YEAR-WISE AND SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF B.Sc. COMPUTER SCIENCE AND ENGINEERING
THIRD SEMESTER
ACADEMIC YEAR 2025-26 OF 2022-25 BATCH(CBCS)

Sl. No.	Part	Subject Code	Title of the Subject	Hours /Week	Duration of Exam (hrs.)	Marks			Credits
						Internal	External	Total	
1	I	ES18101	Environmental Studies and Gender Sensitization (AECC-5)	3	3	40	60	100	3
2	II	G20CS1T	PC Operating systems (GE-2) (ID)	2	3	40	60	100	2
3	II	BS18330	Operating Systems (Core-7)	4	3	40	60	100	4
4	II	CS23301	Electrical Circuits and Machines (Core-8)	4	3	40	60	100	4
5	II	CS20302	Object oriented Programming through Java (Core-9)	4	3	40	60	100	4
6	II	BS18335	Discrete Mathematics (Core-10)	5	3	40	60	100	4
	PRACTICALS								
7	II	G20CS1P	PC Operating system Lab (GE-2)(ID)	2	3	40	60	100	1
8	II	BS18331	Unix Shell Programming Lab (Core-7)	2	3	40	60	100	1
9	II	CS23349	Electrical Circuits and Machines Lab (Core-8)	2	3	40	60	100	1
10	II	CS20303	Object oriented Programming through Java(Core-9)	2	3	40	60	100	1
Total				**30**	**-**	400	600	1000	**25**

*****Ability Enhancement Compulsory Course (AECC) * Generic Elective (GE) *Inter-disciplinary(ID)

GENERIC ELECTIVE

(INTER-DEPARTMENTAL/INTER-DISCIPLINARY)

UG COURSES

List of Generic Elective Courses Offered in the Academic Year 2023-24

S. No	Name of the Department	GE Course
1	B.Sc. Chemical Technology	Solar Processing Technologies
2	B.Sc. Agricultural Science and Rural Development	Principles of Organic farming
3	B.Sc. Computer Science and Engineering	PC Operating Systems
4	B.Com Honors	Taxation
5	B.Sc. Computer Science and Information Technology	PC Hardware and Software Installation
6	B. Com Marketing	Principles of Marketing
7	B.Sc. Biotechnology, Genetics and Chemistry	Medical Lab Technology
8	B. Com Business Studies	Banking
9	B.A Mass Communication	Photography
10	B.Sc. Food Technology and Management	Food Processing and Quality Control
11	B A Psychology, English Literature & Journalism	Communication Skills
		Career Skills
		Psychology of Living
12	B.Sc. Mathematics, Statistics & Computer Science	Quantitative Aptitude
		Statistics-Data Analysis
13	B.Sc. Multimedia and Animation	Creative Arts
14	B. Com Computer Applications	Accounting
15	BBA	Principles of Management
16	B. Com International Finance	Project Management
17	B.Sc. Computer Data Science & Data Analytics Engg.	Python programming
18	B. Com Honors Strategic Finance	Goods and Services Tax
19	B. Com Business Process Management	Financial Markets
20	B.Sc. Food Science, Nutrition and Dietetics	Nutrition and Dietetics
21	B.Sc. Computer Science & Cognitive Systems	Introduction to Worksheets
22	B. Com Business Analytics	Principles of Insurance
23	B.Sc. Computer Science and Artificial Intelligence	LISP Programming
24	B.Sc. Computer Science and Cyber Security	Principles of Information Security
25	B.A Economics, Public Administration and Computer Applications	Human Rights
26	B.Sc. Computer Science and Cloud Computing	Web Programming
27	B.Sc. Computer Science and Internet of Things	Introduction to IoT using Arudino
28	B.Com Information Systems	Human Resource Management
29	B.B.A Entrepreneurship Development	Start-up Management
30	B.B.A Retail Operations Management	Consumer Behavior

ENVIRONMENTAL STUDIES & GENDER SENSITIZATION

Credits:3 **Semester: III**

Subject Code :ES18101 **No. of lecture hours: 45**

Objectives:

- To understand the importance of ecological balance for SustainableDevelopment
- To understand the impacts of developmental activities and mitigationmeasures
- To understand the environmental policies andregulations.
- To develop students sensibility with regard to issues of gender in contemporaryIndia
- To provide a perspective on the socialization of men andwomen
- To expose the students to debate on the politics and economic works and on genderviolence

Outcome:

CO1: **Understand** the importance of Environmental education, conservation of natural resources & Understand the importance of ecosystems and biodiversity

CO2: **Understand** the pollution problems and Apply the environmental science knowledge on solid waste management, disaster management

CO3: **Apply** the environmental science knowledge to Improve the resources and Evaluate and understand the sustainable environmental conditions and control methods

CO4: **Identify** the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems

CO5: **Understand** the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislations

UNIT-I **9hrs**

NATURAL RESOURCES, ECOSYSTEMS, & BIODIVERSITY

- Definition, Scope and importance of environmental studies. Need for publicawareness.
- Renewable & Non Renewable resources, Brief account on Forests, Water, Minerals andEnergy (Solar, Wind, and Geo-thermal &Bio-energy).
- Definition of Ecosystem, Structure and functions—food chains, food webs, ecological pyramids, producers, consumers and decomposers.
- Energy flow and example ecosystems--- Forest, Desert, Aquaticecosystems.
- Definition of Biodiversity, types (Genetic, Species, Ecosystem), India- mega diversityNation.
- Hotspots, Threats to biodiversity, Conservation of biodiversity (In-Situ andEx-Situ).

UNIT-II **9hrs**

ENVIRONMENTAL POLLUTION

- Definition of Environmentalpollution
- Brief account of causes, effects, prevention and control measures of
    - (a) Air pollution
    - (b) WaterPollution
    - (c) Soilpollution
    - (d) Noisepollution
    - (e) MarinePollution
- Solid Waste Management: Causes, Effects & Control measures of urban and industrialwastes
- Disaster Management: floods, Earth quakes, andCyclones.

UNIT-III **9hrs**

Social Issues andEnvironment

- Rain-Water Harvesting, Water-shed Management, and From Unsustainable toSustainable Development.
- Global Warming, Ozone depletion, and Acid rains
- Environmental Legislation: Air Act, Water Act, Environmental Protection Act, ForestAct, WildlifeAct.
- Environmental &HumanHealth ----- HIV/AIDS

- WelfarePrograms-----Family, Women & Child Welfare, PopulationExplosion
- Role of Information Technology in EnvironmentalStudies.

UNIT-IV **9hrs**

Gender Studies

- Why should we study genderissues?
- Socialization- Making women and makingmen
- Being together as equals-Through the lens ofgender
- Missing women: Gender selection and its consequences
- Health issues ofWomen

UNIT-V **9hrs**

Gender & Labour -Gender Violence & Law

- House work : The invisible labour- my mother doesn't work "share theload"
- Sexual harassment – say no eve teasing – the caste based violence –NirbhayaAct
- Domestic violence - Is home a safe place? - Blaming the victim.-Domestic violenceAct
- Forums of justice-Hindu InheritanceAct(2005)

Field Visit for Environmental Studies:

1. Visit to a local Polluted site- Industrial effluent plant/ Polluted Lake/AgriculturalLand
2. Visit to anyEcosystem

ESSENTIAL READING (for Gender Sensitization)

1. A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu. 201. **Towards a World ofEquals : A Bilingual Text on Gender**. Hyderabad: Telugu Akademi.

SUGGESTED READING

(for Environmental Studies)

1. Rajagopalan R. 2015. **Environmental Studies-from Crisis to Cure.** Third Edition. Chennai: Oxford UniversityPress.
2. Dr D K Asthana and Dr Meera Asthana. 2014. **A Text Book of EnvironmentalStudies** Revised Edition. New Delhi: S. Chand & Company.
3. Anubha Kaushik and C.P. Kaushik Published. 2016. **Perspectives in Environmental Studies.** Fifth Edition. New Delhi: New Age International.

(for Gender Sensitization)

4. Sen Amartya **More Than One Million Women Are Missing.** New York Review ofBooks 37.20 (20 December 1990). Print. **We Were Making History...Life Stories of Women in the Telangana People's Struggle**. New Delhi: Kali for Women. 1998.
5. Tripti Lahiri. **By the Numbers: Where Indian Women Work. Women's Studies Journal .** *(*14 November 2012). Available online at: <http://blogs.wsj.com/ India real time/2012/11/14/by – thenumbers-where-Indian-women-work/>
6. K. Satyanarayana and Susie Tharu. Ed. **Steel Nibs Are Sprouting : New DalitWriting From South India, Dossier 2: Telugu and Kanada**Code=3732.
7. Vimala. **Vantillu (The Kitchen)". Women Writing in India: 600 Bc to the Present. Volume II.** The 20thCentury. Ed. Suise Tharu and K.Laltitha. Delhi: Oxford University Press,1995.599-601.
8. Shatrughna, Veena. **Women's Work and its Impact on Child Health andNutrition.** Hyderabad: National Institute of Nutrition, Indian Council of Medical Research .1993.

PC OPERATING SYSTEMS

(GE Inter-Disciplinary)

Credits:2 **Semester: III**
Subject Code:G20CS1T **No. of Lecture Hours:30**

Objectives:

- Install, configure, and maintain the Windows and Ubuntu operatingsystem
- To perform basic file managementoperations
- To work with VirtualBox

Outcome: An introduction to personal computer operating systems including installation, configuration, file management, memory and storage management, control of peripheral devices, and use of utilities

UNIT-I **6 Hrs**

1. IntroduceWindows 10, 1
2. Use Backup and Recovery Tools and DiscoverWindows Apps 1
3. Advanced File Management andAdvancedSearching, 2
4. Introduction of Viruses and Spyware,Windows Defender,Discuss Protecting a Computer by Using Windows Firewall, Discuss Windows Update andPrivacySettings 2

UNIT-II **6 Hrs**

1. Monitoring and Tracking System Performance 2
2. Create a System Diagnostics Report 1
3. Manage Services by Using the Services Console 1
4. Install Windows 10 , Manage Windows 10 memory andstorage 2

UNIT-III **6 Hrs**

1. Introduction to Ubuntu, and History 2
2. Flavours of Ubuntu 1
3. System Requirements, Downloading Ubuntu, Installing Ubuntu 2
4. The MenuBar, Task Bar,System Setting 1

UNIT-IV **6 Hrs**

1.Installing Software,Removing Software,Installing Updates	2
2.Creating Users,Enabling User Accounts,Managing User Permissions and Groups	2
3.Invoking the Command Line,Directory Listing,Command Help	1
4.Creating and finding Files,whoami,present Working Directory,	1

UNIT-V **6 Hrs**

1.	Networking in Ubuntu,Assinging anIP address	1
2.	Introduction toVirtual Box	1
3.	Installation of Windows in Virtual Box	1
4.	Installation of Ubuntu in Virtual Box	1
5.	Install Ubuntu inCloud Environment	2

ESSENTIAL READING

1. Gaskin & Vargas, GO! with Microsoft Windows 10 Introductory, PearsonPublication

2. https://www.tutorialspoint.com/ubuntu/index.html

OPERATING SYSTEMS

Credits:4 **Semester:III**

SubjectCode:BS18330 **No. of Lecture Hours:60**

Objective: To learn the core ideas in operating systems, process management, memory protection, CPU scheduling, concurrent programming, deadlocks and File systems.

Outcome:

CO1: Explain functions, types and structures of operating system

CO2: Analyze various process management concepts including scheduling and synchronization

CO3: Demonstrate process synchronization and dead locks

CO4: Solve issues related to file system interface

CO5: Choose an appropriate Page replacement algorithm

UNIT-I **12hrs**

1. Introduction-Definition of operating system, mainframe system, desktop systems 2
2. Multiprocessor systems, distributed systems,clusteredsystems 2
3. Real time systems , handheld systems 2
4. Operating systemstructures-system components 2
5. Operating system services, system calls 2
6. system programs, system structures ,virtualmachines 2

UNIT-II **12hrs**

1. Process concept-process concept, process scheduling 3
2. Operation on processes, cooperating processes 3
3. Interprocesscommunication 3
4. Process scheduling-basic concepts, scheduling criteria,schedulingalgorithms. 3

UNIT-III **12hrs**

1. Process synchronization-criticalsection problem 3
2. Semaphores,monitors 3
3. Deadlocks-deadlock characterization, methods forhandling deadlocks 3
4. Deadlock prevention, Deadlock avoidance,Deadlockdetection 3

UNIT-IV **12hrs**

1.	File system-file concept,accessmethods	3
2.	Directory structure, file system mounting, filesystem sharing.	3
3.	File system implementation-file system structure, filesystemimplementation.	3
4.	Directory implementation, allocation methods, freespacemanagement	3

UNIT-V **12hrs**

1	Memory management-swapping, contiguous memory allocation	2
2	Fragmentation-internal and external fragmentation	2
3	Paging, segmentation, segmentation with paging.	3
4	Virtual memory management-demand paging	2
5.	Page replacement algorithms, Thrashing and working set model.	3

ESSENTIAL READING

1. Silberschatz Abraham, Galvin Peter,B. and Gagne Greg. 2006. **Operating System Concepts.** India:Wiley.

SUGGESTED READING

1. Tanenbaum Andrew, S. 2001. **Modern Operating Systems**. Asia: Pearson Education.

ELECTRICAL CIRCUITS AND MACHINES

Credits : 4 **Semester:III**
SubjectCode:CS23301 **No. of Lecture Hours:60**

Objective:

To deal with basic fundamental of electrical engineering, like DC &AC circuits and DC & ACmotors.

Outcome:

CO1: Student will be able to analyze the electrical circuits with help of KCL and KVL techniques.

CO2: Students will be able to **explain** the operation of DC generator and analyze the Characteristics of DC generator.

CO3: Student will be able to **explain** the principle of operation of DC motor and analyze their Characteristics. Acquire the skills to analyze the starting and speed control methods of DC motors.

CO4: Judge to develop equivalent circuit and evaluate performance of transformers.

CO5: Ability to identify speed – torque characteristics of induction motor and understand starting methods of induction motor.

UNIT-I	**Fundamentals of DC Circuits & 1-Φ AC Circuits**	**12hrs**
1.Resistance, Capacitance, Inductance,FluxDensity.		2
2.Ohms Law and Kirchhoff'slaws. Analysis of circuits using KVL and KCL		4
3.Power in AC and DC circuits, Power factor in AC circuits		2
4.Star – Delta and Delta – Star Transformations. Problems on simple networks		3
5.Phasor representation of Sine quantities		1

UNIT- II	**Transformers and 3-Φ AC Circuits**	**12hrs**
1. Average and RMS value, form factor.		1
2. Mutual inductance dot convention.		1
3. Power factor measurement by two wattmeter method.		2
4. Principles of operation and EMF equation of Transformer.		2
5. Regulation and efficiency of transformer. Losses in transformer		2
6. Voltages and currents, equivalence circuit theory		2
7. O.C. and S.C. tests – efficiency calculations.		2

UNIT- III Network Theorems **12hrs**

1. Thevenin's Theorem	2
2. Nortons's Theorem	2
3. Maximum Power Thransfer Theorem	2
4. Reciprocity Theorem	2
5. Superposition Theorem	2
6. Problems on simple resistive networks	2

UNIT-IV DC Machines **12hrs**

1. Construction and working principles of DC machines (Generators & Motors)	2
2. Types of DC Generators	1
3. Characteristics of DC generators	2
4. Back – emf and its significance in DC Motors	1
5. Types of DC Motors and their applications	1
6. Characteristics of DC Motors	2
7. Speed control of DC Motors	2
8. Stepper Motor and its Applications	1

UNIT-V **12hrs**

1. Production of rotating magnetic field	1
2. Construction and working of 3-Φ Induction Motor	2
3. Construction and working of 1-Φ Induction Motor	2
4. Slip – Torque Characteristics	2
5. 1-Φ Induction motor starting methods - Split phase, permanent capacitor type, Shaded pole and their applications.	4

ESSENTIALREADING

1. Theraja, B.L. & Theraja,AK. 2015. **A Essential Reading of ElectricalTechnologyVol-1.** S.CHAND. (Unit- I & II)
2. Theraja, B.L. Theraja, AK. 2015. **A Essential Reading of Electrical Technology Vol–II.** S.CHAND. (Unit-III, IV & V)

SUGGESTED READING

1. Cotton H.7th Edition. **Electrical Technology (Engineering Degree Series).** NewDelhi: CBS Publishers andDistributors.
2. Edminister Joseph, A. **Schaum's Outline of Electrical Circuits.** 6th Edition**.** New Delhi: McGraw Hill
3. Bimbhra, P.S. 2003. **An Essential Reading of Electrical Machinery.** KhannaPublishers.

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Credits:4 **Semester:III**
SubjectCode:CS20302 **No. of Lecture Hours:60**

Objectives:

- To be used for internetcomputing.
- To emphasize on learning Object oriented concepts, file handling, creating userdefined packages, creating GUI, deploying web applications and accessing thedatabase

Outcome:

CO1: Understand fundamentals of object oriented concept , classes , objects and methods

CO2: Apply inheritance, packages and exceptional handling techniques

CO3: Demonstrate Threads and applet programming.

CO4: Express event handling and swing components.

CO5: Design interactive programs using swing

UNIT – I	**12Hrs**
1. Fundamentals of Object oriented concepts, Java Evolution and overview	2
2. Variables, Data types and Arrays, Operators and Control Statements	2
3. Class Fundamentals, declaring objects and methods	2
4. Constructor, this Keyword	2
5. Overloading methods, Objects as parameters	2
6. Access control, static, command line arguments	2

UNIT – II	**12Hrs**
1. Inheritance, multilevel hierarchy, super, method overriding	2
2. Dynamic Method Dispatch, Abstract classes, using final	2
3. Package-package access, importing packages and classes, user defined package	2
4. Interface-define, implement and extending Interface, Multiple inheritance	2
5. Exception handling: try-catch, multiple catch, Nested try, throw, throws, finally, user defined exception	2

UNIT– III	**12Hrs**
1. Multithreading- Thread Model, Main Thread, Creating a Thread, isAlive (),join()	2
2. Threadpriorities, Synchronization.	2
3. String class,Wrapper class	2
4. Stringmethods.	2
5. Applet class-basics, architecture, life cycle, applet tag, passing parameters, animation	2

6. Working with frames, fonts, color, Graphics and displaying images in applet.	2

Unit-IV **12Hrs**

1. Event Handling: The delegation event model, Event classes-Action event, Mouse Event, Window Event, Item Event, Key Event	2
2. Sources of Event, Event listeners-Action listener, Mouse listener, Mouse motion, Window listener, Key Listener.	2
3. Layout manager-card, grid, flow and border.	2
4. Swing- MVC architecture, components and containers	1
5. Swing control- JLabel and ImageIcon, JTextField,JButton	1
6. JRadioButton, JCheckbox, JToggleButton, JTextArea.	2
7. JPasswordField, JCombobox, JTable, JOptionPane	2

Unit-V **12Hrs**

1. JTable, JOptionPane JTree,JList,JMenu.	3
2. JScrollBar,JSplitPane,	3
3. Input-output- File- directories, File Name Filter, Reading and WritingFiles, File Reader andFileWriter ,	3
4. **RMI:** Architecture, registry service, Parameter passing inRemoteMethods, Creating RMI Application and steps involved in running RMI application.	3

ESSENTIAL READING

1. Schildt, Herbert. 2002. **The Complete reference Java2.** New Delhi: Tata McGraw Hill

SUGGESTED READING

1. Deitel, P.J.Deitel, H.M. **Java for Programmers, Java: How to Program**.PHI.
2. Gaddis,Tony. **Starting Out with Java**. Dream TechPress
3. Balagurusamy, E. **Programming with Java, A Primer**. 3rd Edition. New Delhi:TMH.

DISCRETE MATHEMATICS

Credits:4 **Semester: III**

Subject Code:BS18335 **No. of Lecture hours:75**

Objective: To give an introduction to lattices, Graph theory and to familiarize with the basic Concepts of Number theory.

Outcome:

CO1: Develop understanding of Logic Sets and Functions
CO2: Evaluate and apply the fundamental concepts in graph theory
CO3: Develop an understanding of how graph and tree concepts are used to solve problems arising in the computer science.
CO4: Express the concepts and results of Number Theory.
CO5: Identify methods and techniques used in number theory.

UNIT- I **15Hrs**

Lattices

1. Relations and ordering	3
2. Partial order relations - Partially ordered sets	3
3. Hasse diagrams	3
4. Lattices - Properties of lattices	3
5. Types of Lattices	3

UNIT-II **15Hrs**

Graph theory- I

1. Definition of a graph, Degree of vertex	3
2. First theorem of graph theory Paths and connection	3
3. Isomorphism of graphs	3
4. Some special simple graphs	6

UNIT-III **15Hrs**

Graph theory - II

1. Trees andtheirproperties 9
   Binary trees, Binary search trees, Spanning trees, Kruskal's Algorithm- Prim's Algorithm
2. Planar graphs,Euler's formula 6

UNIT-IV **15Hrs**

Graph theory-III

1. Eulergraphs 5
2. Hamiltonian graphs-Grinberg theorem 5
3. Chromaticnumbers 5

UNIT-V **15Hrs**

Elements of Number Theory

1. Divisibility-Division algorithm 1
2. Euclid'algorithm 2
3. Propertiesof G.C.D 2
4. Primes – Fundamental theoremof Arithmetic. 2
5. Congruence's– Properties 2
6. Fermat's theorem anditsApplications 3
7. Wilson's theorem anditsApplications 3

ESSENTIAL READING

1. Tremblay, J.P and Manohar, R. 2007. **Discrete Mathematical Structures with applications to Computer Science.** New Delhi: Tata McGraw-Hill.(For UnitI)
2. Mott, J.L and Kandel. 2007. **Discrete Mathematics for Mathematicians and Computer Scientists.** 2nd Edition. New Delhi : PHI. (For Units II, III &IV)
3. Burton, David M. 2003**. Elementary Number theory.** 2nd Edition. New Delhi: Universal Book Stall. (For UnitV)

PC OPERATING SYSTEMS LAB

(GE Inter-Disciplinary)

Credits:1 **Semester: III**
Subject Code:G20CS1P **No. of LectureHours:30**

Objective:

- To learn the basics of Operating Systems, installations of operatingsystems, and learn the Utilities**.**

No.ofHours **Topics**

1. Installation of VirtualBox
2. Installation of Windows OperatingSystem.
3. Installation of Ubuntu OperatingSystem
4. Exploring Windows Environmment
5. Installing and Removingapplication
6. Creating and Managing Users inWindows
7. Manage Services by Using the ServicesConsole
8. Diagnosis ofWindows
9. Networking inUbuntu
10. Creating and Managing UsersinUbuntu
11. Basic Commands ofUbuntu
12. Install Ubuntu in CloudEnvironment

UNIX SHELL PROGRAMMING LAB

Credits:1 **Semester:III**

SubjectCode:BS18331 **No. of practical hours:30**

Objectives:

- To understand the commands and programming constructs of ShellProgramming.
- To understand various algorithms related to CPU scheduling and memory management.

Outcome: Students will be able to identify UNIX/Linux utilities and implement shell scripts to perform more complex tasks.

Noofhrs	Topic
1	Introduction to Vi Editor, File and Directory relatedCommands.
2	MiscellaneousCommands
3	Arithmetic in ShellScripts
4	Sample programs using ShellScript
5-6	Decision making in ShellScript
7-8	Loop control structures in ShellScript.
9-10	Implementation of UNIX Systemcalls
11-12	Implementation of CPU Schedulingalgorithms
13-15	Implementations of memory managementalgorithms

ELECTRICAL CIRCUITS AND MACHINES LAB

Credits: 1 **Semester:III**
SubjectCode:CS23349 **No. of practical hours:30**

Objective:
To identify the different applications of DC and AC networks as well as motors.

Outcome:
Students will be able to run the machine and calculate its efficiency using different testing procedures.

List of Experiments:

1. Verification of KVL, KCL and Ohm's Law.
2. Power and Power factor measurement in 1-Φ AC Circuits
3. SC & OC test on transformers
4. Verification of Thevenin's Theorem
5. Verification of Norton's Theorem
6. Verification of Super Position Theorem
7. Verification of Maximum Power Transfer Theorem
8. Verification of Reciprocity Theorem
9. Characteristics of DC Shunt Generator
10. Characteristics of DC Shunt Motor
11. Load Characteristics of 3-Φ Induction Motor
12. Load Characteristics of 1-Φ Induction Motor

OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

Credits:1 **Semester:III**

SubjectCode:CS20303 **No. of practical hours:30**

Objective: To learn Java Programming with object-oriented concepts.

Outcome: Students will be able to create applications using object oriented concepts.

1. Programs on control statements and loopingstatements.
2. Programs onoperators.
3. Programs on classes, objects andmethods.
4. Programs onarrays.
5. Programs onconstructors.
6. Programs on overloadingmethods.
7. Programs on command linearguments.
8. Program to demonstrate on statickeyword.
9. Program on accessmodifiers.
10. Programs to demonstrate on inheritance.
11. Illustrate the method of overriding inJava.
12. Program to demonstrate dynamicdispatch.
13. Program to implement abstract class to find area andperimeter.
14. Program to demonstrate oninterface.
15. Program to illustrate the keywords i)superii)final
16. Program to illustrate the multiple inheritance by usingInterfaces.
17. Create a package called "Arithmetic" that contains methods for arithmeticoperations.
18. Define an exception called "Marks Out of Bound"Exception.
19. Program by using try, catch- multi-catch, finally, throwblocks.
20. Program for multi-thread concept. (Use Odd and Evennumber)
21. Program to demonstrate the concept of synchronization by suitablecode.
22. Program to demonstrate Inter thread communication by suitable example.
23. Programs onApplets.
24. Programs on Eventclasses.
25. Programs on Event listenerinterfaces.
26. Programs on Layoutmanagers.
27. Programs on swingcontrols.
28. Program that displays the number of characters, lines and words in afile.
29. Program to copy the contents of afile.
30. Program to read and display the filecontents.
31. Program for random access tofile.
32. An applet program to display the filecontents.

YEAR-WISE AND SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF B.Sc COMPUTER SCIENCE AND ENGINEERING
FOURTH SEMESTER
ACADEMIC YEAR 2025-26 OF 2022-25BATCH (CBCS)

Sl. No.	Part	Subject Code	Title of the Subject	Hours /Week	Duration of Exam (hrs.)	Marks			Credits
						Internal	External	Total	
1	II	BS23401	Probability & Statistics (GE-3) (DS)	4	3	40	60	100	4
2	II	CS23402	Computer Organization (Core-11)	3	3	40	60	100	3
3	II	CS23403	Web Technologies(core-13)	3	3	40	60	100	3
4	II	BS20404	Microprocessors and Micro controllers (Core-14)	3	3	40	60	100	3
5	II	CS20405	Object Oriented Systems Development (Core-15)	4	3	40	60	100	4
6	II	BS23406	Database Management Systems(Core-12)	4	3	40	60	100	4
	PRACTICALS								
7	II	CS18407	Microprocessors System & Application Lab (Core-14)	2	3	40	60	100	1
8	II	CS18408	Object Oriented Systems Development Lab (Core-15)	2	3	40	60	100	1
9	II	BS23409	Database management Systems Lab(Core-12)	2	3	40	60	100	1
10	II	CS23410	Web Technologies(core-13)	2	3	40	60	100	1
Total				**29**	**-**	400	600	1000	**25**

* Generic Elective (GE) * Skill EnhancementCourse(SEC) * Discipline-Specific(DS)

PROBABILITY & STATISTICS

(GE Discipline-Specific)

Credits: 4 **Semester:IV**
SubjectCode:BS23401 **No. of Lecture Hours:60**

Objective:

To teach concepts and applications of Statistics in real life situations

Outcome:

CO1: Calculate the mean, median, and mode of a set of data and **identify** the importance of measures of dispersion.

CO2: Use discrete and continuous probability distributions, including requirements and making decisions.

CO3: Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient.

CO4: **Knowledge** about formulating and testing a hypothesis, using critical values to draw conclusions and determining probability of making errors in hypothesis tests, and about large sample tests.

CO5: Understand and **analyze** various methods of small sample tests.

NOTE: APPLICATION ORIENTED ONLY. NO MATHEMATICAL DERIVATIONS.

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UNIT– I **12hrs**

1. Various measures of Central Tendency – Mean, Median &Mode 3
2. Definitions, Merits, Demerit, Problems (grouped and ungrouped data)
3. Various measures of dispersion - Standard Deviation and Variance 3
   Definitions, Merits, Demerit, Problems (grouped and ungrouped data)
4. ProbabilityBasic terminology, Addition theorem problems, 3
   Multiplication theorem problems,
5. Bayes theorem problems (Derivations for theorems not included) 3

UNIT– II **12hrs**

1. **Random Variable:** Discrete Random variable & Continuous Randomvariable 3
Probability Mass &Density functions.
2. **Mathematical Expectation**: Mathematical Exception,
3. Addition Theorem ofexpectation,Multiplication theorem of expectation**.** **3**
(Excluding Derivations –Problemsonly)
4. **Theoretical Distributions:** Discrete distributions: Binomial distribution, 3
Fitting ofbinomialdistribution, Poison distributions, Fitting ofpoissondistribution
5. **Normal Distribution** : Chief characteristics of the normaldistribution, 3
area of a property, Importance and fitting of a normal distribution.
(Excluding derivations –Applicationsonly for all distributions mentioned above)

UNIT– III **Correlation and Regression** **12Hrs**

1. Simple correlations(definitions and types) 6
2. Karl Pearson coefficient of correlation
3. Rankcorrelation 3
4. Regression and regression lines (Problems only) 3

UNIT– IV **12hrs**

1. **Testing of Hypothesis:** Sampling distribution, the null hypothesis 2
and type I and IIerrors,Critical region and levelofsignificance.
2. **Tests of significance for large samples:** **2**
3. Test of single proportion 2
4. Test of significance of difference ofproportions 2
5. Test of significance for single mean and difference ofmeans 2
6. Test of significance for difference of standarddeviations. 2

UNIT – V ` **12Hrs**

1. **Small Sample Tests: Chi – Square test**: PopulationVariance 4
Goodnessoffit Independence of attributes(Problemsonly)
2. **T- test :** SingleMean Difference means and paired t-test(Problems only) 4
3. **F-test:** Test of significance based on equality oftwovariances(Problems only) 4

ESSENTIAL READING

1. Gupta, S. C. (2011). ***Fundamentals of statistics*** (pp. 18-1). New Delhi, India: Himalaya publishing house.
2. Gupta, S. P. (1978). **Statistical Methods** 1978. 46th Edition.

SUGGESTED READING

1. Deovre, J. (1987). **Probability and statistics for engineering and science**. *Brooks/Cole, Belmont, CA*.
2. Richard A. Johnson, Miller, Freund. **Probability & Statistics for Engineers**. PHI Publications

COMPUTER ORGANIZATION

Credits:3 **Semester:IV**

SubjectCode:CS23402No. of Lecture Hours: 45

Objectives:

- To have a thorough understanding of the basic structure and operation of registers andcontrol memory.
- To discuss in detail the operation of the arithmetic unit including the algorithms and implementation of fixed-point and floating-point addition, subtraction andmultiplication.
- To study the different ways of communicating with I/O devices and standard I/Ointerfaces.
- To study the hierarchical memorysystem

Outcome:

CO1: Demonstrate knowledge of register organization of a basic computer system

CO2: Explain machine language of a basic computer system.

CO3: Appraise in-depth understanding of control unit organization and micro programmed control.

CO4: Apply various algorithms to perform arithmetic operations and propose suitable hardware for them

CO5: Analyze and emphasize various communication media in the basic computer system using design of various memory structures.

UNIT- I	**12Hrs**
1. Register transfer language, register transfer, bus system for 4 registers	2
2. Arithmetic micro operations, logic micro operations	2
3. Shift micro operation, Arithmetic logic shift unit	2
4. Instruction codes-direct and indirect mode	2
5. Computer registers, 16 bit common bus system	2
6. Computer instructions	2
UNIT -II	**12Hrs**
1. Timing and Control, Instruction cycle	1
2. Input Output and interrupt	2
3. Memory reference instruction	2
4. Central processing unit, general register organization	2
5. Instruction format	1
6. Addressing modes	1
7. Data transfer and manipulation	1
8. Programmed control	2

UNIT-III **12Hrs**

1.	Micro programmed control:controlmemory	2
2.	Addresssequencing	2
3.	Computerhardwareconfiguration	2
4.	Microinstructionformat	3
5.	Design of control unit andmicro-programsequencer	3

UNIT–IV **12Hrs**

1.	Pipeline and vectorprocessing-parallelprocessing	2
2.	Arithmetic pipeline,Instructionpipeline	2
3.	RISC pipeline , ArrayProcessors.	2
	Computer arithmetic-addition and subtraction Floating point Arithmetic operation-consideration, configuration, additionandSubtraction	2
4.	Multiplication algorithm- Booth algorithm,ArrayMultiplier	2
5.	Division Algorithm- Hardware implementation, algorithm anddivideoverflow	2

UNIT–V **12Hrs**

1.	Peripheraldevices	1
2.	I/O interfaces , Modesof transfer	1
3.	DirectMemoryAccess	2
4.	I/O processor- CPUIOPCommunication	2
5.	Memoryorganization-memoryhierarchy	2
6.	Main memory-design of RAM andROMchips	2
7.	Auxiliary memory ,Cache andAssociativememory	2

ESSENTIAL READING

1. Mano Morris, M. 2003. **Computer System Architecture**. Prentice Hall of India.

Loyola Academy, Alwal, Secunderabad 500010

WEB TECHNOLOGIES

Credits :3 **Semester: IV**
SubjectCode: CS23403 **No. of Lecture Hours: 45**

Objectives:

- To design and develop web pages using HTML andCSS.
- To develop a well-formed XML schemas anddocuments.
- To use PHP language for server side scripting and connect to thedatabase.

Outcome:

CO1: Illustrate basic html scripts to design web pages
CO2: Explain about cascading style sheets
CO3: Analyze java script programming using operators, expressions, functions
CO4: Classify event handling in java script and introduction to xml
CO5: Develop PHP programs and database connectivity through mysql.

UNIT-I HTML 9Hrs

1. Origin and Evolution of HTML and XHTML, basic syntax, Document structure	1
2. Basic text markup, Images	2
3. Hypertext links, lists	2
4. Tables, Forms	2
5.Frames	2

UNIT-II CASCADING STYLE SHEETS 9Hrs

1. Introduction, Levels of style sheets, style specification format	1
2. Selector forms, property value forms	1
3. Font properties, list properties	3
4. Color, alignment of text, the box model	3
5. Background images, the and tags	1

UNIT-III JAVASCRIPT 9Hrs

1. Overview, object orientation and JavaScript	1
2 .Primitives, operations, expressions	1
3. Control statements in Javascript	2
4, Screen output and keyboard input	2
5. Arrays, Functions in Javascript	2

UNIT-IV	**EVENT HANDLING IN JAVA SCRIPT**	**9Hrs**
1.	Document Object model, Element Access in JavaScript	1
2.	Events and Event Handling Techniques	1
3.	Introduction to XML, Syntax, Document Structure, DTD	2
4.	Displaying XML documents with CSS, XSLT Style sheets	1
5.	**AJAX**-Enabled Rich Internet Applications: introduction, history of Ajax, traditional web applications Vs Ajax Applications,	2
6.	RIAs with Ajax, Ajax example using XML Http Request object, creating full scale Ajax-enabled application, Dojo Toolkit.	2

UNIT-V	**9Hrs**
1. Over view of PHP	1
2. Primitives, Operations and Expressions	1
3. Control Statements, Arrays, Functions	3
4. Pattern Matching, Form Handling, Files, Cookies and Session tracking	2
5. Database access through web: Architectures for database access MySQL Database System, Database access with PHP and MySQL	2

ESSENTIALREADING

1. Sebesta, Robert W. 2008. **Programming the World Wide Web.** 4th Edition. NewDelhi: PearsonEducation
2. **Internet & World Wide Web: HOW TO PROGRAM**- H. M. Deitel, P.J. Deitel, - Fourth Edition- Pearson edition.

MICROPROCESSOR AND MICROCONTROLLER

Credits : 3 Semester: IV

SubjectCode:BS20404 No. of Lecture Hours:45

Course Objectives:

- To understand the microprocessor architecture with the help of8086
- To study the concepts of interfacingtechniques
- To study microprocessor programmingapplications
- To understand the differences between microprocessor andmicrocontroller
- To study the architecture of 8051microcontroller

Course Outcomes:

Students will be

- Able to acquire an overview of microprocessor architecture and itsprogramming
- Able to understand the interfacing of microprocessor to various IOdevices/modules
- Able to apply the knowledge and understanding to practical real time problemsfor automation

UNIT-I 9 Hrs

1. Introduction of microprocessor, Evolution of microprocessors.	1
2. 8086 architecture- internal block diagram, Signal description of 8086.	2
3. Memory segmentation and Register organization.	2
4. Operation of 8086 based microcomputer (minimum mode)	2
5. Bus activities during read and write machine cycles	2

UNIT-II 9 Hrs.

1. Addressing modes of 8086	1
2. Introduction to programming, standard programming structures	1
3. 8086 instruction set. Data transfer and Arithmetic Instructions.	2
4. Logical, Shift, rotate and Loop instructions	2
5. Flag manipulation and string instructions	1
6. Assembly Language Programs	2

UNIT-III 9Hrs.

Digital Interfacing

1. Methods of parallel data transfer and implementing Hand-Shakedatatransfer 2
2. 8255 PPI internal block diagram, system connections, operational modesandinitialization 2
3. Key Switch Types,keyboard-circuit connections 1
4. Interfacing a Microprocessor to a Keyboard -- SoftwareKeyboardInterfacing 2
5. Interfacing to Alphanumeric Displays, software-multiplexedLEDdisplays. 2

UNIT-IV 9 Hrs.

1. Interrupts (external and Internal interrupts). 1
2. Interrupt system- interrupt response- Interrupt Pointer Table 2
3. 8259A Interrupt priority controller- block diagram and signal description 1
4. DMA data transfer, basic block diagram of DMA Controller 2
5. Introduction to asynchronous serial data communication 1
6. 8251A USART: block diagram, signal description, initialization, sending and receiving data 2

UNIT-V 9Hrs.

8051 Microcontroller

1. Introduction to 8051 Microcontroller, difference between Microprocessor and Microcontroller	3
2. 8051controller functional block diagram, description of various blocks/units	1
3. 3.Pin diagram and signal description of 8051 Microcontroller	2
4. 8051 registers, flags and stack operation	2
5. Internal organization of 8051 memory	1

ESSENTIAL READING

1. Hall Douglas V, SSSP Rao, 2012, **MICROPROCESSORS AND INTERFACING**. 3rd Edition, McGH (For units- I, II, III andIV)

2.Mazidi Mohammad Ali, Mazidi Janice Gillispie. **8051 Microcontroller &Embedded systems,** PHI. 2005 (For unitV)

OBJECT ORIENTED SYSTEMS DEVELOPMENT

Credits:4 **Semester:IV**
SubjectCode:CS20405 **No. of Lecture Hours: 60**
Objectives:

- To introduce object oriented concepts in systemsdevelopment
- To teach various development methodologies and design models which will help thestudents in theirprojects.

Outcome:

CO1: **Explain** basics of OOSD concepts

CO2: Categorize Object oriented methodologies and UML diagrams.

CO3: Choose classification theory and performing case studies.

CO4: Design models based on Object oriented concept.

CO5: Identify software quality, system usability, measuring and satisfaction

UNIT – I **12Hrs**

1. **Object oriented system development** – Introduction	1
2. Object Basics– Objects, classes, state and properties	2
3. Behavior, methods, messages,	2
4. Encapsulation, class hierarchy, polymorphism	2
5. Relationships and associations	2
6. Aggregations and containment	2
7. Object identify and static and dynamic binding, persistence, meta classes	1

UNIT – II **12Hrs**

1. **Object oriented system life cycle**– Analysis Design, Prototyping	2
2. Implementation and Incremental testing.	2
3. Object oriented Methodologies –Unified approach	2
4. **UML** – Introduction , class diagrams	2
5. Use case diagram	1
6. Interaction diagram	1
7. Sequence diagram, collaboration diagram, state chart diagram	1
8. Activity diagram, component diagram, Deployment diagram	1

UNIT – III **12Hrs**

1. **Object Oriented Analysis** - Identifying use cases- Introduction	1
2. Business object analysis, Use- case model	2
3. developing effective documentation, case studies	2
4. **Classification**- classification theory	2
5. classes, responsibilities, collaborators, naming classes	1
6. Object relationships, attributes and methods- associations	1
7. Super and sub-class relationships, a part – of relationship	1
8. Class responsibilities, identifying attributes and methods	1
9. Object responsibility, defining methods and messages, case studies.	1

UNIT – IV **12Hrs**

1. **Object Oriented Design** - Object oriented design process and design axioms	1
2. Corollaries, design and patterns	2
3. **Designing classes** – Introduction, Designing classes-the process	1
4. Class visibility, refining attributes,	2
5. Designing methods and protocols , case studies	2
6. Designing methods for the ViaNet Bank Objects: verify password method, Deposit method, Account class withdraw method	1
7. **Access Layer-** Database management systems	1
Object Oriented Database management systems	2

UNIT – V **12Hrs**

1. **Software Quality Assurance** – Introduction, QAT	1
2. Testing strategies- Black Box Testing, White Box Testing, Top-Down Testing, Bottom-Up Testing	2
3. Impact of Object Oriented testing, test cases, test plan	2
4. Continuous testing, case studies	2
5. **System Usability and measuring user satisfaction** – Introduction	2
6. Usability testing , user satisfaction test, user satisfaction test template	2
7. Case study	1

ESSENTIAL READING

1. Bahrami, Ali. 1999. **Object Oriented System Development.** New Delhi: McGraw-Hill.

SUGGESTED READING

1. Jacbson Ivor, Booch Grady and Rumbaugh James, 2008. **The Unified Software Development Process**, India: PearsonEducation.

DATABASE MANAGEMENT SYSTEMS

Credits:4 **Semester:IV**
SubjectCode:BS23406 **No. of Lecture Hours:60**

Objectives:

- To form the basis for the bulk management ofdata.
- To offer the power to logically present the databases to individual usage aswell.
- To provide facilities for data access, enforcing data integrity, managing concurrencyand restoring the data frombackups.

Outcome:

CO1: Represent logical database using Entity Relationship and Enhanced ER model.

CO2: Formulate database using relational algebra and organize relation using normalization

CO3: Design SQL queries and implements PL/SQL.
CO4: Classify the storage and file structure, storage access, indexing and hashing techniques of the database
CO5: Explain the concept of Transactions, recovery system and concurrency control.

UNIT – I	**12Hrs**
1. **Introduction**: Introduction to DBMS, System Structure	2
2. DDL, DML	2
3. Data Dictionary, Data Base Administrator, DBA	2
4. Database Levels, Data Independence	2
5. Data Base Design and E-R Model: Entity–Relationship Model, Properties, Constraints and Occurrences	2
6. **Enhanced Entity Relationship Model**: Generalization, Specialization, Aggregation, Design Considerations.	2

UNIT – II	**12Hrs**
1. **RelationalModel**:Structure	**2**
2. Reduction toRelationalSchema	**2**
3.RelationalAlgebra	**2**
4. Modification oftheDatabase	**2**
5.Normalization:First, Second	**2**
6.Third Normal FormsandBCNF	**2**

UNIT – III	**12Hrs**
1. **SQL** : Data Definition, Basic Structure of SQL Queries	1
2. Set Operations, Aggregate Functions	2
3. Null Values, Nested Sub Queries	2
4. Joins, Modifications of the Database, Views	2
5. **PL/SQL** : Programming, Procedures	1
6. Triggers, Cursors	1
7. Application Design &Development: Authorization in SQL–Granting of Privileges	1
ranting Privileges in SQL, Roles, Revoking of Privileges, Authorizationon Views, Functionsand Procedures	1
9. Application Security –Encryption Techniques	1

UNIT-IV	**12Hrs**
1. File Organization, Organization of Records in Files	1
2. **Indexing and Hashing:** Index sequential, B+ tree index	2
3. Static Hash Function, Dynamic Hash Function	1
4. Comparison of Hashing and Indexing	1
5. **Database System Architecture**: Centralized, Client-Server & Server System Architectures	2
6. Distributed Databases: Homogeneous & Heterogeneous Databases, Cloud-Based Databases	3
7. Concurrency Control in Distributed Databases	2

UNIT – V	**12Hrs**
1. **Recovery System**: Failure Classification	1
2. . Recovery and Atomicity, Log-Based Recovery, Check Points	2
3 **Transactions**: Transaction Concept, States	1
4. . Implementation of Atomicity and Durability, Concurrent Executions	1
5. Serializability, Testing for Serializability	1
6 **Concurrency Control** : Lock Based Protocols	2
7. Locks, Granting of Locks, Two-Phase Locking Protocol, Dead Lock Handling	2
8. Introduction to NOSQL-Types of NOSQL Databases	2

ESSENTIAL READING

1. Silberschatz, Abraham. Korth, Henry F and Sudharshan, S. 2006. **Database System Concepts**. 5th Edition. McGraw-Hill InternationalEdition.
2. Bayross, Ivan. 2009. **SQL, PL/SQL (The Programming Language of Oracle).** 4th Revised Edition**.** New Delhi: BPBpublications.

SUGGESTED READING

1. McFadden, Fred R. Hoffer, Jeffrey A and Prescott, Mary B. 1999. **Modern Database Management**. 5th Edition. Asia: Pearson Education.

MICROPROCESSOR SYSTEMS AND APPLICATIONS LAB

Credits:1 **Semester:IV**

SubjectCode:CS18407 **No. of practical hours: 30**

Objective: To write and practice assembly language programs on microprocessor kit with realtime applications.

Outcome: Student will be able to explain the configuration 8086 based micro computer system and execute number of ALPs.

USING 8086/ PC / MASM

No.of Hours	Topics
1	Division of two given bytes, Addition of two givenwords
2	Subtraction of two given words, Multiplication of two givenwords
3	Division of two given words, Find the largest of given twobytes
4	Find the smaller of given two bytes,the largest of given twowords
5	Find the smaller of given two words, Find the reverse of a givenword
6	Find the number of 1's and 0's in given word, Find whether thegiven word is even orodd.
7	To arrange the given bytes in ascending order, To arrange the given bytes in descendingorder.
8-9	Find the sum of series of given 5 words, Find the average of giventwo bytes.
10	To display the multiplicationtable.
Interfacing	
11-12	LED Interfacing using8255.
13-14	Stepper motorinterface.
15	LCDInterfacing.

OBJECT ORIENTED SYSTEMS DEVELOPMENT LAB

Credits:1 **Semester:IV**

SubjectCode:CS18408 **No. of practical hours:30**

Objective: To introduce case tools for system development.

Outcome: Students will be able to demonstrate object oriented analysis and design documents using Unified Modeling Language.

Students have to perform the following on a given Case Study:

- Use CaseModelling
- StructuralModelling
- BehaviouralModelling
- ArchitecturalModelling

The output should consist of:

- Use caseDiagrams
- ClassDiagrams
- SequenceDiagrams
- CollaborationDiagrams
- State ChartDiagrams
- ActivityDiagrams
- DeploymentDiagrams
- ComponentDiagrams

Note: Students should form into groups. They should carry out the Case Study as a group activity. The lab should be carried out using a CASE Tool. Finally they should submit a report.

DATABASE MANAGEMENT SYSTEMS LAB

Loyola Academy, Alwal, Secunderabad 500010

Credits: 1 **Semester:IV**

SubjectCode:BS23409 **No. of practical hours: 30**

Objective: To present the concepts and techniques relating to query processing bySQL

Outcome: Students will be able to use commercial relational database system (Oracle) by writing Queries using SQL and implement PL/SQL

List of Programs:

1. Create Employee Table with the following Fields
   Eno,ename,joiningdate,salary,job,commission,deptno

Eno	Ename	Salary	Job	Commission	Joiningdate	Deptno
1	Sita	5000	Clerk	800	12-jan-90	10
2	Rita	8000	Salesman	600	25-mar-02	20
3	Geetha	54000	HR	700	11-jun-05	30
4	Rahul	8900	Finance	850	15-dec-10	10
5	swetha	15000	Marketing	900	18-sep-09	20

   Execute the following Queries
   1. Insert atleast 5 records
   2. Write a query to display the data in table as follows:
   3. Write a query to eliminate duplicate rows using select statement
   4. Write a query to sort the data in a table
   5. Write a query to create a table from another table
   6. Write a query to creating a table from a table by specifying certain condition
   7. Write a query to insert data into a table from another table
   8. Write a query to creating a table from a table by specifying certain condition
   9. Write a query to modify the structure of the table
   10. Write a query to drop a column from a table
   11. Queries using Aggregate Functions, Sub Queries
2. Create department table with the following fields
   Deptno,deptname,Location

Deptno	Department Name	Location
10	Clerk	New York

20	Sales	Sydney
30	Hr	Dallas
10	Finance	Texas
20	marketing	North Carolina

Execute the following on EMP & Dept database

1. Orderby clause
2. Date Functions
3. Group By Clause
4. Sub Queries
5. Group Functions
6. Joins
7. Set Operators
8. Views

3. Create Table Student with the following Fields sno,sname,group,marks,percentage

Sno	Group	Sub1	Sub2	Total Marks	percentage
1	BA	53	78	131	54
2	BSC	86	45	131	64
3	BCOM	79	23	102	51
4	BBA	42	98	140	70
5	MSC	56	46	102	51

Execute the Following Queries:

1. Write a query to find the average of marks of Student table
2. Write a query to find the minimum value of marks of student table
3. Write a query to find the maximum value of marks of student table
4. Write a query to implement count function in student table
5. Write a query to implement sum function in student table

PL/SQL Programs

1. PL/SQL to add two numbers
2. PL/SQL to find factorial of a number
3. PL/SQL for demo on for loop
4. PL/SQL for case structure
5. PL/SQL/ for simple loop
6. PL/SQL to increase the value by 10
7. PL/SQL for performing arithmetic operations
8. PL/SQL to find square, cube, double of a number
9. PL/SQL program to swap two numbers
10. PL/SQL program to find multiplication table

11. PL/SQL to determine whether a year is leap year or not
12. PL/SQL to delete an item whose itemnum=4
13. PL/SQL program for inverting a number
14. PL/SQL program to calculate the area for circle for value of radius ranging from 3 to 7
15. Write a program to print empno, ename, job and salary of an employee given empno
16. Write a PL/SQL block that will increase the salary by 100 if salary is greater than 1000 for a empno
17. Write a PL/SQL block using the cursor to display details of all employee's from emp table whose sum of sal and commission is greater than 2000
18. PL/SQL to update salary of an employee whose empno and increment mentioned
19. Write a PL/SQL block which accepts the empno from the user and display the details of the employee. When the user enters an empno that is not in the emp table then PL/SQL block must display an appropriate message to the user
20. PL/SQL that creates a trigger that inserts or update values of ename, job as lower case strings
21. PL/SQL to implement standalone procedure in INOUT mode
22. PL/SQL to create a function to findout total number of Employees in the emp table
23. PL/SQL to handle ZERO_DIVIDE Expection.

WEB TECHNOLOGIES LAB

Credits:1 **Semester:V**
SubjectCode: CS23410 **No. of Practical Hours: 30**

Objective:

- To develop web applications usingHTML,JavaScript,XML.

Outcome:

- Students will be able to develop dynamic web pages using Java Script, gain knowledgein server side scripting with PHP language, and parsingXML.

1-2. Programs to demonstrate on basic HTMLtags.

3-4. Programs to demonstrate on different types of lists.

5-6. Programs to demonstrate on frames, forms, tablescreation.

7. Programs to demonstrate on inline, external, embedded stylesheets. 8-9. Programs to demonstrate controlstructures.

10. Programs to demonstrate on functions,arrays.

11. Programs to demonstrate on XMLdocument.

12. Programs to demonstrate on DTD and its XMLdocument.

13. Programs to demonstrate on control structures inPHP.

14-15. Programs to demonstrate on arrays, functions inPHP.

16. Ajax program to create input page to receive any text or number and server side page to process the request