MANONMANIAM SUNDARANAR UNIVERISTY,
TIRUNELVELI-12

SYLLABUS

UG - COURSES – AFFILIATED COLLEGES

Course Structure for B. C. A.
(Choice Based Credit System)
(with effect from the academic year 2021-2022 onwards)

Semester-III				
Part	**Subject Status**	**Subject Title**	**Subject Code**	**Credit**
I	Language	TAMIL/ MALAYALAM/HINDI	C1TL31/ C1MY31/ C1HD31	4
II	Language	ENGLISH	C2EN31	4
III	Core	INTRODUCTION TO OPERATING SYSTEMS	CMCA33	4
III	Major Practical III	PRACTICAL - JAVA PROGRAMMING LAB	CMCAP3	2
III	Allied – I Paper I	DATA STRUCTURE	CACA31	3
III	Allied Practical I	PRACTICAL - DATA STRUCTURE	CACAP3	2
III	Skill Based	PROGRAMMING WITH PHP AND MYSQL	CSCA31	4
IV	Non-Major Elective I	FUNDEMENTALS OF STATISTICS-I / அறிமுகத்தமிழ்	CNMA32/ CNTL31	2
IV	Common	Yoga	CYOG31	2

Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks

A. **Scheme for internal Assessment**:
Maximum marks for written test: **20 marks**
3 internal tests, each of **I hour** duration shall be conducted every semester.
To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:
Written test- 20 marks; Assignment -5 marks Total - 25 marks

B. Scheme of External Examination
3 hrs. examination at the end of the semester
A – Part : 1 mark question two - from each unit
B – Part : 5 marks question one - from each unit
C – Part : 8 marks question one - from each unit

- **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

- **Cumulative Grade Point Average (CGPA)**

$$\mathbf{CGPA} = \frac{\mathbf{\Sigma\,(GP \times C)}}{\mathbf{\Sigma C}}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

- **Classification**
  a) First Class with Distinction : CGPA $\geq$ 7.5*****
  b) First Class : CGPA $\geq$ 6.0
  c) Second Class : CGPA $\geq$ 5.0 and $<$ 6.0
  d) Third Class : CGPA $<$ 5.0

பொதுத்தமிழ்

பாடத்திட்டத்தின் நோக்கங்கள் (Course Objectives) **காப்பியங்கள் வாயிலாகத் தமிழரின் விழுமியங்களை உணரச் செய்தல்**		
எதிர்பார்க்கும் படிப்பின் முடிவுகள் (Course Outcomes)		
CO1.	மாணவர் காப்பியங்கள் மூலம் பண்டைத் தமிழரின் வாழ்வியலை அறிந்து செய்தல்	K_1, K_2, K_5
CO2.	யாப்பு, பா, அணி இவற்றின் இலக்கணத்தைக் கற்றுச் செய்யுள் இயற்றும் திறனைப் பெறுவர்	K_2, K_4
CO3.	இலக்கிய ஆய்வுத்திறனில் மேம்படுவர்	K_2, K_3, K_4
CO4.	நேர்மையான வழியில் வாழ அறிந்து கொள்வர்	K_2, K_5
CO5.	தூப்பியங்கள் மற்றும் சிற்றிலக்கியங்களின் வரலாற்றை அறிந்து கொள்வர்	K_1, K_2, K_4
K1 – நினைவில் கொள்ளுதல் (Remember) K2 – புரிந்து கொள்ளுதல் (understand) K3 – விண்ணப்பித்தல் (Apply) K4 – பகுத்தாய்தல் (Analyze) K5 – மதிப்பிடு செய்தல் (Evaluate) K6 – உருவாக்குதல் (Create)		

அலகு-1: செய்யுள்

சிலப்பதிகாரம் முதல் நந்திக் கலம்பகம் வரை
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்., திருநெல்வேலி – 1
தொலைபேசி எண் : 0462-2323990

அலகு-2: இலக்கணம்

யாப்புஇலக்கணம்
அணி - இலக்கணம்
மொழிபெயர்ப்பு

அலகு-3: உரைநடை

இலக்கிய ஆய்வுத்திறன் தொகுப்பாசிரியர் - முனைவர் கரு.முரகன்
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்., சென்னை – 50
தொலைபேசி எண் : 044-26251968, 26258410, 48601884

அலகு-4: புதினம்

வேரில் பழுத்த பலா – ஆசிரியர் சு.சமுத்திரம்
அறிவுப் பதிப்பகம் (பி) லிட்., சென்னை -14 தொலைபேசி எண் : 044-28482441

அலகு-5: இலக்கிய வரலாறு

1. ஐம்பெருங்காப்பியங்கள்
2. ஐஞ்சிறு காப்பியங்கள்
3. சிற்றிலக்கியங்களின் தோற்றமும் வளர்ச்சியும் வகைகளும்
   (பிள்ளைத்தமிழ், பரணி, கலம்பகம், உலா)

மேற் பார்வை நூல்கள்

இலக்கணம் : யாப்பருங்கலகாரிகை

இலக்கிய வரலாறு : ஆசிரியர் முனைவர் சி. பாலசுப்பிரமணியன்.

பாவை பப்ளிகேஷன்ஸ் 142இ ஜானி ஜான் கான் சாலை இராயப்பேட்டை

சென்னை – 14 தொலைபேசி எண் : 28482441

முனைவர் பெ. சுயம்பு

பாரதி பதிப்பகம் 113இ இராஜீவ் தெரு திசையன்விளை -57

தொலைபேசி எண் :04637 - 272096

மாணவர்களைக் களஆய்விற்கு அழைத்துச் செல்லலாம்

Mapping with Programme Outcomes

CO_s	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	S	M	M	S	M
CO3	S	S	M	S	M
CO4	M	S	S	S	S
CO5	M	M	S	S	S

S- மிகையான (Strong) M- நடுநிலையான (Medium) L- குறைவான (Low)

MALAYALAM

UNIT – 1- Thullal- A Satirical Classical Visual Art Form

തുള്ളല്

തുള്ളല്പ്രസ്ഥാനം – ചരിത്രം – സാമൂഹ്യമാറ്റങ്ങള് - ആക്ഷേപഹാസ്യം – ജനകീയത – പ്രധാനപ്പെട്ട തുള്ളലുകള് - ഇവയുടെ പരിചയം

FOR DETAILED STUDY

1. കുഞ്ചന് നമ്പ്യാര് - ഘോഷയാത്ര
(ദ്വന്തെന്തേരസുഖരസികന്മാരായ്...
...പണ്ടക്കേകാള് പല വിക്രമപൗരുഷമുണ്ടിപ്പോള് മമ കൗരവവീരാ)

UNIT – 2-KADHAKALI- A Classical Visual Art Form

കഥകളി

ചരിത്രം - കാക്കാരിശ്ശി നാടകം – പാഠകം – രാവിട്ടു നാടകം – തെയ്യം – എന്നിവയെ പരിചയപ്പെടുത്തുക – സംസ്കാരം – സാമൂഹ്യപ്രാധാന്യം – പുതിയ കാലത്തെ മാറ്റങ്ങള് - സാങ്കേതിക കാര്യങ്ങള് - അഭിനയരീതികള് - വേഷം

FOR DETAILED STUDY

2. നളചരിതം ആട്ടക്കഥ നാലാം ദിവസം (എ. ആർ. രാജരാജവർമ്മയുടെ
കാന്താരതാരകം) ഉണ്ണായിവാരിയർ
ആട്യത്തെ ആറു രംഗങ്ങള്

UNIT – 3- Translation of a Sanskrit Drama

നാടകം (സംസ്കൃത നാടക വിവർത്തനം)

നാടകവുമായി ബന്ധപ്പെട്ട വിവർത്തനചരിത്രം – ആട്യകാലത്തെ വിവർത്തനങ്ങളുടെ പ്രത്യേകതകള് - സംസ്കൃതനാടകവുമായി ബന്ധപ്പെട്ട സങ്കേതങ്ങള് - നാടകാസ്വാദനവുമായി ബന്ധപ്പെട്ട ചൂറ്റുപാടുകള് - സാമൂഹ്യാവസ്ഥ – പ്രാധാന്യം

FOR DETAILED STUDY

3. മലയാളശാകുന്തളം – നാലാമങ്കം – വിവർത്തനം എ. ആർ. രാജരാജവർമ്മ

UNIT – 4- A Modern Drama in Malayalam

നാടകം (മലയാള നാടകം)

മലയാളനാടകചരിത്രം – പ്രധാനപ്പെട്ട നാടകാചാര്യന്മാർ - ആട്യകാലത്തെ പ്രവർത്തനങ്ങള് - അരങ്ങും നാടകസാഹിത്യവും – പ്രധാനപ്പെട്ട നാടകങ്ങള് - സാമൂഹ്യ മാറ്റങ്ങള് - രാഷ്ട്രീയചരിത്രം – പ്രവർത്തനങ്ങള് - നാടകത്തിന്റെ സമകാലികാവസ്ഥ – റേഡിയോ തുടങ്ങിയ മാധ്യമങ്ങള് - പ്രക്ഷണല് നാടകങ്ങള് - അമച്വർ നാടകങ്ങള്

FOR DETAILED STUDY

4. സി. എന്. ശ്രീകണ്ഠന്നായര് - കാഞ്ചനസീത
ആദ്യത്തെ രണ്ട് രംഗം

UNIT – 5- Cinema

സിനിമ

സിനിമയുടെ ചരിത്രം – ആദ്യകാലം – ഓരോ ഘട്ടത്തിലെയും വികാസം – സിനിമാ പഠനം – സിദ്ധാന്തങ്ങള് - മലയാള സിനിമ – ആദ്യകാലത്തെ സിനിമ – ശബ്ദചിത്രം – നിശ്ശബ്ദചിത്രം – ദൃശ്യഭാഷ – സംവിധാനം – തിരക്കഥയില് നിന്ന് സിനിമയിലേക്കുള്ള വികാസം

FOR DETAILED STUDY

5. അടൂര് ഗോപാലകൃഷ്ണന് - മതിലുകള്

REFERENCE BOOKS

കരൈളിയുടെ കഥ – പ്രൊഫ. എന്. കൃഷ്ണപിള്ള
നളചരിതം ആട്ടക്കഥ – കാന്തഹാരതാരകം – എ. ആര്. രാജരാജവര്മ്മ
ഉയരുന്ന യവനിക – സി. ജെ. തോമസ്
മലയാളനാടകസാഹിത്യചരിത്രം – ഡോ. വയലാ വാസുദേവന് പിള്ള
മലയാളനാടകസാഹിത്യചരിത്രം – ജി. ശങ്കരപ്പിള്ള
സിനിമയുടെ വ്യാകരണം – ഡോ. ടി. ജിതേഷ്
തിരക്കഥാരചന – കലയും സിദ്ധാന്തവും – ജോസ്. കെ. മാനുവല്
കഥയും തിരക്കഥയും – ആര്. വി. എം. ദിവാകരന്
നാടോടി വിജ്ഞാനീയം – എം. വി. വിഷ്ണുനമ്പൂതിരി
മലയാള സംഗീതനാടകചരിത്രം – കെ. ശ്രീകുമാര്
ചവിട്ടുനാടകം – സബീനാറാഫി
കേരളത്തിലെ നാടോടി നാടകങ്ങള് - ഡോ. എസ്. കെ. നായര്
ഫോക്ലോര് - രാഘവന് പയ്യനാട്

നാട്ടരങ്ങ് – ജി. ഭാര്ഗവന് പിള്ള
കുഞ്ചന്നമ്പ്യാരും അദ്ദേഹത്തിന്റെ കൃതികളും – വി. എസ്. ശര്മ്മ

HINDI

Objectives:

1. To acquire knowledge regarding fundamental concepts in Hindi grammar.
2. To acquire the ability to master translation skills
3. To develop writing skills for official documentation – Letter, Banking terminologies

C.O. NO	Upon the completion of this course, students will be able to	PSOs Addressed	Cognitive Level
CO 1	In depth knowledge regarding the plays	B,A	K1,K4
CO 2	Identify eminent ancient Hindi poets	B,C	K1,K2
CO 3	Understand the history of Hindi Literature – Adhikal , Bathikal	F,G	K3,K5
CO 4	Understand various aspects of Tourism	C,D	K5
CO 5	Knowledge regarding Journalism	A,C	K4,K5

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyse, K5 – Evaluate, K6 – Create

UNIT I

DRAMA

1. Ek Aur Dronachary

.

UNIT II

ANCIENT POETRY

1. Kabir Das
2. Soor Das
3. Meera Bhai

UNIT III

HISTORY OF HINDI LITERATURE

1. Aadhikal
2. Bhakthikal

UNIT IV

TOURISM

UNIT V

JOURNALISM

Text book:

1. Ek Aur Dronachary – Shankar Shesh – Published by Kithabhar Praksthan, New Delhi
2. Kavya Ras – Dr. V Bhaskar – Published by Pachori Press, Sadar Bazar, Madurai, UP
3. Hindi Sahithy ka Saral Ithihas – Viswanath Tripathi – Published by Orient Publication Private Limited, Himayath Nagar, Hyderabad

Reference :

1. Hindi Vathayan – Dr. K M Chandra Mohan – Published by Viswavidyalay Prakashan, Varanasi – Page number 40-42
2. Hindi Vathayan – Dr. K M Chandra Mohan – Published by Viswavidyalay Prakashan, Varanasi – Page number 45-51

Mapping with POs

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	S	S	S	M	S	S	S	M
CO 2	S	S	S	S	S	S	M	S
CO 3	S	M	S	S	S	S	S	S
CO 4	S	S	S	S	S	S	S	L
CO 5	S	S	L	S	S	S	S	S
CO 6	S	S	S	S	M	M	S	S

S – Strong, M – Medium, L – Low

ENGLISH

COURSE OUTCOMES: At the end of the course students will be able to

CO	Course Outcomes	Cognitive Level
CO1	Enable the students to critically summarise prose	K1, K2, K4
CO2	Enrich the students through various perspectives reading in poetry	K1, K2, K3, K4
CO3	Familiarise the cultural diversity through reading fiction	K1, K2, K4
CO4	Grasp meaning of words and sentences ssss and use	K1, K2. K3
	appropriate vocabulary	
CO5	Spell English correctly	K2, K3

PROSE, POETRY, FICTION, GRAMMAR, LANGUAGE STUDY AND ORAL COMMUNICATION SKILLS

UNIT I - PROSE

1. Character is Destiny – Dr Radhakrishnan.
2. How to be a Doctor? – Stephen Leacock.
3. How to win? – Shiv Kera
4. On doing Nothing – J.B.Priestley

UNIT II - POETRY

1. Summer Woods – Sarojini Naidu.
2. Ode to the West Wind – P.B.Shelley.
3. Once upon a Time – Gabriel Okkara
4. Beat Beat drums – Walt Whitman

UNIT III – FICTION

Abridged Version of The Dark Room - R.K.Narayan

UNIT IV – GRAMMAR

1. Reported Speech
2. Rearrange the Jumbled words
3. Verb Patterns and Sentences

UNIT V – LANGUAGE STUDY AND ORAL COMMUNICATION

1. Phonetics – consonants
2. Foreign Words and Phrases
3. Homophones
4. Developing Hints

MAPPING OF COURSE OUTCOMES

CO/ PO/ POS	PO1	PO2	PO3	PO4	PO5	POS1	POS2	POS3	POS4	POS5
CO1	M	M	S	M	S	S	S	S	M	M
CO2	S	S	S	M	M	M	M	M	S	S
CO3	M	S	M	S	M	S	M	S	M	S
CO4	M	M	S	M	S	S	M	S	M	S
CO5	M	S	M	S	M	M	S	M	M	M

S – Strongly correlated, M – Moderately Correlated, w- weakly correlated, No Correlation - 0

JAVA PROGRAMMING

COURSE OBJECTIVES:

- To learn Object Oriented Programming language.
- To learn about Networking and event handling concepts.
- To handle abnormal termination of a program using exception handling.
- To design user Interface using AWT.

COURSE OUTCOMES:

Upon completion of the course, the students should be able:

CO1: To get knowledge of the structure and model of the Java programming language.

CO2: To understand how to design applications with threads in Java.

CO3: To get Knowledge for developing software in the Java programming language.

CO4: To learn how to use exception handling in Java applications.

CO5: To use the Java programming language for various programming technologies.

COURSE OUTLINE:

UNIT – 1 HISTORY, DATA TYPES AND OPERATORS

History & Evolution of Java: Creation of Java – The java Buzz words – An overview of Java Object Oriented Programming. Data types: A closer Look at Literals – Variables – Type conversion and casting – Automatic type promotion in Expressions. Arrays: One Dimensional Array – Multi Dimensional Arrays. Operators: Arithmetic Operators – Bitwise operators – Relational operators – Boolean Logical operators – Assignment operators – Conditional operators–Operator Precedence—Control statements.

UNIT - 2 CLASSES, METHODS AND INHERITANCE AND ABSTRACT CLASS

Class Fundamentals – Declaring objects – Assigning object Reference variables – Introducing Methods – Constructors – This Keyword - Garbage collection. A Closer Look at Methods and Classes: Overloading Methods – Overloading Constructors – Using object as parameters – Returning objects – Recursion – Introducing Access control – understanding static – Introducing final – Nested and Inner classes – String class –String Buffer Class – Using command line arguments. Inheritance: Basics – Using super – creating Multilevel Hierarchy – Method overriding – Dynamic Method Dispatch – Using Abstract class – Using final with inheritance.

UNIT-3 PACKAGES, INTERFACES, EXCEPTION HANDLING AND MULTITHREADING

Packages –Access Protection -Importing packages – Interfaces. Exception Handling: Fundamentals – Exception Types – Uncaught Exceptions – Using try and catch – Multiple catch clauses – Nested try statements – throw- throws- finally – Java‘s Built – in Exception – creating your own Exception subclasses. Multithreaded Programming: Java Thread Model – Main Thread – Creating a Thread - Creating Multiple Threads–Using is Alive () and join () – Thread priorities – Synchronization – Interthread Communication – Suspending Resuming: and stopping Threads.

UNIT – 4 NETWORKING, APPLETS AND EVENT HANDLING

Networking Basics – Networking Classes and Interfaces – Inet Address – Inet4 Address and Inet6 Address – TCP/IP client Sockets – URL – URL Connection – HTTP URL Connection – Cookies. The Applet Class: An Applet skeleton – Simple Applet Display Methods – Example programs. Event Handling: Two Event handling Mechanisms – Delegation Event Model – Event classes – Sources of Events – Event Listener Interfaces Handling Mouse events – Handling Keyboard events.

UNIT - 5 AWT AND AWT CONTROLS

AWT Classes – Window fundamentals – working with Frame Windows - working with Graphic and color.

Using AWT controls: Controls fundamentals – Labels – using Buttons – Applying check Boxes – Check Box group – Choice controls – Using a Text field – Using a Text Area – Understanding Layout Managers (Flow Layout only) – Menu Bars and Menus.

Mapping of COs to POs and PSOs

Course Outcome	PO Addressed PO1 to PO7	Correlation Level L/M/H	PSO Addressed PSO1 to PSO7	Correlation Level L/ M/ H	Cognitive Level K1 to K6
CO1	PO3	H	PSO1	H	K1
CO2	PO3, PO6	H/M	PSO2, PSO6	H/M	K2
CO3	PO1, PO2, PO5	H/M/M	PSO4	M	K3
CO4	PO1, PO5	H/M	PSO4	H	K4
CO5	PO3, PO4	H/M	PSO4, PSO5	H/M	K5

(L – Low, M – Medium, H – High; K1 – Understand, K2 – Apply, K3 – Analyze, K4 – Evaluate, K5 Create)

TEXT BOOK:

1. JAVA - The Complete Reference -Herbert Schildt, Eleventh Edition, Oracle Press, 2019.

REFERENCE BOOKS:

1. Core and Advanced Java Programming – Black Book, Dreamtech Press, 2018
2. Programming with Java - A Primer, E. Balaguruswamy, Sixth Edition, 2016.

FINANCIAL ACCOUNTING

COURSE OBJECTIVES:

- To impart basic accounting knowledge.
- To provide knowledge on the fundamental of financial accounting.
- To expose the student to various financial transaction and its current applications.

COURSE OUTLINE:

UNIT -1 BASIC CONCEPTS OFACCOUNTING

Introduction to Accounting : Need for Accounting –Accounting as the language of business – Attributes and steps of Accounting –Book keeping Vs Accounting – Branches of Accounting – Methods of Accounting – Types of Accounting – Accounting Rules - Bases of Accounting – Accounting terminology. Basic Accounting Concepts: Meaning and classification of Accounting- Accounting Concepts – Accounting Conversion – Accounting equations.

UNIT – 2 JOURNAL AND LEDGER

Recording a Financial Data: Memorandum Book, business transaction, Journal, Rules for Debit and Credit, Compound Journal entry, Advantages of Journal, Ledger, Ledger Account, Ledger Posting, Process of Posting, Balancing of An Account, Significance of Balances, Relation between Journal and Ledger-Subsidiary Books.

UNIT – 3 PREPARING TRIAL BALANCE

Trial Balance: Objects, Methods of Preparing Trial balance, how to locate errors, hints for the preparation of trial balance & problems.

UNIT -4 FINAL ACCOUNTS

Trading account – individual items posted to the debit of trading account – individual items credited to trading account – advantages of trading account – profit & loss account - advantages of profit & loss account- manufacturing account- balance sheet- classification of assets & liabilities.

UNIT – 5 ACCOUNTS FOR NON PROFIT ORGANISATION

Introduction – Final accounts of no trading concern- receipts and payments account – features- income & expenditure account – feature- distinction between the two – treatment of special items – some important adjustments – types of problems – Distinction between income and expenditure account and profit and loss account – accounts of professional men.

COURSE OUTCOMES:

Upon completion of the course, the students should be able:

- To acquire knowledge about general aspects of business operations.
- To explain the concepts and procedures of financial reporting, including income and expenditure statement, balance sheet etc.
- To locate and analyze financial data from annual reports of corporations.

TEXT BOOKS:

1. Financial Accounting - T.S.Reddy, A.Murthy – Margham Publications, 2012.
2. Fundamentals of Advanced Accounting - R.S.N.Pillai, Bagavathi, S.Uma, 5th Edition, S.Chand Publication, 2012.

REFERENCE BOOKS:

1. Essentials of Financial Accounting – Asish K. Bhattacharayya, PHI, 2020.
2. Advanced Accountancy - S.P.Jain and Narang – Kalyani Publications, 2017.

INTRODUCTION TO OPERATING SYSTEMS

COURSE OBJECTIVIES

- To understand design issues related to process management and various related algorithms.
- To understand design issues related to memory management and various related algorithms.
- To understand design issues related to file management and various related algorithms.

COURSE OUTCOMES:

Upon completion of the course, the students should be able to:

CO1: Master functions, structures and history of operating systems.

CO2: Master various process management concepts including scheduling, synchronization, and deadlocks.

CO3: Be familiar with multithreading.

CO4: Master concepts of memory management including virtual memory & File Management.

COURSE OUTLINE:

UNIT - I INTRODUCTION

What is an Operating System: Mainframe Systems – Desktop Systems –

Multiprocessor Systems – Distributed Systems – Clustered Systems – Real Time Systems – handheld Systems.

UNIT – II PROCESS CONCEPT

Process Concept – Process Scheduling – Operations on Process – Co-operating processes – Inter Processes - Inter Process communication. CPU Scheduling: Basic Concepts –Scheduling Criteria - Scheduling algorithms – Multi processor Scheduling - Real time Scheduling – Algorithms evaluation.

UNIT - III PROCESS SYNCHRONIZATION & DEADLOCKS

Process Synchronization: Background – The critical section problem – Synchronization hardware – Semaphores – Classical problems of Synchronization – critical regions – Monitors – Atomic transaction. Deadlocks: System model – Deadlock Characterization – methods for handling Deadlocks – Deadlock prevention – Deadlock Avoidance – Deadlock detection – recovery from Deadlock.

UNIT IV MEMORY MANAGEMENT

Memory management: Background – Swapping – Contiguous memory allocation – paging – segmentation – segmentation with paging. Virtual Memory: Background – Demand paging – Page replacement – Allocation of frames.

UNIT V FILE MANAGEMENT

File System Interface: File concept – Access methods – File system structure – File system implementation – Directories structure - Directory implementation – Allocation methods – Free space management – Efficiency and performance – Recovery. Mass Storage Structure: Disk Structure – Disk Scheduling – Disk management – Swap space management – RAID structure – Disk attachment– Stable Storage.

TEXT BOOK:

1. Operating System Concepts – Abraham Silberschatz and Peter Baer Galvin, Addition Wesley publishing company – 9th Edition, 2018.

REFERENCE BOOKS:

1. Operating System: Intel and Design Principles, 7th Edition, William Stallings, PHI, 2012
2. Understanding Operating System, Ida M.Flynn, Ann Mclver McHoes, PWS Publishing.
3. Operating Systems – Second Edition, Achyuts.Godbole, TMH.

Mapping of COs to POs and PSOs :

Course Outcome	PO Addressed PO1 to PO7	Correlation Level L/M/H	PSO Addressed PSO1 to PSO7	Correlation Level L/ M/ H	Cognitive Level K1 to K6
CO1	PO3	H	PSO1	H	K1
CO2	PO3, PO6	H/M	PSO2, PSO6	H/M	K2
CO3	PO1, PO2, PO5	H/M/M	PSO4	M	K3
CO4	PO1, PO5	H/M	PSO4,PSO5	H/M	K4

(L – Low, M – Medium, H – High; K1 – Understand, K2 – Apply, K3 – Analyze, K4 – Evaluate, K5 Create)

JAVA PROGRAMMING LAB

PRACTICAL LIST

1. Design a class called student with data members name, Roll Number and three subject marks. include methods to assign initial values, find total and average and to display total and average marks .
2. Write a java program to find the area of Square, Rectangle, and Triangle by (a) Overloading Constructor Method (b) Overloading Method
3. Write a java program using Multilevel Inheritance.
4. Write a java program using Overriding Methods
5. Write a java program to create and Implement an Interface.
6. Write a java program to Create and Import Package (Minimum Three Classes)
7. Write a java program to throw the following Exception: (a)Negative Array Size (b) Array Index out of Bounds
8. Write a java program to Create your Own Exception
9. Write a java program to create a thread Using Thread Class.
10. Write a java program Display a Simple Banner Applet.
11. Write a java program using Applet to Design a Web Page
12. Write a java program to illustrate Mouse and keyboard Event Handling.
13. Write a java program to Design a calculator to perform arithmetic operations.
14. Write a java program, which creates a window with a checkbox group with boxes for the colors, violet, indigo, yellow, orange, red, blue and green. When the button is selected the background color must change accordingly.
15. Write a java program to create a file menu with option New, Save and Close, Edit menu with option cut, copy, and paste.

DATA STRUCTURES

COURSE OBJECTIVES:

- To understand different methods of organizing large amounts of data.
- To efficiently implement different data structure.
- To efficiently implement solution for different problems.

COURSE OUTCOMES:

Upon completion of the course, the students should be able:
CO1: An understanding of the basic data structures.
CO2: To describe Data structures like stack, queue, tree and graph.
CO3: An understanding of the basic search and sort algorithms.
CO4: The appropriate use of a particular data structure and algorithm to solve a problem.

COURSE OUTLINE:

UNIT – 1 DATA TYPES INTRODUCTION

Introduction: Pseudo code – The Abstract Data Type – A Model for an Abstract Data Type – Algorithms Efficiency.
Searching: List Searches – Hashed List Searches – Collision Resolution.

UNIT – 2 LINKED LISTS

Linear List Concepts – Linked List Concepts – linked List Algorithms – Processing a Linked List – Complex Linked List Structures.

UNIT – 3 STACKS AND QUEUES

Basic Stacks Operations – Stack Linked List Implementation – Stack Applications – Queue operations – Queue Linked List Design.

UNIT – 4 TREES

Basic Tree Concepts – Binary Tree - Binary Tree Traversals – Expression Trees- General Trees – Binary Search Trees – Heap definition – Heap Structure – Basic Heap Algorithm.

UNIT - 5 INTRODUCTION TO GRAPHS

Sorting And Graphs: General Sort Concepts – Quick sort – External sorts.
Graphs: Terminology - Operations–Graph storage Structure–Networks.

Mapping of COs to POs and PSOs

Course Outcome	PO Addressed PO1 to PO7	Correlation Level L/M/H	PSO Addressed PSO1 to PSO7	Correlation Level L/ M/ H	Cognitive Level K1 to K6
CO1	PO3	H	PSO1	H	K1
CO2	PO3, PO6	H/M	PSO2, PSO6	H/M	K2
CO3	PO1, PO2, PO4	H/M/M	PSO4	M	K3
CO4	PO1, PO5	H/M	PSO4, PSO5	H/M	K5

(L – Low, M – Medium, H – High; K1 – Understand, K2 – Apply, K3 – Analyze, K4 – Evaluate, K5 Create)

TEXT BOOK:

1. Data Structures a Pseudo Code Approach with C++, Richard F. Gilberg & Behrouz A Forouzan, Brooks/Cole (Thomson Learning) 2001. Chapters: 1,2.1,2.3,2.4,3.1-3.4,3.6,4.1-4.3,5.1,5.2,7.1-7.5,8.1,9.1- 9.5,11.1,11.4 (Quick Sort only) 11.6, 12.1-12.5.

REFERENCE BOOKS:

1. Fundamentals of Data Structures - Eilis Horowitz & Sartaj, Galgotia Publications 2008
2. Data Structures - Seymour Lipschutz, Tata McGrawHill, 2014

DATA STRUCTURES LAB

PRACTICAL LAB

1. Write a C++ program to implement sequential search and Binary search in array.
2. Write a C++ program to implement linked list and perform the following operations
   (a) Add a node as first node. (b) Add a node as last node.
3. Write a C++ program to implement linked list and implement the following Objects.
   (a) Delete the first node. (b) Delete the last node.
4. Write a C++ program to implement a stack linear list perform the push and pop Operations.
5. Write a C++ program to implement binary tree using Linked and
   Perform the following traversal:
   (a) Inorder traversal. (b) Preorder traversal. (c) Postorder traversal.
6. Write a C++ program to implement merge sort.
7. Write a C++ program to implement quick sort.

PROGRAMMING WITH PHP & MYSQL

COURSE OBJECTIVES:

- To understand the concepts of open sources.
- To learn and use open-source database management system MySQL
- To create dynamic web pages and websites.
- To connect webpages with database.

COURSE OUTCOMES:

Upon completion of the course, the students should be able:

CO1: To observe and understand the role, structure, control flow, classes and concepts in PHP and tables in MySQL

CO2: To implement the concepts in PHP and queries in MySQL.

CO3: To analyze functions for data and file handling in PHP and data management in MySQL

CO4: To evaluate the programming concepts in PHP to develop interfaces and manipulate data using MySQL.

CO5: To create applications using PHP and MySQL.

COURSE OUTLINE:

UNIT-1

Introduction: Introduction- Open-source PHP – PHP history- features-variables-statements operators‘ conditional statements-if-switch-nesting conditions-merging forms with conditional statements-loops-while-do-for – loop iteration with break and continue.

UNIT – 2

Arrays and Functions: Arrays: Creating an array- modifying array-processing array-grouping form with arrays- using array functions- creating user defined functions-using files- sessions cookies- executing external programs – Creating sample applications using PHP.

UNIT – 3

File Handling Opening files using fopen - looping over a files content with feof-reading text from a file using fgets - closing a file- reading character with fgetc-reading whole file with file_get_contents reading a file into an array with file-checking if a file exists- fscan fparse_ini_file- Getting file information with stat-fseek-copying files with copy- deleting files writing to a file-reading and writing binary files – locking files.

UNIT - 4 MySQL:

Effectiveness of MySQL -MySQL Tools-Prerequisites for MySQL connection Databases and tables- MySQL data types-Creating and manipulating tables-Insertion-updation and deletion of rows in tables -Retrieving data- Sorting and filtering retrieved data -Advanced data filtering Data manipulation functions-Aggregate functions -Grouping Data-Subqueries Joining Tables- Set Operators-Full text searching.

UNIT- 5 PHP with MySQL:

Working MySQL with PHP-database connectivity- usage of MYSQL commands in PHP processing result sets of queries- handling errors-debugging and diagnostic functions validating user input through Database layer and Application layer formatting query output with Character- Numeric- Date and time – sample database applications.

Mapping of COs to POs and PSOs :

Course Outcome	PO Addressed PO1 to PO7	Correlation Level L/M/H	PSO Addressed PSO1 to PSO7	Correlation Level L/ M/ H	Cognitive Level K1 to K6
CO1	PO3	H	PSO1	H	K1
CO2	PO3, PO6	H/M	PSO2, PSO6	H/M	K2
CO3	PO1, PO2, PO5	H/M/M	PSO4	M	K3
CO4	PO1, PO5	H/M	PSO4	H	K4
CO5	PO3, PO4	H/M	PSO4, PSO5	H/M	K5

(L – Low, M – Medium, H – High; K1 – Understand, K2 – Apply, K3 – Analyze, K4 – Evaluate, K5 Create)

TEXT BOOKS

1. VIKRAM VASWANI- ―PHP and MySQL‖- Tata McGraw-Hill- 2005.
2. BEN FORTA – ―MySQL Crash course‖, SAMS- 2006.
3. Steven Holzner – ―The Complete reference PHP‖, Tata McGraw Hill,2008

REFERENCE BOOKS:

1. Tim Converse- Joyce Park and Clark Morgan- ―PHP 5 and MySQL‖ -Wiley India reprint - 2008.
2. Robert Sheldon- Geoff Moes- ―Beginning MySQL‖-Wrox- 2005

FUNDAMENTALS OF STATISTICS-I

Objective:

- To introduce the new concept of Measure of Central Tendency to other major students. Also to study about correlation, regression and to solve simple problems.

Course Content

UNIT–1:

Classification of datas–Bar Diagram–Pie chart.

UNIT–2:

Measures of central tendency: Mean, median, mode (with frequency).

UNIT–3:

Measures of dispersion: Range–standard deviation, Variance–Quartile deviation.

UNIT–4:

Correlation–Rank correlation (Problems only)

UNIT–5:

Regression equations (Problems only)

Text Book:

1. Dr. S. Arumugam, A. Thangapandi Issac- Statistics, New Gamma Publishing House, Palayamkottai.(2016)

Books for Reference:

1. S. P. Gupta - Elementary Statistical Methods, Sultan Chand & Sons, (2017).
2. T. Veerarajan, Fundamentals of mathematical Statistics, Yes Dee Publishing Pvt, Ltd.. (2017)
3. C.B. Gupta and Vijay Gupta, An Introduction to Statistical Methods, Vikas Publishing House Pvt. Ltd. New Delhi –(1973)

Course Outcomes:

On successful completion of the course, the students should be able to

CO No.	Course Outcome	Knowledge Level
CO1	Analyse the classification of datas.Also to construct bar diagram and Pie chart.	K3, K6
CO2	Illustrate measure of central tendency and to find mean,median and mode.	K1,K2
CO3	Explain the measure of dispersion .Also to find standard deviation,variance,quartile deviation and to obtain the relationship between them.	K4,K5
CO4	Interpret correlation and to solve rank correlation problems.	K2,K6
CO5	To find solution for regression equations	K1, K6

K1-Remember, K2-Understand, K3-Apply, K4-Analyze, K5-Evaluate, K6-Create

CO-PSO mapping (Course Articulation Method)

PSOs / Cos	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	2	3	3	1
CO3	3	3	3	3	3
CO4	3	2	3	3	2
CO5	1	2	2	1	2
Total contribution of COs to PSOs	13	12	14	13	11
Weighted Percentage of COs contribution to PSOs	86.67	80	93.33	86.67	73.33

அறிமுகத்தமிழ் -தாள் - 1

பொருளடக்கம்

கடவுள் வாழ்த்து

எங்கும் மனிதர் உனைத்தேடி
இரவும் பகலும் அலைகின்றனார்
எங்கும் உள்ளது உன் வடிவாம்
எனினும் குருடர் காண்பாரோ?
எங்கும் எழுவது உன் குரலாம்:
எனினும் செவிடர் கேட்பாரோ?
எங்கும் என்றும் எவ்வுயிரும்
யாவு மான இறையவனே!

-கவிமணி

அலகு- 1 எழுத்துக்கள்

அ) எழுத்துக்களின் அறிமுகம் --பிறப்பிடம்
ஆ) தமிழ் எழுத்துக்களின் எண்ணிக்கை
இ) எழுத்துக்களின் புணர்ச்சி

அலகு:2

அ) சொல்
ஆ) தொடர்
இ) வாக்கியம்

அலகு- 3

அ) வாய்மொழிப் பயிற்சி
ஆ) இனிய சொற்றொடரும், மரபுத் தொடரும்
இ) உவமைகள்
ஈ) பழமொழிகள்
உ) இனிய செய்யுள் வரிகள்
ஊ) பறவை விலங்கினங்களின் ஒலிகள், அவற்றின் இளமைப் பெயர்கள்
எ) மாணவர் ஆசிரியர் உரையாடல்
ஏ) ஒரு பொருள் குறித்துப் பேசுதல்.

அலகு- 4

எண்கள்
நாட்கள்
மாதங்கள்

அலகு- 5

அ) கையெழுத்துப் பயிற்சி கொடுத்தல்

ஆ) சுவரொட்டிகள், துண்டு பிரசுரங்களை வாசித்தல்

இ) படங்களைக் காட்டிப் பெயர் சொல்ல வைத்தல் மற்றும் கருத்துப்படங்களைப் பார்த்து சூழல்களைப் பேச வைத்தல்

ஈ) வாக்கியம் அமைத்தல்

உ) மொழித்திறன் பயிற்சி

ஊ) கையெழுத்துப் பயிற்சி

எ) வாய்மொழிப் பயிற்சி

ஏ) சரியான வாக்கியமாக மாற்றுதல்

ஐ) இனமில்லாதவற்றை எடுத்து எழுதுதல்

ஒ) விடுபட்ட எழுத்துக்களை இணைத்தல்

ஓ) ஏதேனும் ஒரு தலைப்பில் ஐந்து பெயர்களை எழுத வைத்தல் (வினாவுக்குரிய விடையளித்தல்)

ஔ) தன் விவரப்பட்டியல் தயாரித்தல்