Faculty of Engineering and Technology
P. K. University
Shivpuri (MP)

Department of Computer Science Engineering & IT

Evaluation Scheme & Syllabus for

B.Tech. Third Year (V & VI Semester)
(Effective from session 2025-26)

STUDY AND EVALUATION SCHEME FOR B.TECH. COMPUTER SCIENCE & ENGG.													
YEAR 3rd /SEMESTER-5th													
SUBJECT CODE	SUBJECTS NAME	STUDY SCHEME Periods/Week			Credits	MARKS IN EVALUATION SCHEME						Total Marks of Internal &External
						INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
UMANACO501	MANAGERIAL ECONOMICS	3	0	0	3	30	-	30	70	-	70	100
UDATACO502	DATABASE MANAGEMENT SYSTEM	3	1	0	4	30	-	30	70	-	70	100
UINDUCO503	INDUSTRIAL SOCIOLOGY	3	0	0	3	30	-	30	70	-	70	100
UDESICO504	DESIGN & ANALYSIS OF ALGORITHM	3	0	0	3	30	-	30	70	-	70	100
UWEBTCO505	WEB TECHNOLOGIES	3	0	0	3	30	-	30	70	-	70	100
UPRINCO506	PRINCIPLES OF PROGRAMMING LANGUAGE	3	0	0	3	30	-	30	70	-	70	100
UDATACO507	DATABASE MANAGEMENT SYSTEM LAB	0	0	2	1	-	25	25	-	25	25	50
UDESICO508	DESIGN & ANALYSIS OF ALGORITHM LAB	0	0	2	1	-	25	25	-	25	25	50
UWEBTCO509	WEB TECHNOLOGIES LAB	0	0	2	1	-	25	25	-	25	25	50
UPRINCO510	PRINCIPLES OF PROGRAMMING LANGUAGE LAB	0	0	2	1	-	25	25	-	25	25	50
Total		18	1	8	23	180	100	280	420	100	520	800

STUDY AND EVALUATION SCHEME FOR B.TECH. COMPUTER SCIENCE & ENGG.												
YEAR 3rd /SEMESTER-6th												
SUBJECT CODE	SUBJECTS NAME	STUDY SCHEME Periods/Week			Credits	MARKS IN EVALUATION SCHEME						Total Marks of Internal &External
						INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
UINDUCO601	INDUSTRIAL MANAGEMENT	3	0	0	3	30	-	30	70	-	70	100
UCOMPCO602	COMPUTER NETWORKS	3	1	0	4	30	-	30	70	-	70	100
UCOMPCO603	COMPILER DESIGN	3	1	0	4	30	-	30	70	-	70	100
UINTECO604	INTERNET OF THINGS	3	1	0	4	30	-	30	70	-	70	100
UCOMPCO605	COMPUTER NETWORKS-LAB	0	0	2	1	-	25	25	-	25	25	50
UCOMPCO606	COMPILER DESIGN-LAB	0	0	2	1	-	25	25	-	25	25	50
Total		12	3	4	17	120	50	170	280	50	330	500

Department of Computer Science Engineering &IT
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P.K. University, Shivpuri (MP)
III Year V Semester
UMANACO501 : MANAGERIAL ECONOMICS

L	T	P
3	0	0

UNIT-I

ntroduction of Engineering Economics and Demand Analysis: Meaning and nature of Economics, Relation between science, engineering, technology and economics; Meaning of Demand, Determinants of Demand, Shifts in demand, Law of Demand, Price Elasticity of Demand &Types, Income Elasticity, Cross price Elasticity, Determinants of Elasticity, uses and importance of elasticity.

UNIT II

Concept of Supply: Law of Supply, Factors affecting Supply, Elasticity of supply.

Demand Forecasting: Introduction, Meaning and Forecasting, Methods or Techniques of Demand Forecasting, Criteria for Good Demand Forecasting, Demand Forecasting for a New Product;

UNIT III

Cost Analysis- Introduction, Types of Costs, Cost-Output Relationship: Cost Function, Cost-Output Relationships in the Short Run, and Cost-Output Relationships in the Long Run; Short run and long run, Break- Even Analysis; Production functions: laws of variable proportions, law of returns; Economies of scale: Internal and external

UNIT IV

Market Structure: Market Structure Perfect Competition, Imperfect competition – Monopolistic, Oligopoly, duopoly sorbent features of price determination and various market conditions

UNIT V

Nature and characteristics of Indian economy, concepts of LPG, elementary concepts of National Income, Inflation and Business Cycles ,Concept of N.I. and Measurement., Meaning of Inflation, Types and causes , Phases of business cycle .Investment decisions for boosting economy(National income and per capital income)

References:

1. Premvir Kapoor, Sociology and Economics for Engineers, Khanna Publishing House (Edition 2018)
2. Salvatore D, ―Principles of Microeconomics‖, Oxford University Press.
3. Koutsoyiannis A, ―Modern Microeconomic‖, Macmillan Education Ltd.
4. Dwivedi DN, ―Principles of Microeconomics‖, Pearson Education.
5. Cowell, FA, ―Microeconomic Principles and Analysis‖, Oxford University Press.

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L	T	P
3	1	0

UDATACO502: DATABASE MANAGEMENT SYSTEMS

UNIT I

Introduction: Overview, Database System vs File System, Database System Concept and Architecture,DataModelSchemaandInstances,DataIndependenceandDatabaseLanguage and Interfaces, Data Definitions Language, DML, Overall Database Structure. Data Modeling Using the Entity Relationship Model: ER Model Concepts, Notation for ER Diagram ,Mapping Constraints ,Keys, Concept sof Super Key ,Candidate Key, Primary Key, Generalization,Aggregation,ReductionofanERDiagramstoTables,ExtendedERModel,

UNIT II

Relational data Model and Language: Relational Data Model Concepts, Integrity Constraints, Entity Integrity, Referential Integrity, Keys Constraints, Domain Constraints, RelationalAlgebra,RelationalCalculus,TupleandDomainCalculus.IntroductiononSQL: Characteristics of SQL, Advantage of SQL. SQl Data Type and Literals. Types of SQL Commands. SQL Operators and Their Procedure. Tables, Views and Indexes. Queries and Sub Queries. Aggregate Functions. Insert, Update and Delete Operations, Joins,Unions, Intersection, Minus, Cursors, Triggers, Procedures in SQL/PL SQL

UNIT III

Data Base Design & Normalization: Functional dependencies, normal forms, first, second, 8 third normal forms, BCNF, inclusion dependence, loss less join decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design

UNIT IV

Transaction Processing Concept: Transaction System, Testing of Serializability, Serializability of Schedules, Conflict & View Serializable Schedule, Recoverability, Recovery from Transaction Failures, Log Based Recovery, Checkpoints, Deadlock Handling. Distributed Database: Distributed Data Storage, Concurrency Control, Directory System.

UNIT V

Concurrency Control Techniques: Concurrency Control, Locking Techniques for Concurrency Control, Time Stamping Protocols for Concurrency Control, Validation Based Protocol, Multiple Granularity, Multi Version Schemes, Recovery with Concurrent Transaction, Case Study of Oracle References:

1. Korth, Silbertz, Sudarshan,‖ Database Concepts‖, McGrawHill
2. Date C J, —An Introduction to Database Systems‖, AddisionWesley
3. Elmasri, Navathe, — Fundamentals of Database Systems‖, AddisionWesley
4. O'Neil, Databases, ElsevierPub.
5. RAMAKRISHNAN"Database Management Systems",McGraw Hill
6. Leon & Leon,‖Database Management Systems‖, Vikas PublishingHouse
7. Bipin C. Desai, — An Introduction to Database Systems‖, GagotiaPublications

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III Year V Semester
UINDUCO503 : INDUSTRIAL SOCIOLOGY

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3	0	0

UNIT-I

Industrial Sociology: Nature, Scope and Importance of Industrial Sociology. Social Relations in Industry, Social Organization in Industry- Bureaucracy, Scientific Management and Human Relations

UNIT II

Rise and Development of Industry: Early Industrialism – Types of Productive Systems – The Manorial or Feudal system. The Guild system, The domestic or putting-out system, and the Factory system. Characteristics of the factory system. Causes and Consequences of industrialization. Obstacles to and Limitations of Industrialization.

UNIT III

Industrialization in India. Industrial Policy Resolutions – 1956.Science. Technology and Innovation Policy of India 2013

UNIT IV

Contemporary Issues: Grievances and Grievance handling Procedure. Industrial Disputes: causes, Strikes and Lockouts. Preventive Machinery of Industrial Disputes: Schemes of Workers Participation in Management- Works Committee, Collective Bargaining, Bi-partite & Tri-partite Agreement, Code of Discipline, Standing Orders. Labor courts & Industrial Tribunals

UNIT V

Visualizing the future: Models of industrialization- Collectivist, anarchist, free market, environmentalist, etc. Cultural issues, consumer society and sociological concerns

References:

1. PREMVIR KAPOOOR, Sociology & Economics for Engineers, Khanna Publishing House (Edition 2018).
2. GISBERT PASCAL, Fundamentals of Industrial sociology, Tata McGraw Hill, New Delhi, 1972.
2. SCHNEIDER ENGNO V., Industrial Sociology 2nd Ed., McGraw Hill Publishing Co., New Delhi, 1979.
3. MAMORIA C.B. And MAMORIA S., Dynamics of Industrial Relations in India.
4. SINHA G.P. and P.R.N. SINHA, Industrial Relations and Labour Legislations, New Delhi, Oxford and IBH Publishing Co.,
5. S.C. SHARMA, Industrial Safety and Health Management, Khanna Book Publishing Co. (P) Ltd., Delhi
5. NADKARNI, LAKSHMI, Sociology of Industrial Worker, Rawat, Jaipur,1998.
6. BHOWMICK SHARIT, Industry, Labour and Society,Orient, 2012.
7. RICHARD BROWN, JOHN CHILD, AND S R PARKER, The Sociology of Industry 1st Edition, Routledge, 2015

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III Year V Semester
UDESICO504: DESIGN AND ANALYSIS OF ALGORITHM

L	T	P
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UNIT I: Introduction: Algorithms, Analyzing Algorithms, Complexity of Algorithms, Growth Functions,PerformanceMeasurements,SortingandOrderStatistics-Shell Sort, Quick Sort,Merge Sort, Heap Sort, Comparison of Sorting Algorithms, Sorting in Linear Time

UNIT II : Advanced Data Structures: Red-Black Trees, B – Trees, Binomial Heaps, Fibonacci Heaps, Tries, Skip List

UNIT III: Divide and Conquer with Examples Such as Sorting, Matrix Multiplication, Convex Hull and Searching.

Greedy Methods with Examples Such as Optimal Reliability Allocation, Knapsack, Minimum Spanning Trees – Prim's and Kruskal's Algorithms, Single Source Shortest Paths- Dijkstra's and Bellman Ford Algorithms.

UNIT IV: Dynamic Programming with Examples Such as Knapsack. All Pair Shortest Paths – Warshal's and Floyd's Algorithms, Resource Allocation Problem. Backtracking, Branchand Bound with Examples Suchas Travelling Salesman Problem,

Graph Coloring, n-Queen Problem, Hamiltonian Cycles and Sum of Subsets

UNIT V : Selected Topics: Algebraic Computation, Fast Fourier Transform, String Matching, Theory of NP-Completeness, Approximation Algorithms and Randomized Algorithms

References:

1. Thomas H. Coreman, Charles E. Leiserson and Ronald L. Rivest, ―Introduction to Algorithms‖, Printice Hall of India.
2. E. Horowitz & S Sahni, "Fundamentals of ComputerAlgorithms",
3. Aho, Hopcraft, Ullman, ―The Design and Analysis of Computer Algorithms‖ Pearson Education,2008.
4. LEE "Design & Analysis of Algorithms (POD)",McGraw Hill
5. Gajendra Sharma, Design & Analysis of Algorithms, Khanna Publishing House
6. Richard E.Neapolitan "Foundations of Algorithms" Jones & Bartlett Learning
7. Jon Kleinberg and Éva Tardos, Algorithm Design, Pearson,2005.
8. Michael T Goodrich and Roberto Tamassia, Algorithm Design: Foundations, Analysis,
9. and Internet Examples, Second Edition, Wiley,2006.
10. Harry R. Lewis and Larry Denenberg, Data Structures and Their Algorithms, Harper Collins,1997
11. Robert Sedgewick and Kevin Wayne, Algorithms, fourth edition, Addison Wesley,2011.
12. Harsh Bhasin,‖Algorithm Design and Analysis‖,First Edition,Oxford UniversityPress.

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III Year V Semester
UWEBTCO505 : WEB TECHNOLOGIES

L	T	P
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UNIT-I

Introduction: Introduction and Web Development Strategies, History of Web and Internet, Protocols Governing Web, Writing Web Projects, Connecting to Internet, Introduction to Internet services and tools, Introduction to client-server computing.CoreJava:Introduction,Operator,Datatype,Variable,Arrays,Methods&Classes,Inheritance, Packageand Interface, Exception Handling, Multithread programming, I/O, Java Applet, String handling, Event handling, Introduction to AWT,AWT controls, Layout managers

UNIT II

Web Page Designing: HTML: List, Table, Images, Frames, forms, CSS, Document type definition,XML: DTD, XML schemes, Object Models, presenting and using XML, Using XML Processors: DOM and SAX, Dynamic HTML

UNIT III

Scripting: Java script: Introduction, documents, forms, statements, functions, objects; introduction to AJAX,

Networking Internet Addressing, Introduction Address, Factory Methods, Instance Methods, TCP/IP Client Sockets, URL, URL Connection, TCP/IP Server Sockets, Datagram.

UNIT IV

Enterprise Java Bean: Preparing a Class to be a JavaBeans, Creating a JavaBeans, JavaBeans Properties, Types of beans, Stateful Session bean, Stateless Session bean, Entity bean

Java Database Connectivity (JDBC): Merging Data from Multiple Tables: Joining, Manipulating, Databases with JDBC, Prepared Statements, Transaction Processing, Stored Procedures

UNIT V

Servlets: Servlet Overview and Architecture, Interface Servlet and the Servlet Life Cycle, Handling HTTP get Requests, Handling HTTP post Requests, Redirecting Requests to Other Resource s, Session Tracking, Cookies, Session Tracking with Http Session

Java Server Pages (JSP): Introduction, Java Server Pages Overview, A First Java Server Page Example, Implicit Objects, Scripting, Standard Actions, Directives, Custom Tag Libraries..

References:

1. Burdman, Jessica, ―Collaborative Web Development‖ AddisonWesley
2. Xavier, C, ― Web Technology and Design‖ , New **AgeInternational**
3. Ivan Bayross,‖ HTML, DHTML, Java Script, Perl & CGI‖, BPBPublication
4. **Tanveer Alam, Internet & Java Programming, Khanna PublishingHouse**
5. Bhave, ―Programming with Java‖, PearsonEducation
6. Herbert Schieldt, ―The Complete Reference:Java‖,TMH.
7. Hans Bergsten, ―Java Server Pages‖, SPDO'Reilly
8. **Mar**garet Levine Young, ―The Complete Reference Internet‖,TMH
9. Naughton, Schildt, ―The Complete Reference JAVA2‖,TMH

Department of Computer Science Engineering & IT
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P.K. University, Shivpuri (MP)
III Year V Semester
UPRINCO506: PRINCIPLES OF PROGRAMMING LANGUAGES

L	T	P
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UNIT I

Introduction: Role of Programming Languages: Why Programming Languages, Towards Higher-Level Languages, Programming Paradigms, Programming Environments Language Description: Syntactic Structure, Language Translation Issues: Programming Language Syntax, Stages in Translation, Formal Translation Models

UNIT II

Data, Data Types, and Basic Statements : Names , Variables , Binding, Type Checking, Scope, Scope Rules , Lifetime and Garbage Collection, Primitive Data Types, Strings, Array Types, Associative Arrays ,Record Types, Union Types, Pointers and References Arithmetic Expressions , Overloaded Operators, Type Conversions , Relational and Boolean Expressions, Assignment Statements, Mixed Mode Assignments, Control Structures, Selection ,Iterations, Branching, Guarded Statements

UNIT III

Subprograms and Implementations : Subprograms, Design Issues, Local Referencing, Parameter Passing, Overloaded Methods, Generic Methods, Design Issues for Functions , Semantics of Call and Return, Implementing Simple Subprograms, Stack and Dynamic Local Variables, Nested Subprograms, Dynamic Scoping

UNIT IV

Object-Orientation, Concurrency, and Event Handling : Grouping of Data and Operations — Constructs for Programming Structures, Abstraction Information Hiding, Program Design with Modules, Defined Types, Object Oriented Programming — Concept of Object, Inheritance, Derived Classes and Information Hiding – Templates, Semaphores, Monitors, Message Passing, Threads, Statement Level Concurrency Exception Handling
(Using C++ and Java as Example Language).

UNIT V

Functional and Logic Programming Languages : Introduction to Lambda Calculus ,Fundamentals of Functional Programming Languages, Programming with Programming with ML, Introduction to Logic and Logic Programming Programming with Prolog.

References:

1. ―Programming Languages: Design and Implementations‖ , Terrance W.Pratt, Marvin T.V.Gopal, Fourth ed., PrenticeHall
2. ―Programming Language Design Concept‖, David A. Watt, WilleyIndia
3. ―Programming languages: Concepts and Constucts‖, Ravi Sethi, Second Ed.,Pearson.
4. ―Types and programming Languages‖, Benjamin C. Pierce. The MIT Press Cambridge, Massachusetts London, England

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III Year V Semester

UDATACO507: DATABASE MANAGEMENT SYSTEMS

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Lab Objectives :

1. Installing oracle/MYSQL
2. Creating Entity-Relationship Diagram using case tools.
3. Writing SQL statements Using ORACLE/MYSQL:
   a) Writing basic SQL SELECT statements.
   b) Restricting and sorting data.
   c) Displaying data from multiple tables. d) Aggregating data using group function. e) Manipulating data.
   e) Creating and managing tables.

4. Normalization
5. Creating cursor
6. Creating procedure and functions
7. Creating packages and triggers
8. Design and implementation of payroll processing's system
9. Design and implementation of Library Information System
10. Design and implementation of Student Information System
11. Automatic Backup of Files and Recovery of Files

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III Year V Semester

UDESICO508 : Design and Analysis of Algorithm Lab Objective

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1. Program for Recursive Binary & Linear Search.
2. Program for Heap Sort.
3. Program for Merge Sort.
4. Program for Selection Sort.
5. Program for Insertion Sort.
6. Program for Quick Sort.
7. Knapsack Problem using Greedy Solution
8. Perform Travelling Salesman Problem
9. Find Minimum Spanning Tree using Kruskal's Algorithm
10. Implement N Queen Problem using Backtracking

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III Year V Semester
UWEBTCO509 : WEB TECHNOLOGIES LAB

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This lab is based on the Web Technologies. Some examples are as follows:

1.Write HTML/Java scripts to display your CV in navigator, your Institute website, Department Website and Tutorial website for specific subject

2.Write an HTML program to design an entry form of student details and send it to store at database server like SQL, Oracle or MS Access.

3.Write programs using Java script for Web Page to display browsers information.

5.Write a Java applet to display the Application Program screen i.e. calculator another.

6.Writing program in XML for creation of DTD, which specifies set of rules. Create a style sheet in CSS/ XSL & display the document in internet explorer.

7.Program to illustrate JDBC connectivity. Program for maintaining database by sending queries. Design and implement a simple servlet book query with the help of JDBC & SQL. Create MS Access Database, Create on ODBC link, Compile & execute JAVA JDVCSocket.

8.Install TOMCAT web server and APACHE. Access the above developed static web pages for books web site, using these servers by putting the web pages developed.

9.Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 **respectively. Write a servlet for doing the following. Create a Cookie and add these four user id's and** passwords to this Cookie. 2. Read the user id and passwords entered in the Login form and authenticate with the values available in thecookies.

10. Install a database (Mysql or Oracle). Create a table which should contain at least the following fields: name, password, email-id, phone number Write a java program/servlet/JSP to connect to that database and extract data from the tables and displaythem.Insertthedetailsoftheuserswhoregisterwiththewebsite,whenever anewuserclicksthe submit button in the registration page.

11. Write a JSP which insert the details of the 3 or 4 users who register with the web site by using

registration form. Authenticate the user when he submits the login form using the user name and password from the database

12. Design and implement a simple shopping cart example with session tracking API.

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III Year V Semester
UPRINCO510 : PRINCIPLES OF PROGRAMMING LANGUAGES

L	T	P
0	0	2

Lab Objective:-

1. Program for linear search in XML
2. Program for binary search in XML
3. Program for insertion sort in XML
4. Program for bubble sort in XML
5. Program for merge sort in XML
6. Program for Quick sort in XML
7. Program for making a dictionary in XML
8. Program for merging two unsorted-students-name-list in sorted order

Department of Computer Science Engineering &IT
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III Year VI Semester
UINDUCO601 : INDUSTRIAL MANAGEMENT

L	T	P
3	0	0

UNIT-I

Introduction: Concept and scope of Industrial Management. Productivity: Definition, measurement, productivity index, types of production system, Industrial Ownership

UNIT II

Functions of Management Taylor's Scientific Management Theory, Fayol's Principles of Management,
Social responsibilities of Management, Introduction to Human resources management: Nature of HRM, functions and importance of HRM

UNIT III

Work Study: Introduction, definition, objectives, steps in work study, Method study: definition, objectives, steps of method study, Work Measurement: purpose, types of study — stop watch methods — steps — allowances — standard time calculations — work sampling, Production Planning and Control Inventory Control: Inventory, Cost, Models of inventory control: EOQ, ABC, VED

UNIT IV

Quality Control: statistical quality control, Control charts for variables and attributes, Acceptance Sampling- Single sampling- Double sampling plans, Introduction to TQM.

UNIT V

Project Management: Project network analysis, CPM, PERT and Project crashing and resource Leveling

References:

1. Engineering Management (Industrial Engineering & Management)/ S.C. Sharma & T.R. Banga, Khanna Book Publishing Co. (P) Ltd., Delhi (ISBN: 978-93-86173-072)
2. Industrial Engineering and Management/ P. Khanna, Dhanpatrai publications Ltd.
3. Production & Operation Management /PaneerSelvam /PHI.
4. Industrial Engineering Management/NVS Raju/Cengage Learning.
5. Industrial Engineering Management I RaviShankar/ Galgotia.

Department of Computer Science Engineering &IT
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III Year VI Semester
UCOMPCO602 : COMPUTER NETWORKS

L	T	P
3	1	0

UNIT-I

Introduction Concepts: Goals and Applications of Networks, Network structure and architecture, The OSI reference model, services, Network Topology Design - Delay Analysis, Back Bone Design, Local Access Network Design, Physical Layer Transmission Media, Switching methods, ISDN, Terminal Handling

UNIT II

Medium Access sub layer: Medium Access sub layer - Channel Allocations, LAN protocols - ALOHA protocols - Overview of IEEE standards - FDDI. Data Link Layer - Elementary Data Link Protocols, Sliding Window protocols, Error Handling.

UNIT III

Network Layer: Network Layer - Point - to Pont Networks, routing, Congestion control Internetworking - TCP / IP, IP packet, IP address, IPv6

UNIT IV

Transport Layer: Transport Layer - Design issues, connection management, session Layer-Design issues, remote procedure call. Presentation Layer-Design issues, Data compression techniques, cryptography - TCP -Window Management.

UNIT V

Application Layer: Application Layer: File Transfer, Access and Management, Electronic mail, Virtual Terminals, Other application. Example Networks - Internet and Public Networks

REFRENCES:

1. Forouzen, "Data Communication and Networking",TMH
2. A.S. Tanenbaum, Computer Networks, Pearson Education
3. W. Stallings, Data and Computer Communication, MacmillanPress
4. Bhavneet Sidhu, An Integrated approach to Computer Networks, Khanna PublishingHouse
5. .Gary R.Wright,W.Richard Stevens "TCP/IP Illustrated,Volume2 The Implementation"Addison-Wesley
6. Michael A. Gallo and William M. Hancock "Computer communucation and Networking Technology"Cengage Learning
7. Anuranjan Misra, ―Computer Networks‖, AcmeLearning

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III Year VI Semester
UCOMPCO603 : COMPILER DESIGN

L	T	P
3	1	0

UNIT-I

Introduction to Compiler: Phases and passes, Bootstrapping, Finite state machines and regular expressions and their applications to lexical analysis, Optimization of DFA-Based Pattern Matchers implementation of lexical analyzers, lexical-analyzer generator, LEX compiler, Formal grammars and their application to syntax analysis, BNF notation, ambiguity, YACC. The syntactic specification of programming languages: Context free grammars, derivation and parse trees, capabilities of CFG

UNIT II

Basic Parsing Techniques: Parsers, Shift reduce parsing, operator precedence parsing, top down parsing, predictive parsers Automatic Construction of efficient Parsers: LR parsers, the canonical Collection of LR(0) items, constructing SLR parsing tables, constructing Canonical LR parsing tables, Constructing LALR parsing tables, using ambiguous grammars, an automatic parser generator, implementation of LR parsing tables

UNIT III

Syntax-directed Translation: Syntax-directed Translation schemes, Implementation of Syntax-directed Translators, Intermediate code, postfix notation, Parse trees & syntax trees, three address code, quadruple & triples, translation of assignment statements, Boolean expressions, statements that alter the flow of control, postfix translation, translation with a top down parser. More about translation: Array references in arithmetic expressions, procedures call, declarations and case statements.

UNIT IV

Symbol Tables: Data structure for symbols tables, representing scope information. Run- Time Administration: Implementation of simple stack allocation scheme, storage allocation in block structured language. Error Detection & Recovery: Lexical Phase errors, syntactic
phase errors semantic errors

UNIT V

Code Generation: Design Issues, the Target Language. Addresses in the Target Code, Basic Blocks and Flow Graphs, Optimization on of Basic Blocks, Code Generator .Code optimization: Machine-Independent Optimizations, Loop optimization, DAG representation of basic blocks, value numbers and algebraic laws, Global Data-Flow analysis

REFRENCES:

1. K. Muneeswaran, Compiler Design, First Edition, Oxford University Press.
2. J.P. Bennet, ―Introduction to Compiler Techniques‖, Second Edition, TataMcGraw-Hill,2003.
3. Henk Alblas and Albert Nymeyer, ―Practice and Principles of Compiler Building with C‖, PHI,2001.
4. Aho, Sethi & Ullman, "Compilers: Principles, Techniques and Tools‖, PearsonEducation
5. V Raghvan, ― Principles of Compiler Design, TMH
6. Kenneth Louden,‖ Compiler Construction‖, Cengage Learning. Charles Fischer and Ricard LeBlanc,‖ Crafting a Compiler with C‖, Pearson Education

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III Year VI Semester
UINTECO604 : INTERNET OF THINGS

L	T	P
3	1	0

UNIT I

Internet of Things (IoT): Vision, Definition, Conceptual Framework, Architectural view, technology behind IoT, Sources of the IoT, M2M Communication, IoT Examples .

Design Principles for Connected Devices: IoT/M2M systems layers and design standardization, communication technologies, data enrichment and consolidation, ease of designing and affordability

UNIT II

Hardware for IoT: Sensors, digital sensors ,actuators, radio frequency identification (RFID) technology, wireless sensor networks, participatory sensing technology .Embedded Platforms for IoT: Embedded computing basics, Overview of IOT supported Hardware platforms such as Arduino, NetArduino, Raspberry pi, Beagle Bone, Intel Galileo boards and ARM cortex

UNIT III

Network & Communication Aspects in IoT: Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination

UNIT IV

Programming the Ardunio: Adonis platform boards anatomy, ardunio IDE, coding, using emulator, using libraries, additions in ardunio, programming the ardunio for IoT.

UNIT V

Challenges in IoT Design Challenges:Developmentchallenges,Securitychallenges,Other challenges

IoT Applications : Smart metering, e-health, city automation, automotive applications, home automation, smart cards, Communicating data with H/W units, mobiles, tablets, Designing of smart street lights in smart city

References:

1. Olivier Hersent, David Boswarthick, Omar Elloumi—The Internet of Things key applications and protocols‖, willey
2. Jeeva Jose, Internet of Things, Khanna Publicatiosn
3. Michael Miller —The Internet of Things‖ by Pearson
4. Raj Kamal —INTERNET OF THINGS‖, McGraw-Hill, 1ST Edition,2016
5. Arshdeep Bahga, Vijay Madisetti — Internet of Things(A hands on approach)‖ 1ST edition, VPI publications,2014
6. Adrian McEwen,HakinCassimally —Designing the Internet of Things‖ WileyIndia

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III Year VI Semester

UCOMPCO605 : COMPUTER NETWORKS LAB

L	T	P
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1. To learn handling and configuration of networking hardware like RJ-45 connector, CAT-6 cable, crimping tool,etc.
2. Configuration of router, hub, switch etc. (using real devices or simulators)
3. Running and using services/commands like ping, trace route, nslookup, arp, telnet, ftp,etc.
4. Network packet analysis using tools like Wireshark, tcp dump,etc.
5. Network simulation using tools like Cisco Packet Tracer, NetSim, OMNeT++, NS2, NS3,etc.
6. Socket programming using UDP and TCP (e.g., simple DNS, data & time client/server, echo client/server, iterative& concurrent servers)
7. Programming using raw sockets
8. Programming using RPC

Department of Computer Science Engineering &IT
(Faculty of Engineering and Technology)
P.K. University, Shivpuri (MP)
III Year VI Semester

UCOMPCO606 : COMPILER DESIGN LAB

L	T	P
0	0	2

1. Implementation of LEXICAL ANALYZER for IFSTATEMENT
2. Implementation of LEXICAL ANALYZER for ARITHMETICEXPRESSION
3. Construction of NFA from REGULAREXPRESSION
4. Construction of DFA from NFA
5. Implementation of SHIFT REDUCE PARSINGALGORITHM
6. Implementation of OPERATOR PRECEDENCEPARSER
7. Implementation of RECURSIVE DESCENT PARSER
8. Implementation of CODE OPTIMIZATIONTECHNIQUES