

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Proposed Scheme of Absorbion of New course(C. B. S.) to Old course of Sixth Semester
B. E. (Information Technology)

As per Old course scheme of RTM,
Nagpur University

Sr. No	Sem	Subjects	Th/Pr
1	VI	Software Engineering	Th
2	VI	Software Engineering	Pr
3	VI	JAVA Programming	Th
4	VI	JAVA Programming	Pr
5	VI	Database Management Systems	Th
6	VI	Database Management Systems	Pr
7	VI	Operating Systems	Th
8	VI	Microprocessors	Th
9	VI	Microprocessors	Pr
10	VI	Visual Techniques	Th
11	VI	Visual Techniques	Pr

As per New course (C. B. S.)scheme of RTM,
Nagpur University

Subject Code	Subjects	Th/Pr
BEIT603T	Database Management Systems	Th
BEIT603P	Database Management Systems	Pr
BEIT602T	Operating Systems	Th
BEIT601T	Computer Networks	Th
BEIT604T	Internet Programming	Th
BEIT604P	Internet Programming	Pr
BEIT605T	Functional English	Th
BEIT606P	Mini Project and Industrial Visit	Pr

Note: If any student has cleared any subject as mentioned in absorption scheme of relevent semester in previous semester of old course will be exempted for appearing in the examination for that subject

BEIT601T

COMPUTER NETWORKS
(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I: Introduction

Introduction to computer networks & Internet, Network architecture, layered approach, OSI reference model, TCP/IP protocol suite, performance issues in networks, throughput, delay, latency, jitter, packet delivery ratio, packet loss rate, reliability, Introduction to Wireless Networks, IEEE 802.11, Bluetooth and WiMAX, wireless transmission, infrared transmission

UNIT II: Data Link Layer

Design issues, framing, error control, flow control, error-correcting and detecting codes, Data link protocols, unrestricted simplex protocol, simplex stop-and-wait protocol, one-bit sliding window protocol, Go Back N ARQ protocol, selective repeat ARQ protocol, static and dynamic channel allocation, ALOHA, CSMA/CD, CSMA/CA

UNIT III: Network Layer

Design issues, classful and classless addressing, IPv4 addressing mechanism, Subnetting and Supernetting, Next generation IP, IPv6 addressing, transition from IPv4 to IPv6, ICMPv6, routing algorithms, shortest path routing, flooding, flow-based routing, distance vector routing, link state routing, hierarchical routing, congestion control algorithms, OSPF, BGP, Multicasting, firewalls

UNIT IV: Transport layer and Application Layer

Quality of service, transport service primitives, elements of transport protocol, addressing, establishing a connection, releasing a connection, flow control and buffering, multiplexing, crash recovery, client server model, concurrency, processes, sockets, socket system calls

UNIT V:

BOOTP and DHCP, packet formats, operation, error control, transition states, DNS (Domain Name System), DNS in the Internet, Resolution, FTP and TFTP, connection, communication, command processing, file transfer, messages

UNIT VI:

Mobile IP, addressing, agents, three phases, agent discovery, registration, data transfer, Internet Security, privacy, digital signature, application layer security, transport layer security, security at the IP layer IPSec, Real Time traffic over the Internet

Text Books:

1. Computer Networks, Fifth Edition, Andrew Tanenbaum(Pearson Education)
2. TCP/IP Protocol Suite, Behrouz A Forouzan, McGraw Hill Fourth Edition

BEIT602T

OPERATING SYSTEMS
(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

Introduction: What is Operating System(OS), structure of OS, history of OS, Types of OS: Time sharing, real-time, multiprocess (Asynchronous & Synchronous), multiprogramming (loosely coupled, tightly coupled), Distributed, web-based, client-server, peer-to-peer, services of OS, user view & machine view of OS, System calls, Spooling and buffering. Case Studies: Android, Linux, Windows 8.

UNIT II:

File Management: File Concept, file attributes, file operations, file system structure, file system implementation, file access methods, Disk Scheduling Algorithms, File protection, free space management on disk.

UNIT III:

Process Management: Process concept, process scheduling, operations on process, interprocess communication, communication between client-server, multithreaded model, process scheduling criteria, scheduling algorithm.

UNIT IV:

Memory Management: Preliminaries, Bare machine, resident monitor, swapping, multiple partitions, paging, segmentations, combined systems. Virtual Memory: Overlays, demand-paging performance, of demand paging, page replacement, virtual memory concepts, page replacement algorithms. Allocation algorithm, thrashing.

UNIT V

Process Synchronization: Critical Section problem, semaphores, classic problems: Dining Philosopher problem, producer-consumer, reader-writers problem, bounded buffer problem, monitors, Atomic transaction, synchronization examples.

UNIT VI:

Deadlock and Protection: System model, deadlock characterization, methods for handling deadlocks, prevention, detection, recovery, avoidance, Banker's Algorithm. Goal of protection, mechanism & policies, domain protection, access matrix, implementation of access matrix, dynamic protection structures, revocation, existing systems & language based protection, protection problem security.

Text Books:

1. Modern Operating Systems – A. S. Tanenbaum, Pearson Education
2. Operating System- A. S. Godbole, Tata McGraw Hill, third edition
3. Operating System Concepts- Silberchatz and Galvin, Addison Wesley
4. Android application Development for Java Programmers by James c. Sheusi, CENGAGE Learning.

Reference Books:

1. Operating Systems concepts and Design – Milan Milenkovic, Tata McGraw Hill

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BEIT603T

DATABASE MANAGEMENT SYSTEMS

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I: Introduction to Database Systems

Database Systems: Significance and advantages, Types of Databases, Limitations of File processing system, the DBMS Environment, Data Abstraction, Data Independence, DBMS Architecture, Functions of DBMS, Formal relational query languages: Relational Algebra, Tuple Relational calculus, Domain Relational Calculus.

UNIT II: File Organization, Indexing and Hashing

File organization, Organization of records in files, Data dictionary storage, Basic concepts of indexing, Ordered indices, B+ Tree index files, B+ Tree indexing, B+ Tree Extensions, Multiple Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices, Index Definition in SQL.

UNIT III: Data Models and Relational Database Design

Evolution of Data Models, Entity Relationship Model, Development of ER Diagrams, Extended Entity Relationship Model. Relational model: Logical View of Data, Keys, Integrity Rules, Relational set operators, Data Dictionary and System Catalog, Indexes, Codd's Relational Database Rules. Normalization of Database Tables: Need and Significance, the normal forms - 1NF, 2NF, 3NF, BCNF, 4NF, 5NF, normalization & database design, denormalization.

UNIT IV: Query Processing and Query Optimization

Overview of Query Processing, Measures of Query cost, Selection Operation, Sorting, Join Operation, Other Operations, and Evaluation of Expressions. Overview of Query Optimization, Transformation of Relational Expressions, Estimating Statistics of Expression results, Choice of Evaluation Plans, Materialized Views

Unit V: Transaction Management

Transactions: Concept, Transaction Model, Transaction atomicity and Durability, Transaction Isolation, Serializability, Transaction Isolation Levels and Implementations. Concurrency Controls: Lock Based Protocol, Deadlock Handling, Time-stamp Based Protocols, and Validation Based Protocols. Recovery System: Failure Classification, Log Based Recovery, Advanced Recovery Techniques.

UNIT VI: SQL and Advanced SQL

Introduction to SQL: SQL Data Definition, Basic Structure of SQL Queries, Set Operations, Null values, Aggregate functions, Nested Sub-queries, Modifications of the Databases Intermediate SQL: Join Expressions, Views, Integrity Constraints, SQL Data types and Schemas, Authorization. Advanced SQL: Dynamic SQL and Embedded SQL, Functions and Procedures, Triggers.

Text Books:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan, Database System Concepts, 6th Edition, McGraw Hill (SIE), 2013.
2. Carlos Coronel, Steven Morris and Peter Rob, Database Principles – Fundamentals of Design, Implementation and Management, 9th Edition, Cengage Learning, 2013.
3. Hector-Garcia Molina, Jeffrey Ullman and Jeniffer Widom, Database Systems – the Complete Book, 2nd Edition, Pearson Education, 2014.
4. Database Systems Concepts, Designs and Application(2e Pearson) by Shio Kumar Singh
5. The database book, Principles and Practice using MySQL by Narain Gehani, University Press.
6. An Introduction to Database Systems(8e Pearson) by Date, Kannan, Swamynathan

Reference Books:

1. Alexis Leon and Mathews Leon, Database Management Systems, Vikas Publishing, 2008.
2. Ramez Elmasri and Shamkant Navathe, Database Systems - Models, Languages, Design and Application Programming, 6th Edition, Pearson Education, 2009.

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BEIT603P

DATABASE MANAGEMENT SYSTEMS

(Practical Credit: 01)

Teaching Scheme:

Practical: 2 Hours/week

Examination Scheme:

Practical: P (U): 25 Marks P (I): 25 Marks

Duration of University Exam. : 02 Hours

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Note:

1. Practicals are based on DATABASE MANAGEMENT SYSTEMS syllabus (subject code: BEIT603T)
2. Practicals are to be performed using SQL
3. Minimum ten practicals have to be performed
4. Do not include study experiments

BEIT604T

INTERNET PROGRAMMING

(Theory Credit: 05)

Teaching Scheme:

Lecture: 4 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 80 Marks T (I): 20 Marks

Duration of University Exam. : 03 Hours

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UNIT I:

HTML and common tags: Introduction, www, Internet, URL, Common tags: Text formatting tags Line and Paragraph tags, Lists: ordered list Unordered List, definition List, anchor tag , Absolute and relative path, Tables and its attributes, Image tag- alt attribute, image mapping frames, forms , cascading style sheet, External style sheet, internal Style sheet.

UNIT II:

Java Scripts: Introduction Benefits of java script, Editing java scripts Displaying information, Alerts(), Prompts(), confirm box, Operators, conditional statements, conditional loops, functions, arrays, Objects-math, string, date, Boolean, number, document, windows. DHTML with java script, Object model collection, events in java script, filters and transitions-Flip filter, Image mask, shadow filter, alpha filter, Blur filter. Difference between HTML and DHTML

UNIT III:

XML: Introduction, Advantages, Difference between HTML and XML, XML Namespace, Well formed and valid XML, XML Document type definition, XML schemas, Data types Attribute Types, XML Transformation- xsl, Document object model (DOM) using XML processors: DOM and SAX.

UNIT IV:

The Server Side: Client side Vs. Server side, Transformation from static to dynamic sites, Java Servlets, reading environment parameters, accessing parameter data, state management, event driven tracking.

UNIT V:

Java Server Pages: Need of JSP, JSP Life Cycle, Elements in JSP Page, Implicit JSP Objects, JSP Objects scope, JSP tags, JSP exceptions ,Expression Language, JSP standard tag Library custom tag Library, JSP and Equivalent Technologies.

UNIT VI:

Android applications Project: android applications components, application design, the screen layout and main.xml file, component Ids, few simple controls, getting and configuring android emulator, Key Classes like Button, TextView, EditText, View. OnClickListener

Text Books:

1. Web Technology Theory and Practices by M. Shrinivasan, PEARSON publication.
2. Android application Development for Java Programmers by James c. Sheusi, CENGAGE Learning.

3. The Modern approach to Web Technologies by Dr. Vaka Murali Mohan and Mr. S. Pratap Singh SCITECH Publications.
4. Web Technologies TCP/IP architecture, and Java Programming by Achyut S. Godbole & Atul Kahate , Tata McGraw-Hill publication Second edition.

Reference Books:

1. HTML: The Complete Reference, by Thomas A. Powell, McGraw Hill
2. XML: The Complete Reference, by Williamson, McGraw Hill

BEIT404P

INTERNET PROGRAMMING
(Practical Credit: 01)

Teaching Scheme:
Practical: 2 Hours/week

Examination Scheme:
Practical: P (U): 25 Marks P (I): 25 Marks
Duration of University Exam. : 02 Hours

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Note:

1. Practicals are based on INTERNET PROGRAMMING syllabus (subject code: BEIT404T)
2. Practicals are to be performed using Apache Tomcat and Eclipse IDE
3. There should be at the most two practicals per unit
4. Minimum ten practicals have to be performed
5. Do not include study experiments

BEIT605T

FUNCTIONAL ENGLISH
(Theory Credit: 03)

Teaching Scheme:

Lecture: 2 Hours/week

Tutorial: 1 Hour/week

Examination Scheme:

Theory: T (U): 40 Marks T (I): 10 Marks

Duration of University Exam. : 02 Hours

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Objective: At the end of the semester, students will have enough confidence to face competitive examinations (IELTS/ TOEFL/CAT/ MAT/ XAT/SNAP/GMAT/GATE etc.) to pursue masters degree. They will also acquire language skills required to write their Reviews/Projects/Reports. They will be able to organize their thoughts in English and hence face job interviews more confidently.

Scope: The Curriculum designed is student –centered and it is guidance for their career

Course Structure

Unit 1. Functional Grammar: (4 periods) (3+3+2+2=10)

Common errors, Transformation of Sentences, Phrases, Idioms & Proverbs.

[50 sentences of common errors, 50 examples of Transformation of Sentences, (5 each type), 50 noun/prepositional phrases, 50 idioms/proverbs]

Unit II. English for Competitive Exams & Interview Techniques: (6 periods)

3+3+2+2=10 or (10X1=10)

IPA (vowel & consonant phonemes), Word building [English words /phrases derived from other languages), Technical Jargons, Synonyms/Antonyms, Analogies, Give one word for, Types & Techniques of Interview

Assignment : [25 Words for teaching IPA, 25 words/phrases of foreign origin, 25 technical jargons, 25 words for Synonyms/ Antonyms, 25 words for Analogies, 50 examples of give one word for]

Unit III (A) Formal Correspondence (8 periods) (10X1=10)

Business Letters, Technical Report Writing, Writing Resumes, e-mail etiquettes

[Orders, Complaints, Enquiries, Job applications & Resume Writing, Writing Memoranda]

(B) Analytical comprehension: [Four fictional & four non-fictional unseen texts]

Unit IV. Technical & Scientific Writing: (4 periods) (10X1=10)

Writing Reviews, Features of Technical Writing, Writing Scientific Projects, Writing Research papers.

Assignment: (Any one project/review as assignment)

Total number of periods required = 22 for each Branch of Engineering

Reference Books:

1. Oxford Learners' Dictionary of Current English
2. Business Communication - KK Sinha, Galgotia Publishers
3. Developing Communication skills- Krishna Mohan & Meera Banerjee
4. Effective technical Communication –Barun K Mitra
5. Effective Business Communication – Herta A Murphy, Habert Hidebrandt, Jane P Thomas

Evaluation Pattern:

Internal Examination: Weightage = 10 mrks

Written Examination: 05 marks

Project Seminar : 05 marks

External Examination: Weightage = 40 marks

Question Pattern for End Semester Examination.

Q No.	Unit No	Que.type	No. of Questions	Weightage
1 or 2	I	objective	2 bunches of 4 questions each	(3+3+2+2)=10)
3 or 4	II	Objective	2 bunch of 4 questions each	(3+3+2+2)=10 or (10X1=10)
5 or 6	III	subjective	1 out of 2	(10X1=10)
7 or 8	IV	Subjective	1 out of 2	(10X1=10)

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BEIT606P

MINI PROJECT AND INDUSTRIAL VISIT
(Practical Credit: 02)

Teaching Scheme:
Practical: 2 Hours/week

Examination Scheme:
Practical: P (U): 25 Marks P (I): 25 Marks
Duration of University Exam. : 02 Hours

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Course Objective:

1. To develop an understanding of applications in real life
2. To develop research skills of students
3. To help the students in exploring career opportunities in their areas of interest.
4. To give an insight into the overall functioning of the organisations where students visited.
5. To develop Institute-Industry Interaction
6. To provide means to immerse students in actual supervised professional experiences

Constraints:

1. The students shall work in groups of 4-5 each and work on small application or research based/Industry oriented real time problems.
2. Local Mentor and Industry Mentor shall work in coordination if students are doing project in industry.
3. Industry visit should be planned to explore students about real time problems.
4. Students shall work on providing solutions to identified problems
5. Detailed reports are expected to be submitted at the end
6. Evaluation should be done based on feedback of Local and Industry Mentor

Expected Outcome:

1. Problem Identification and Definition
2. Defining data requirements and Identifying data sources
3. Literature Survey
4. Primary data collection
5. Software and Hardware requirements
6. Overall Project development as per the phases of SDLC
7. Outcome of the project
8. Utility of the project to the organisation
