organizations, certification, government licensing, IT professional malpractice. IT users: common ethical issues, ethical practice of IT users.				6
3	Intellectual Property: Intellectual property, copyrights, patents, trade secrets and its laws, employees and trade secret, key intellectual property issues, plagiarism, reverse engineering, open source code, competitive intelligence, trademark infringement, cyber squatting.				6
4	Ethics of IT Organization: Key ethical issues for organizations, ethics in IT outsourcing, whistle blowing, green computing, ICT industry code of conduct.				6

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

5	Ethical aspect of Online communities, Emerging and Converging Technologies: Ethical concerns in online communities, Ubiquitous computing, Intelligent user interfaces and other emerging technologies.	6
	Total	30
Text Books:		
<ol style="list-style-type: none"> 1. "Ethics in Information Technology", 4th Edition, George Reynolds Strayer University, 2012. 2. "Ethics and Technology: Controversies, Questions, and Strategies for Ethical Computing", 3rd Edition, Herman T. Tavani, John Wiley & Sons, 2011. 		
Reference Books:		
<ol style="list-style-type: none"> 1. "Ethics in IT outsourcing", Gold T. Taylor & Francis, 2012. 2. "Contemporary Issues in Ethics and Information Technology", Robert A. Schultz, Idea Group Inc (IGI), 2006. 		
Term Work:		
As per department and Institute Norms for Term-work.		

Signature
(Prepared by Concerned Faculty/HOD)

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. (Information) Technology				Semester : VII	
Course : Management Information Systems Elective - I				Code : BTIT07005	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	1	4.5	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Software Engineering (BTIT05002)					
Objectives: To learn and understand fundamentals of Information Systems. To learn and understand architecture, methodology and applications of MIS					
Outcomes: After successfully completion of this course, students should be able <ul style="list-style-type: none"> • To understand the role of Information System in business environment. • To analyze various management information systems in use. • To assess various security & ethical concerns related to MIS. • To identify the challenges in the management of global information systems. • To understand the implications of social media on organizations 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Foundations of Information systems and Management: Why Information systems? Fundamental behavioural, technical, business and managerial concepts about the components and roles of information systems, Types of information systems: Operations support systems and Management support systems, Definition, role and impact of MIS, MIS as a support to the management and a tool for management process				5
2.	Strategic Use of Information Systems: Fundamentals of strategic advantage –What is strategic advantage, brief overview of business strategy, organizational strategy and information systems strategy.				5
3.	Using Information Technology for strategic advantage: Major concepts, developments, and management issues in information technology (hardware, software, networks, data resource management, and other information processing technologies such as the Internet).				6
4.	Business Applications-I: Major uses of information systems for the operations, management, and				8

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

	<p>competitive advantage of an e-business enterprise.</p> <p>Electronic Business Systems – Enterprise business systems, Functional business systems</p> <p>Enterprise Resource Planning (ERP) systems – What is ERP? Benefits, challenges and trends in ERP</p> <p>Customer relationship Management (CRM) systems - What is CRM? Three phases of CRM, Benefits, challenges and trends in CRM</p> <p>Supply Chain Management (SCM) systems - What is SCM? Role of SCM, Benefits, challenges and trends in SCM.</p>	
5.	<p>Business Applications-II: Decision support systems (DSS) – Introduction, DSS components, Decision and management, information quality, Reporting, Online analytical processing, Using DSS – what-if analysis, sensitivity analysis, Goal-seeking analysis, Optimization analysis, Data mining for decision support</p> <p>Knowledge Management and Business Analytics - Data, information and Knowledge, What is knowledge Management, Managing Knowledge to Business Intelligence, Why manage knowledge, Knowledge management processes, Components of business analytics</p>	8
6.	<p>Social Media and Organizations: Leveraging social media for business, What to track in social media, Network effects for organizations, Social computing applications (Enterprise social computing) and implications on organizations</p>	5
7.	<p>Management Challenges – Security, Ethical and Societal Challenges: Ethical guidelines for information use, Ethical responsibility of business professionals, Privacy issues, Other challenges – Employment, Health issues</p>	4
8.	<p>Management Challenges - Enterprise and Global Management of Information Technology: Managing Information Technology - Business and IT, Managing Information Technology, Business IT Planning, Managing IS Function, Failures in IT Management</p> <p>Managing Global IT - The International Dimension, Global IT Management, Cultural, political and geo-economic challenges, Global business/IT Strategies and applications Global IT Platforms, Global data access issues</p>	4

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

	Total	45
Text Book: <ol style="list-style-type: none">1. James A O'Brien ,George M Marakas "Management Information Systems", 10th Edition, Tata Mc-Graw-Hill, 20132. Effy Oz," Management Information System", Cengage Learning, 6th Edition, 20133. Keri E Pearlson, Carol S Saunders " Strategic Management of Information Systems", Wiley, 4th Edition, 2012		
Reference Books: <ol style="list-style-type: none">1. Kenneth C.Laudon , Jane P. Laudon "Management Information Systems", Pearson Education, 20062. MahadeoJaiswal ,Monika Mittal "Management Information Systems ,Oxford University Press, 2009		
Term Work: As per Department and Institute norms for term-work.		

Signature
(Prepared by Concerned Faculty/HOD)

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

Program: B. Tech. (Information Technology)				Semester : VII	
Course : Multimedia Systems Elective - I				Code : BTIT07006	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	1	4.5	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Operating system (BTIT04004), Distributed Computing (BTIT05006)					
Objective: This course deals with integration of multiple media on computers. Learn the issues involved in capturing, compressing, processing, manipulating, searching, indexing, storing, and retrieving various kinds of continuous media in text section					
<ul style="list-style-type: none"> • Outcomes: Students will be able to : • Understand the need for audio and video data compression • Learn different file format standards • Understand various multimedia technologies • Learn authorization, hypermedia, linking, storage and retrieval of media applications 					
Detailed Syllabus:					
Unit	Description				Duration
1	Introduction: Multimedia Applications, Multimedia systems architecture, Evolving Technologies for Multimedia systems, Defining objects for multimedia systems, Multimedia data Interface standards				4
2	Compression and Decompression: Types of Compression, Binary Image Compression schemes, Color, Gray Scale, And still-video Image compression, Video image compression, Audio compression, Fractal compression				6
3	Data and file format standards: RTF, TIFF, RIFF, MIDI, JPEG DIB, AVI Indeo, MPEG				4
4	Multimedia I/O Technologies: Key technology Issues, Pen input, Video and Image Display Systems, Print output Technologies, image scanners, Digital voice and audio, Digital Camera, Video Images and animation, Full Motion video				6
5	Storage and Retrieval Technologies: Magnetic media Technology, Optical media, Hierarchical Storage Management, Cache Management for Storage systems				4
6	Architectural and Telecommunications Considerations: Specialized computational processors, Memory systems, Multimedia Board solutions, Lan/Wan connectivity, Distributed object models				4

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

7	Multimedia Application Design: Multimedia application classes, Types of Multimedia systems, Virtual Reality design, components of Multimedia systems, Organising Multimedia databases, Application workflow design issues, distributed application design issues	5
8	Multimedia Authoring and user interface: Multimedia authoring systems, Hypermedia Application Design considerations, user interface design, information access, Object display/playback issues	4
9	Hypermedia Messaging: Mobile Messaging, Hypermedia Message components, Hypermedia linking and embedding, creating hypermedia messages, integrated multimedia message standards, integrated document management	4
10	Distributed Multimedia systems and design: Components of a Distributed Multimedia system, distributed client-server operation, fundamental design issues, determining enterprise requirements, performance analysis, Business information model for IFC	4
	Total	45
Text Books:		
1. Prabhat K. Andheigh, KiranThakrar, "Multimedia Systems Design", 1 st Edition, PHI, 2009		
Reference Books:		
1. Free Halshall, "Multimedia communications", Pearson education, 2010		
2. J.D.Gibson, "Multimedia Communications : Directions and Innovations", Academic Press, Hardcourt India, 2007		
3. K.R.Rao , D.Milovanovic, "Multimedia communications systems : Techniques, standards, and networks", Pearson Education, 2002		
4. Ralf Steinmetz, KlaraNahrstedt, "Multimedia: Computing, Communications & Applications", 1 st Edition, Pearson Education, 2002		
Term Work :		
As per Department and Institute norms for termwork.		

Signature
(Prepared by Concerned Faculty/HOD)

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. (Information Technology)				Semester : VII	
Course : Artificial Intelligence Elective - I				Code : BTIT07007	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	1	4.5	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Computer Programming - I(BTAB01006), Computer Programming - I (BTAB02006), Error! Reference source not found. (BTIT03003)					
Objectives:					
<ul style="list-style-type: none"> • Formulate scientific questions and solve problems with the aid of abstraction and modeling. • Understand and implement the game playing strategies. • Develop basic AI systems. 					
Outcomes:					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction to Artificial Intelligence: Definition, the AI problems, physical symbol system, physical symbol system hypothesis, Intelligent agents: agents and environment, agent types, desirable properties of knowledge, AI techniques, different AI techniques.				5
2.	Problems, problem spaces and search: Need of a system to solve a problem, problem as a state space search, requirement of a formal description of a problem, production system, control strategy & its requirement, breadth first search & depth first search.				5
3.	Heuristic search technique: Heuristic technique, problems of heuristic technique with real world, different weak methods such as generate and test, hill climbing, simple hill climbing and steepest ascent hill climbing, problem with hill climbing such as local maxima, plateau, ridge, simulated annealing, best first search, OR graphs, A* algorithm, agenda driven search, AND-OR Graphs, AO* algorithm.				7
4.	Knowledge Representation logic and rules: Predicate logic: facts, representation of fact, mapping between facts and representation, properties and issues of knowledge representation system, propositional logic & predicate logic, Instance relationship, Isa, gt< predicate, resolution, conversion to clause form: necessity Herbrand's theorem, resolution in propositional logic, unification algorithm,				8

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

	resolution in predicate logic, different strategies to speed up resolution procedure, question answering, natural deduction. Rules: procedural versus declarative knowledge, forward versus backward reasoning, forward & backward chaining rule system, combining backward reasoning, matching: indexing, matching with variable, complex & appropriate matching conflict resolution, control knowledge.	
5.	Weak Slot & filler structure: usefulness of slot & filler structure, semantic net, intersection search, representing non binary predicates by semantic net, partitioned semantic net, frames, frames as sets & instance, different ways of relating classes, slots as full-fledged objects, slots values as object, inheritance revisited.	5
6.	Game playing: Domain of a game, different ways to improve search strategies, plausible move generate, static evaluation function, different static evaluation functions, minimax search procedure, adding alpha-beta cutoff, search efficiency of alpha-beta procedure, futility cutoff, additional refinements such as waiting for quiescence, secondary search, using book move, iterative deepening, advantage of depth first iterative deepening.	6
7.	Learning: General concept about learning, different learning techniques such as rote learning, learning by taking advice, learning in the problems solving, learning with macro-operators, learning by chunking, utilities problem, learning from examples, winston's learning program, version spaces, candidate elimination algorithm, decision tree, explanation based learning.	4
8.	Expert system: Definition, model, characteristic, architecture, development process, limitations, criteria for knowledge representation, knowledge representation schemes, classification model, general rules used in classification model, black board model, explanation facilities, causal model, explanation focus on status, classification, rationalization, its limitations, knowledge acquisition, different techniques, expert system tools like language, shells, narrow ES tools, LISP machine, large hybrid ES tools, PC based expert system, knowledge acquisition tools.	5
	Total	45
Text Books:		
1. Elaine Rich, Kevin Knight, "Artificial Intelligence", 2nd Edition, Tata Mc-Graw Hill, 1999.		
2. Stuart Russel and Peter Norvig, "Artificial Intelligence: A Modern Approach", Pearson Education, 2010.		

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

Reference Books:

1. Patric H. Winston, "Artificial Intelligence", 2nd Edition, Addison Wesley, 1981.
2. Nils J. Nilson, "Principles of Artificial Intelligence", Narosa Publication, 1997.
3. Robert J. Schalkolf, "Artificial Intelligence: An Engineering Approach", Mc-Graw Hill, 1990.
4. David W. Rolston, "Principles of Artificial Intelligence and Expert System Development", Mc-Graw Hill, 1988.
5. Dan W. Patterson, "Introduction to Artificial Intelligence and Expert System", PHI, 2001.
6. Giarratano and Riley, "Expert System Principles and Programming", 3rd Edition, PWS publishing company, 1998.

Term Work: As per department and Institute ICA Norms.

Signature
(Prepared by Concerned Faculty/HOD)

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

Program: B. Tech. (Information Technology)				Semester : VII	
Course : Information Storage and Management Elective - I				Code : BTIT07009	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marsks)
3	2	1	4.5	Scaled to 70 marks	Scaled to 30 marks
Pre-requisite: Error! Reference source not found. (BTIT04004), Computer Networks (BTIT05005)					
Objectives: <ul style="list-style-type: none"> This course is an introduction to the field of Information Storage and management. This course provides detailed knowledge, practical training, and insight into the implementation and management of various storage technologies with a focus towards applying these technologies in an information lifecycle paradigm. 					
Outcomes: After successfully completion of this course, students will be able to <ul style="list-style-type: none"> Understand data centre requirements and Information Lifecycle Management Understand storage systems architecture and compare architectural component options Evaluate network storage systems, protocols and mechanisms for scaling systems Understand the techniques for storage system monitoring and management Design solutions for real-life storage problems 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction to Storage Technology: Data proliferation and the varying value of data with time & usage, Sources of data and states of data creation, Data centre requirements and evolution to accommodate storage needs, Overview of basic storage management skills and activities, The five pillars of technology, Overview of storage infrastructure components, Evolution of storage, Information Lifecycle Management concept, Data categorization within an enterprise, Storage and Regulations				6
2.	Storage Systems Architecture: Intelligent disk subsystems overview, Contrast of integrated vs. modular arrays, Component architecture of intelligent disk subsystems, Disk physical structure-components, properties, performance, and specifications, Logical partitioning of disks, RAID & parity algorithms, hot sparing, Physical vs. logical disk organization, protection, and back end management,				8

**SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

	Array caching properties and algorithms, Front end connectivity and queuing properties, Front end to host storage provisioning, mapping, and operation, Interaction of file systems with storage, Storage system connectivity protocols	
3.	Introduction to Networked Storage : JBOD, DAS, SAN, NAS, & CAS evolution, Direct Attached Storage (DAS) environments: elements, connectivity, & management, Storage Area Networks (SAN): elements & connectivity, Fibre Channel principales, standards, & network management principales, SAN management principles, Network Attached Storage (NAS): elements, connectivity options, connectivity protocols (NFS, CIFS, ftp), & management principles, IP SAN elements, standards (iSCSI, FCIP, iFCP), connectivity principles, security, and management principles, Content Addressable Storage (CAS): elements, connectivity options, standards, and management principles, Hybrid Storage solutions overview including technologies like virtualization & appliances.	8
4.	Introduction to Information Availability: Business Continuity and Disaster Recovery Basics, Local business continuity techniques, Remote business continuity techniques, Disaster Recovery principles & techniques	7
5.	Managing & Monitoring: Management philosophies (holistic vs. system & component), Industry management standards (SNMP, SMI-S, CIM), Standard framework applications, Key management metrics (thresholds, availability, capacity, security, performance), Metric analysis methodologies & trend analysis, Reactive and pro-active management best practices, Provisioning & configuration change planning, Problem reporting, prioritization, and handling techniques, Management tools overview	8
6.	Security & Virtualization: Storage Security (Importance of Information security, elements and attributes of security), Developing a storage security model (Restricting Access Path, Vulnerability Management, Understanding Vulnerabilities), Securing Data Storage (Storage Security domains, Risk assessment Methodology, Security elements, threats against applications, Controlling user access to data, threats against backup , recovery and archive) Virtualization (Define virtualization, types of virtualization), Storage Virtualization (Storage functionality, Virtual storage, Comparison of virtualization architectures, challenges of storage virtualization), Block level virtualization, File level virtualization	8
	Total	45

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Text Books:

1. SomasundaramGnanasundaram, Alok Shrivastava, " Information Storageand Management: Storing, Managing and Protecting Digital Information in Classic, Virtualized and Cloud Environments", EMC Education services, Wiley India Publisher, secondEdition, 2012.
2. Robert Spalding, "Storage Networks: The Complete Reference", 1st Edition, Tata Mcgraw Hill, 2003.

Reference Books:

1. Marc Farley, "Building Storage Networks", 2nd Edition, Tata McGraw Hill, 2001.
2. EMC, "Information Storage and Management", Wiley India, 2009.

Term Work:

As per Department and Institute norms for termwork.

Signature
(Prepared by Concerned Faculty/HOD)

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. (Information Technology)				Semester : VII	
Course : Internet of Things (Elective I)				Code : BTIT07012 (A.Y. 2016-17)	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 70 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	1	4.5	Scaled to 70 marks	Scaled to 30 marks
Prerequisite: Wireless Networking, Basic programming skills, basic electronics skills					
Objectives: The basic idea of the Internet of Things is that virtually every physical thing in this world can also become a computer that is connected to the Internet. When they do so they are often called smart things, because they can act smarter than things that have not been tagged. Students will gain advanced knowledge of key theories and concepts of the Internet of Things. They will acquire specialised problem-solving skills, being able to analyse and design new solutions based on Internet of Things technology.					
Outcomes: After Completion of this course, students will be able to					
<ol style="list-style-type: none"> 1. Apply IoT solutions to specific problems. 2. Analyze routing protocols, flow control mechanisms and application layer protocols for IoT. 3. Analyze physical and data link layer standards applicability to IoT. 4. Apply cloud solutions and data analytics frameworks for IoT. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction to Internet of Things: Introduction, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies, IoT Levels & Deployment Templates.				4
2.	Applications of IoT: Home Automation, Smart Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health & Lifestyles.				3
3.	IoT and Machine 2 Machine: Introduction, M2M, Difference between IoT and M2M, Software Defined Networks and Network Function Virtualization for IoT, hardware and software for IoT.				5

SVKM's NarseeMonjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

4.	Application and Transport Layer: application layer- Representational State Transfer (REST) with HTTP and CoAP, transport Layer- CoAP, UDP, congestion control mechanism for CoAP.	7
5.	Network Layer: IPv6, 6LoWPAN, IPv6 Routing Protocol for Low Power and Lossy Networks (RPL).	7
6.	Physical Layer and Data Link Layer: IEEE 802.15.4, IEEE 802.11 and WiFi.	7
7.	IoT Physical Servers & Cloud Offerings: Introduction to Cloud Storage Models & Communication APIs, Web Application Messaging Protocol (WAMP), Web Application Framework for internet of things, cloud based solutions.	7
8.	Data Analytics for IOT: Introduction, frameworks for data analysis, case study	5
	Total	45

Text Book:

1. Jean-Philippe Vasseur, Adam Dunkels, Morgan Kuffmann, "Interconnecting Smart Objects with IP: The Next Internet", Elsevier publication, 1st edition, 2010 .
2. Bahga&Madisetti "Internet of Things (A Hands-on-Approach)", VPT, 1st edition, 2014.
3. Daniel Minoli, "Building the internet of things with IPv6 and MIPv6", Wiley publication, 1st edition, 2015.

Reference Books:

1. Dr.OvidiuVermesan, Dr. Peter Friess, "Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems", River Publishers, 1st edition, 2013.
2. Lu Yan, Yan Zhang, Laurence T. Yang, HuanshengNing, "The Internet of Things: From RFID to the Next-Generation Pervasive Networked", Auerbach Publication ,1st edition, 2008.
3. Matt Richardson and Shawn Wallace, "Getting Started with Raspberry Pi", O'Reilly Media, Inc, 1st edition, 2012 .

Term Work:

As per Department and Institute ICA Norms.

Signature
(Prepared by Concerned Faculty/HOD)