

UNIVERSITY OF MUMBAI

B.E. INFORMATION TECHNOLOGY

SCHEME OF INSTRUCTIONS AND EVALUATION (R- 2001)

B.E. SEMESTER VIII

Scheme of instructions				Scheme of evaluation					
Subjects	Lect / W eeK	Prac t/ wee k	Tuto / week	Paper		T/W	Pract	Oral	Total
				Hour s	Marks				
Data Warehousing and Mining	4	2	-	3	100	25	-	25	150
Multimedia System	4	2	-	3	100	25	-	25	150
Project Management	4	2	-	3	100	25	-	25	150
Elective –II	4	2	-	3	100	25	-	25	150
Project- B	-	-	6	-	-	50	-	50	100
	16	08	6	-	400	150	-	150	700

**B.E. INFORMATION TECHNOLOGY
FOURTH YEAR SEMESTER VIII**

SUBJECT : DATA WAREHOUSING AND MINING

**Lectures : 4 Hrs Per Week
Practicals: 2 Hrs Per Week**

**Theory Papers (3 Hours): 100
Term Work : 25
Oral: 25**

Objectives Of the course :

The Data Warehousing part of module aims to give students a good overview of the ideas and techniques which are behind recent development in the data warehousing and online Analytical Processing (OLAP) fields, in terms of data models, query language, conceptual design methodologies, and storage techniques. Data mining part of the model aims to motivate, Define and Characterize data mining as process; to motivate, define and Characterize data as

Prerequisites: DBMS

DETAILED SYLLABUS

DATA WAREHOUSING:

1. **Overview And Concepts:** Need For DATA WAREHOUSING, Basic Elements Of Data warehousing, Trends in DATA WAREHOUSING
2. **Planning And Requirments:** Project Planning And Management, Collecting The Requirments.
3. **Architecture and Infrastructure:** Architectural Components, Infrastructure And Metadata.
4. **Data Design And Data Representation:** Principles of Dimensional Modelling, Dimensional Modelling Advanced topics, data extraction, transformation and loading, data quality.
5. **Information Access and Delivery:** Matching Information to Classes of users, OLAP in data Warehouse, Data Warehousing And the Web.
6. **Implimentation And Maintenance:** Physical Design Process, Data Warehouse Deployment, Growth And Maintenance.

DATA MINING:

1. **Introduction :** Basics of Data Mining, Related Concepts, Data Mining Techniques.
2. **Data Mining Algorithms:** Classification, Clustering, Association Rules.
3. **Knowledge Discovery:** KDD Process
4. **Web Mining:** Web Content Mining, Web Structure Mining, Web Usage Mining.
5. **Advanced Topics:** Spatial Mining, Temporal Mining.
6. **Visualization:** Data Generalization and Summarization-based **Characterization, Analytical Characterization:** Analysis of Attribute **Relevance, Mining claa comparisions:** Discriminating Between Different classes, Mining Descriptive Statistical Measures in Large Databases
7. **Data Mining Primitives, Languages, And System Architecture:** Data Mining Primitives, Query Language, Designing GUI Based On Data Mining Query Language, Architecture of data Mining Systems
8. **Application and Trends in Data Mining :** Application , Systems products and research prototypes , additional themes in data mining , Trends in data mining

BOOKS
Text Books:
<ol style="list-style-type: none"> 1. Paulraj Ponnian,"<i>Data Warehousing Fundamentals</i>",John Wiley. 2. M.h.Dunham,"<i>Data Mining Introductory And Advanced Topics</i>",Pearson Education. 3. Han,Kamber,"<i>Data Mining Concepts And Techniques</i> " ,Morgan Kaufmann
References:
<ol style="list-style-type: none"> 1. Ralph Kimball,"<i>The Data Warehouse LifeCycle Tool Kit</i>",John Wiley. 2. M Berry And G.Linoff ,"<i>Mastering Data Mining</i>", John Wiley 3. W.H.Inmon,"<i>Building The Data Warehouse</i>",Wiley Dreamtech. 4. R.Kimpall,"<i>The Data Warehouse Tool Kit</i>", John Wiley 5. E.G.Mallach,"<i>Decision Support And Data Warehouse Systems</i>",TMH.
TERM WORK
Term work should consist of atleast 10 practical experiments and 2 assignments covering the topics of the syllabus
ORAL EXAMINATION
An Oral Examination is to be conducted based on the above syllabus.

B.E. INFORMATION TECHNOLOGY FOURTH YEAR SEMESTER VIII	
SUBJECT: MULTIMEDIA SYSTEMS	
Lectures: 4 Hrs per week Practical: 2 Hrs per week	Theory:100 Marks Term Work:25 Marks Oral:25 Marks
Objectives of the course: This course teaches students to collect, and intelligently integrate multiple media on computers. Students learn the issues involved in capturing, compressing, processing, manipulating, searching, indexing, storing and retrieving various kinds of continuous media in the text section.	
Pre-requisites: Operating Systems, Computer Networks	
DETAILED SYLLABUS	
<ol style="list-style-type: none"> 1. Multimedia systems introduction: Multimedia applications, multimedia systems architecture, evolving technologies for multimedia systems, defining objects for multimedia systems, multimedia data interface standards 2. Compression and Decompression: Types of compressions, binary image compression schemes, color gray scale, still video image compression, video image compression, audio compression, fractal compression, data and file format standards: rich text format, TIFF, RIFF, MIDI, JPEG, AVI, MPEG. 3. Multimedia I/O technologies: Key technologies issues, pen input, video and image display system, printout technology, image scanner, digital voice and audio, full motion video. 4. Storage and retrieval technologies: Magnetic media technology, optical media, hierarchical storage management, cache management for storage systems, image and video databases: indexing and retrieval 5. Architectural and telecommunications considerations: Specialized computational processors, memory systems, multimedia board solutions, LAN/WAN connectivity, multimedia transport across ATM networks, multimedia across wireless, distributed object models 6. Multimedia networking: Multimedia networking applications, streaming stored audio and video, RTP, scheduling and policing mechanisms, integrated services, RSVP 7. Multimedia application design: Multimedia application classes, types of multimedia systems, virtual reality design, components of multimedia systems, organizing multimedia databases, application workflow design issues, distributed application design issues, applications like interactive, television, video conferencing, video on demand, educational applications and authoring, industrial applications, multimedia archives and digital libraries 8. Multimedia authoring and user interface: Multimedia authoring systems, hypermedia application design considerations, user interface design, information access, object display or playback issues. 9. Hyper Media Messaging: Mobile messaging, hyper media message components, hyper media linking and embedding, creating hyper media messages, integrated multimedia message standards, integrated document management, The World Wide Web, open hyper media systems, content based navigation. 	

- 10. Distributed multimedia system:** Components of distributed multimedia systems, distributed client server operation multimedia object server, multi-server network topologies, distributed multimedia database, managing distributed objects
- 11. Multimedia system design:** Methodology and consideration, multimedia system design examples

BOOKS

Text Books:

1. Prabhat K. Andheigh, Kiran Thakrar, 'Multimedia systems design', PHI, John F.
2. Koegel Buford, 'Multimedia Systems', PEA.

References:

1. Free Halshal, 'Multimedia Communications', PEA.
2. R. Steimnetz, K. Nahrstedt, 'Multimedia Computing, Communications and Applications', PEA
3. K. R. Rao, D. Milovanovic, 'Multimedia Communications Systems: Techniques, Standards and Networks'
4. Surbrahmanian, 'Multimedia Database Systems', M. Kaufman
5. J. D. Gibson, 'Multimedia Communications: Directions and Innovations', Academic Press, Hardcourt India
6. J. F. Kurose, K. W. Ross, 'Computer Networking', PEA.

TERM WORK

Term Work should consist of at least 10 practical experiments and 2 assignments covering the topics of the syllabus study of advanced embedded systems.

ORAL EXAMINATION

An oral examination is to be conducted based on the above syllabus

B.E. INFORMATION TECHNOLOGY FOURTH YEAR SEMESTER VIII		
SUBJECT: - PROJECT MANATEMENT		
Lectures : 4 Hrs. per week Practical : 2 Hrs. per week	Theory : 100 Marks Term Work : 25 Marks Oral : 25 Marks	
Objectives :- This course will help to identify key areas of concern and uses of measurement for project management, define indicators based upon what a project manager would want to know, use measurement to support decision making, understand where measurement is used from the perspective of a generic management process		
Pre-requisite :- Software Engineering		
DETAILED SYLLABUS		
Sr. No.	Topic	Sub-Topic
01	Project Management	Introduction, Need, Goals, Evolution, Project environments, Systems, Organizations, and System methodologies.
02	System Development Cycle	Early stages, Life cycle, Development cycle, Constraints in systems development, Phase A: Conception, Project proposals, Project constructing; Middle and Later stages: Phase B: definition, Phase C: Execution, Implementation stage, Phase D: Operation, System development in Industrial and service Organization, System development in large Government programs.
03	Systems and Procedures	Planning fundamentals: Planning steps, Project master plan, Scope and work definition, Project organization structure and responsibilities, Project management system, Scheduling, Planning and scheduling charts.
04	Network Scheduling and PDM	Logic diagram and network, Critical path, Scheduling and time based networks, Management schedule reserve, PDM networks, PERT, CPM, Resource allocation, GERT.
05	Cost Estimation and Budgeting	Cost estimating, Cost escalation, Cost estimating and system development cycle, Cost estimating process, Elements of budgets and estimates, Project cost accounting and MIS, Budgeting using cost accounts, Cost schedules and forecasts.
06	Risk Management	Basic concepts, Assessment, Response planning, Management.
07	Project Control	Control process, Control emphasis, Information monitoring, Internal and external project control, Traditional cost control, Cost accounting systems for project control, Performance analysis, Performance index monitoring, Variance limits, Controlling changes, Contract administration Control problems.
08	Project Management Information System	Functions of PMIS, Computing based tools, Computer – based PMIS, Representative Computer – based PMIS, Web based Project management, Applying computer based PMS, Project evaluation, Project reporting, Project.
09	Software Quality	Introduction, Importance, ISO 9126, Software quality measures, External standards, Technique to enhance software quality.

10	Termination	Terminating the project, Termination responsibilities, Closing and contracts, Project extension.
11	Organization Behavior	Project Organization structure and integration: Organization structure, Formal organization structure, Organization Integration of subunits in projects, Liaison roles, Task forces, and Teams, Project expeditors and Co-Ordinator, Matrix organization, Informal organization, Concurrent engineering, Quality function deployment; Project roles, Responsibility and Authority, Managing participation, Team work and conflict.

BOOKS	
Text Books	
01	J.M. Nicholas “Project Management for Business and Technology”, PHI
02	B. Hughes, M. Cotterell, “Software Project Management “, TMH
Reference	
01	R.K. Wysocki, R. Beck Jr., D.B. Crane, “Effective Project Management”, John Wiley
02	J. Phillips, “IT Project Management”, TMH.
03	P. Jalote, “Software Project Management in Practice”, Pearson Education
TERM WORK	
12	Term work should consist of at least 10 practical experiments and two assignments covering all the topics of the syllabus.
ORAL EXAMINATION	
An oral examination is to be conducted based on the above syllabus	

**B.E. INFORMATION TECHNOLOGY
FOURTH YEAR SEMISTER VIII
SUBJECT: INFORMATION SECURITY (ELECTIVE-II)**

Lectures: 4 Hrs per week theory: 100 Marks

Term work: 25 Marks

Practical: 2 Hrs per week

Oral: 25 Marks

Objectives of the course: Learn about the threats in computer security. Understand what puts you at a risk and how to control it. Controlling a risk is not eliminating the risk but to bring it to a tolerable level.

Pre-requisites: Computer Networks, Operating system.

DETAILED SYLLABUS

1. **Introduction:** Security, Attacks, Computer criminals, Method of defense
2. **Program Security:** Secure programs, Non-malicious program errors, Viruses and other malicious code, Targeted malicious code, Controls against program threats
3. **Operating System Security:** Protected objects and methods of protection, Memory address protection, Control of access to general objects, File protection mechanism, Authentication: Authentication basics, Password, Challenge-response, Biometrics.
4. **Database Security:** Security requirements, Reliability and integrity, Sensitive data, Interface, Multilevel database, Proposals for multilevel security
5. **Security in Networks:** Threats in networks, Network security control, Firewalls, Intrusion detection systems, Secure e-mail, Networks and cryptography, Example protocols: PEM, SSL, IPsec
6. **Administrating Security:** Security planning, Risk analysis, Organizational security policies, Physical security.
7. **Legal, Privacy, and Ethical Issues in Computer Security:** Protecting programs and data, Information and law, Rights of employees and employers, Software failures, Computer crime, Privacy, Ethical issues in computer society, Case studies of ethics

BOOKS

Text Books:

1. C. P. Pfleeger, and S. L. Pfleeger, "Security in Computing", Pearson Education.
2. Wtátt Bishop, "Computer Security: Art and Science", Pearson Education.

REFERENCES:

1. Stallings, "Ciyptography And Network Security: Principles and practice"
2. Kaufman, Penman, Speciner, "Network Security"
3. Eric Maiwald, "Network Security : A Beginner's Guide", TMH
4. Macro Pistoia, "Java Network Security ", Pearson Education
5. Whitman, Mattord, "Principles of information security' Thomson

TERM WORK

17. Term work should consist of at least 10 practical experiments and two assignments covering the topics of the syllabus.

ORAL EXAMINATION

An oral examination is to be conducted based on the above syllabus

B.E. INFORMATION TECHNOLOGY
FOURTH YEAR SEMESTER VIII

SUBJECT : PROJECT - B

Tutorial: 6 Hrs per week

Term work : 50 Marks

Oral : 50 Marks

GUIDELINES

1. project-B exam be conducted by two examiners appointed by university. Student have to give demonstration and seminar no the Project-B for them work marks. All the students of the class must attend all the seminars. Seminar should be conducted continuously for couple of days.
2. Project-B should contain :
 - Introduction and Motivation, Problem Statement, Requirement Analysis, Project design, Implementation Details, Technologies used, Test cases, Project time line, Task Distribution, references, and Appendix consisting of user Manuals.
 - CD containing: project Documentation, Implementation code, Required utilities, Software's and Manuals.
 - Every student must prepare well formatted, printed and hard bound report.
3. Internal guide has to interact at least once in the fortnight and maintain the progress and attendance report during the term.
4. Make sure the internal project guide are BE graduates.
5. Convener should make sure that external examiner are appointed from the list as per appropriate technical area