SREENARAYANAGURU
OPEN UNIVERSITY

BACHELOR OF COMPUTER APPLICATIONS

PROGRAMME SYLLABUS

(Semester I, II, III, IV,V & VI)

2022 Admission Onwards

CBCS-UG Regulations 2021

June 2021

SREENARAYANAGURU OPEN UNIVERSITY
Programme Structure Template -Bachelor of Computer Applications
(BCA)

Sem	Discipline Core Course (DC) 6 Credit each	Discipline Specific Elective courses (DE) 6 Credit each	Generic Elective (GE) 2 Credit each	Ability Enhancement Compulsory Courses (AC) 4 Credit each	Skill Enhancement Courses (SE) 2 Credit each	Skill Enhancement Compulsory Courses (SC) 2 Credit each	Project Work (PR) 6 Credit each	Total Credit Per Semester
I	DC – 1			AC1				22
	DC – 2							
	Eng I(LC)							
II	DC – 3			AC2				22
	DC – 4							
	MIL – I							
III	DC – 5							22
	DC – 6				SE - 1	SC		
	Eng II (LC)							
IV	DC – 7							22
	DC – 8		GE - 1		SE - 2			

	MIL – II							
V	DC 9	DE - 1						
		DE - 2	GE - 2					20
VI		DE - 3					PROJ	
		DE - 4						24
		DE - 5						
Total	**78 Credit**	**30 Credit**	**4 Credit**	**8 Credit**	**4 Credit**	**2 Credit**	**6 credit**	**132 Credit**

DC	: Discipline Core Course	SE	: Skill Enhancement Courses (Core)
DE	: Discipline Specific Elective Course	AC-1	: Environmental Science
AN-A	: Ancillary Course	AC-2	: Communication course (English or MIL)
AN-B	: Ancillary Course	SC	: Humanism and Logic
GE-1	: General Electives from Other Disciplines	MIL	: Modern Indian Languages
GE-2	: General Electives from Other Disciplines	PROJ	: Project

Semester-wise Programme Details

First Semester			
Sl. No	Type of the course	Course Code	Course Name
1	Discipline Core	B21CA01DC	Introduction to Information Technology
2	Discipline Core	B21CA02DC	Problem Solving and Programming in C
3	English Language Core Course 1	B21EG01LC	Reading & Writing English
4	Ability Enhancement Compulsory Course	B21ES01AC	Environmental Studies

Second Semester			
Sl. No	Type of the course	Course Code	Course Name
1	Discipline Core	B21CA03DC	Computer Architecture and Operating System
2	Discipline Core	B21CA04DC	Data Structures
	Ability Enhancement Compulsory Course	B21EG01AC	English for Communication
		B21ML01AC	പ്രായോഗികമലയാളം (Prayogikamalayalam)

3	**(Learners can choose any one)**	**B21HD01AC**	रोज़मर्रा हिंदी **(Everyday Hindi)**
		B21SN01AC	व्यावहारिकसंस्कृतम् **(Vyavaharika Samskrutham)**
		B21AR01AC	**Communication in Arabic**
4	**Modern Indian Languages I (MIL)** **(Learners can choose any one. The same language should be chosen for MIL- II)**	**B21ML01LC**	മലയാളസാഹിത്യം : കവിത -കഥ - ഉപന്യാസം - നോവൽ **(Malayalasahithyam: Kavita-Kadha- Upanyasam-Novel)**
		B21HD01LC	हिंदी गद्य साहित्य और संरचना **(Hindi prose and structure)**
		B21SN01LC	गद्यं नाटकं व्याकरणं च **(Gadyam Natakam cha)**
		B21AR01LC	**Functional Arabic**

Third Semester			
SI No	Type of the course	Course Code	Course Name
1	Discipline Core	B21CA05DC	Database Management Systems
2	Discipline Core	B21CA06DC	Communication and Networking
3	English Language Core Course 2	B21EG02LC	Literature and the Contemporary World
4	Skill Enhancement Course	B21CA01SE	Programming in Java
5	Skill Enhancement Compulsory Courses (SECC)	B21HL01SC	Humanism and Logic

Fourth Semester			
SI No	Type of the course	Course Code	Course Name
1	Discipline Core	B21CA07DC	Programming with Python
2	Discipline Core	B21CA08DC	Software Engineering
3	Skill Enhancement Course (SEC)	B21CA02SE	Web Development using PHP MVC Framework

4	**Modern Indian Languages (MIL))** **(Learners can choose any one. The same language should be chosen for MIL- II)**	**B21ML02LC**	മലയാള സാഹിത്യ മാതൃകകൾ : ആത്മകഥ, ജീവചരിത്രം, യാത്രാവിവരണം, അനുഭവ സാഹിത്യം **(Malayala Sahithya Mathrukakal: Aathmakadha, Jeevacharitram,Yathravivaranam, Anubhavasahithyam)**
		B21HD02LC	हिंदी पद्य साहित्य और अनुवाद
		B21SN02LC	महाकाव्यं गद्यकाव्यं च **(Mahakavyam Gadyakavyam cha)**
		B21AR02LC	**Literature in Arabic**
5	**Generic Electives - I** **(Learners can choose any one. General Electives from Core Discipline cannot be chosen)**	**B21ML01GE**	ആധുനിക മലയാള സാഹിത്യ ചരിത്രം **(Aadhunika Malayala Sahithya Charithram)**
		B21EG01GE	**Appreciating Literature**
		B21HD01GE	व्यावहारिक हिन्दी **(Communicative Hindi)**
		B21SN01GE	संस्कृतसोपानम् **(Samskruthasopanam)**
		B21AR01GE	**Modern Standard Arabic**

Fifth Semester			
SI No	Type of the course	Course Code	Course Name
1	Discipline Core	B21CA09DC	Web Technology
2	Discipline Specific Elective Courses (DE)	B21CA01DE	Introduction to Data Science
		B21CA11DE	Introduction to Information Security
		B21CA21DE	Introduction to Cloud Computing
3	Discipline Specific Elective Courses (DE)	B21CA02DE	Data Mining and Data Warehousing
		B21CA12DE	E-Commerce and E-Governance
		B21CA22DE	Digital Marketing
4	Generic Electives - II (Learners can choose any one. General Electives from Core Discipline cannot be chosen)	B21HS01GE	Modernization of Kerala
		B21CM01GE	Banking
		B21SO01GE	Introduction to Sociology
		B21EC01GE	Economics for everyday life
		B21PH01GE	Introduction to the philosophy of Sree Narayana Guru

		B21BB01GE	**Entrepreneurship and startup**

Sixth Semester			
SI No	**Type of the course**	**Course Code**	**Course Name**
1	**Discipline Specific Elective Courses (DE)**	**B21CA03DE**	**Data Analytics and Visualisation**
		B21CA13DE	**Cyber Crime**
		B21CA23DE	**Cloud Computing Architecture**
2	**Discipline Specific Elective Courses (DE)**	**B21CA04DE**	**Machine Intelligence**
		B21CA14DE	**Blockchain Technology**
		B21CA24DE	**Internet of Things**
3	**Discipline Specific Elective Courses (DE)**	**B21CA05DE**	**High-Performance Computing**
		B21CA15DE	**Quality Control**
		B21CA25DE	**Bioinformatics**
3	**Dissertation / Project Courses (PR)**	**B21CA01PR**	**Dissertation / Project**

For the following five courses,

1. B21CA02DC Problem Solving and Programming in C (Sem 1)
2. B21CA04DC Data Structures (Sem 2)

3. B21CA05DC Database Management Systems (Sem 3)
4. B21CA07DC Programming with Python (Sem 4)
5. B21CA09DC Web Technology (Sem 5)

the specified condition or criteria applies as follows:

- These are 6 credit courses. 4 credits for theory and 2 credits for practical sessions.
- 12 Counseling hours are assigned for the theory with 4 Blocks
- 18 hours are assigned for the lab sessions
- As part of the CE process, two assignments will assess programming skills attained by students through the evaluation of the Rough Report and fair report of Lab sessions
- Rough report to be submitted after covering the first section or section A as per the syllabus. This will be considered as Assignment 1.
- Fair report, to be submitted at the end of Section B, is considered as Assignment 2.
- There will be no external lab examinations conducted as part of the evaluation.

Evaluation:

The evaluation of the programme will be based on two modes:

1. Continuous Internal Evaluation (CIE).

2. End Semester Examination (ESE).

The CIE and ESE will be in the ratio 30:70.

FIRST SEMESTER

DISCIPLINE CORE COURSE-1

B21CA01DC: INTRODUCTION TO INFORMATION TECHNOLOGY

Number of Credits:6

B21CA01DC: INTRODUCTION TO INFORMATION TECHNOLOGY	
CO1: To learn the functional organization of physical components and architecture of a computer.	
CO2: To understand the working of a PC.	
CO3 To analyse the different I/O devices.	
CO4: To understand the concept of application software and system software	
CO5: To analyse the differences in memory units of a computer	
CO6: Attain skills to create a website using HTML	
Block 1: Computer Fundamentals	
Unit 1	Basic Hardware Concepts - Basic concepts, Working, Hardware fundamentals
Unit 2	Number Systems and Coding
Unit 3	Input/ Output Devices
Unit 4	Different types of Computing Systems - Evolution, Characteristics, Classification
Block II: Instructions, Memory and Storage	
Unit 1	Memory Representation and Hierarchy
Unit 2	Instruction set and Instruction Cycle - RISC, CISC
Unit 3	Registers, Cache Memory and Virtual Memory
Unit 4	Secondary Storage Devices - Magnetic storage, Optical disc, USB
Block III: Software	
Unit 1	System boot up and Software Layers - Software, Files and Folders, Booting, POST
Unit 2	Popular Operating Systems
Unit 3	System Software and Utilities - Programming Languages, Language Translators, Database, Utilities

Unit 4	Application software, Computer Virus and Protection
Block IV: Networks & Internet	
Unit 1	Basic Concepts and Devices - Types of network, Network devices, Work stations, Topologies, Network OS
Unit 2	World Wide Web and Search Engines - Websites, Uniform Resource Locator
Unit 3	Internet Connectivity - Internet Service Provider, Connection Types
Unit 4	Electronic mail system - Features, Web based system, Web pages
Block V: Hyper Text Markup Language	
Unit 1	HTML: Basic tags and divisions - HTML as structured language, HTML document type
Unit 2	Managing List and Table - Frame
Unit 3	Presenting Multimedia in HTML
Unit 4	Linking in HTML - HTML anchor tag, Creating a website
Block VI: Trends in Information Technology	
Unit 1	Applications of IT and Mobile Application Development
Unit 2	IT in other disciplines
Unit 3	Computer Security & Malware - Virus, Anti-virus
Unit 4	Latest Trends in Computer Science - Virtual reality, Augmented reality, Artificial intelligence and Automation, Smart technology

References:

- Introduction to Information Technology, 2nd Edition, ITL Education Solutions Limited, Pearson.
- John D.Carpinelli, Computer systems Organization & Architecture, Pearson Education.
- E.Balaguruswamy, Fundamentals of Computers, McGraw hill, 2014
- Carl Hamacher, Vranesic, Zaky, Computer Organization 4th Edition,
- Dennis P Curtain, Information Technology: The Breaking wave, McGrawhill, 2014
- Peter Norton, Introduction to Computers, McGrawhill, Seventh edition
- The Complete Reference HTML & XHTML, Thomas A Powell, 4thEdition

DISCIPLINE CORE COURSE-2

B21CA02DC: PROBLEM SOLVING AND PROGRAMMING IN C

Number of Credits:6

B21CA02DC : PROBLEM SOLVING AND PROGRAMMING IN C	
CO1: To develop problem-solving strategies, techniques and skills that can be applied to computers and problems in other areas	
CO2: To develop the logic, ability to solve the problems efficiently using C programming.	
CO3: To learn various concepts and techniques for problem solving and will implement those ideas using C programs.	
Block 1: Basic Programming Concepts	
Unit 1	Problem Solving and Algorithms - Top-down and Bottom-up approach, Algorithm , Flow chart, Translators
Unit 2	Introduction to C Programming - Execution, Compiling and Linking
Unit 3	Variables and Data Types - Character set,Tokens, Keywords, Identifiers
Unit 4	Operators and Expressions
Block II I/O Statements ,Control Structures, Arrays, and Pointers	
Unit 1	Input Output Statements - Reading and Writing
Unit 2	Control Structures and Looping - Decision making, Looping Structures, break, continue and goto
Unit 3	Arrays and Strings - Declaration, Initialization, Multi-dimensional array, Strings
Unit 4	Pointers and Dynamic Memory Allocation
Block III: Functions, Structures and Union	
Unit 1	Functions - Built-in function, User defined function, Declaration, Definition, Call and Nested Function
Unit 2	Recursion - Types, Advantages and Disadvantages
Unit 3	Call by Value and Call by Reference
Unit 4	Structure and Union - Concept , Definition
Block IV: Storage Classes, Files, and Preprocessors	

Unit 1	Storage classes-Example programs of different storage classes
Unit 2	Managing files - Data organization in files , File operations
Unit 3	Command-line Arguments
Unit 4	Macros and Preprocessor Directives - Concept, File inclusion, Conditional compilation directives
C Programming Practice	
Part A	**Basic Programming** ● Reading and displaying data using input/output devices. ● Declaring variables by using different data types. ● Write programs using different operators to do various operations. ● Write programs using if, if-else, nested if, if elseif ladder and switch case. ● Write programs using different loops - while, for, do-while. ● Write programs using single dimensional and multi dimensional arrays for storage. ● Write programs with the concept of pointers. ● Create different structures using struct keywords eg:- Student, Employee, Books etc. ● Create different unions with union keyword eg:- Student, Employee, Books etc .
Part B	**Modular Programming & File Management** ● Implement different applications by using functions with/ without parameter and return value ● Implement different applications by using recursive functions ● Write programs to implement call by value method and call by reference method ● Write different programs for file handling operations

References:

- "The C Programming Language" by Brian W Kernighan / Dennis Ritchie
- "Let Us C" by Yashavant Kanetkar
- "Programming in C" by Reema Thareja
- "Computer Basics and C Programming" by Rajaraman V

LANGUAGE CORE COURSE

B21EG01LC: Reading & Writing English

Number of Credits:6

See Annexure-I

ABILITY ENHANCEMENT COMPULSORY COURSE

B21ES01AC:Environmental Studies

Number of Credits:6

See Annexure-I

SECOND SEMESTER

DISCIPLINE CORE COURSE

B21CA03DC: COMPUTER ARCHITECTURE AND OPERATING SYSTEMS

Number of credits: 6

B21CA03DC: COMPUTER ARCHITECTURE AND OPERATING SYSTEMS	
CO1: To discuss the basic functional units and architecture of computers.	
CO2: To introduce parallel processing concepts.	
CO3: To introduce basic operating system services	
CO4: To introduce memory management and file system concepts	
Block 1: Basic Functional Architecture	
Unit 1	Generation of Computers, Functional Units and Bus - Bus structures and Types
Unit 2	Timing and Control : Timing Signals
Unit 3	Addressing Modes - Advantages
Unit 4	Program Control - Conditional and Unconditional branch instruction, Compare instruction, Halting instruction
Block II: I/O and DMA	
Unit 1	Register Transfer Languages
Unit 2	Input-Output Organization - Peripheral devices, ASCII, Input Output interface, Bus
Unit 3	Priority Interrupt - Polling , Type, Priority encoder, Software routine
Unit 4	Direct Memory Access - DMA controller
Block III : Parallel Computer Structures	
Unit 1	Introduction to Parallel Processing - Concepts, Serial and Parallel Data Processing, Pipeline computer, Multiprocessing system
Unit 2	Architectural Classification - Schemes and Types
Unit 3	Pipelining - Introduction and Classification
Unit 4	Vector Processing and Array Processors - Vector instruction, Types and Limitations of array processors

Block IV : Basic concepts of Operating Systems	
Unit 1	Operating System components and design - Components, Booting, Types and Structure
Unit 2	Operating System Services - System calls
Unit 3	Process Scheduling - Process scheduling queues, Scheduler, Context switch, Scheduling algorithms: FCFS, SJF, SRTF, RR
Unit 4	Multiple Processor Scheduling - Approaches
Block V: Process Synchronization	
Unit 1	Interprocess Communication - Concepts of process, Process state diagram, Process control block, Operations on processes, Semaphore
Unit 2	Introduction to Process Synchronisation - Race condition, Critical section problem, Classical problems of synchronization
Unit 3	Semaphores and Monitors
Unit 4	Deadlock in Operating System - Methods for handling deadlock
Block VI: Memory management and File systems	
Unit 1	Memory Management Strategies - Techniques, requirements, Logical and Physical addressing, Swapping, Dynamic memory allocation
Unit 2	Paging and Segmentation
Unit 3	Virtual Memory Management -Virtual address space , Demand paging, Page replacement
Unit 4	File Allocation and Management- Directories

References*:*

- M.Morris Mano-Computer Systems Architecture, Third Edition, Pearson Education
- Kai Hwang and F A Briggs-Computer Architecture and parallel processing, McGraw Hills,1990
- Abraham Silberschatz, Peter Galvin and Greg Gagne - Operating System Principles, Seventh Edition, John Wiley
- William Stallings - Operating Systems, Sixth Edition, Prentice Hall of India, Pearson
- Carl Hamacher -Computer Organization, Fifth Edition, Tata McGraw Hill.
  John P Hayes -Computer Architecture & Organization–Mc Graw Hill
- William Stallings-Computer Organization and Architecture, Seventh Edition, Pearson Education
- Milan Kovic - Operating Systems, Second Edition, TMH

DISCIPLINE CORE COURSE

B21CA04DC : DATA STRUCTURES

Number of credits: 6

B21CA04DC : DATA STRUCTURES	
CO1: To develop knowledge of basic data structures and their implementations	
CO2: To familiarize different data structures in context of writing efficient programs	
CO3: To enhance the ability to apply appropriate data structures in problem solving.	
CO4: To make aware of algorithms for solving problems like sorting, searching, insertion and deletion of data	
Block 1: Basic Data Structures	
Unit 1	Linear and Nonlinear structures - Primitive and Non-primitive data structures, Static and Dynamic data structures,Contiguous and non contiguous allocation,Static and Dynamic memory allocation
Unit 2	Array as a data structure - Declaration, initialization and accessing of array elements. Types of array, memory representation of 0ne dimensional and Two dimensional array, static and dynamic memory allocation
Unit 3	Stack - Representation, Basic Operations of Stack, Polish Notation- Queue - Introduction, Types, Basic operations and Applications of Queue
Unit 4	Circular Queue, Double Ended Queue and Priority- Queue Applications - Introduction to applications of Queue, Recursion, Tower of Hanoi problem
Block II: Linear Structures	
Unit 1	Linked allocations - Linked list - Representation, Implementation, Traversal, Self Referential Structure
Unit 2	Operations on linked list- Search and Sort Linked list vs array
Unit 3	Circular linked list, Doubly linked list, Operations and traversal in circular linked list and doubly linked list
Unit 4	Linked list representation of stack and queue

Block III: Non-Linear Data Structures	
Unit 1	Graphs - Types and Terminology, Graph representation and traversal (DFS, BFS)
Unit 2	Trees - Binary tree (Complete, full, 2-tree), Tree traversal
Unit 3	Binary Search Tree - Searching, Insertion, Deletion
Unit 4	Balancing binary tree , AVL tree, B- tree
Block IV: Designing Algorithms	
Unit 1	Complexity of Algorithms - Best Case, Worst Case, Average case - Time and Space complexity- Asymptotic notation, Estimating complexity - Sequence and Loop Structures
Unit 2	Searching and Sorting - Linear search, Insertion sort and Selection sort
Unit 3	Divide and Conquer Algorithms: Min-Max, Binary search, Quicksort
Unit 4	Minimum cost spanning trees3
Data Structure Programming Practice	
Part A	**Linear and Non-Linear Data Structures Implementation** ● Arrays ○ Write a program to implement a simple array and display its elements. ○ Implement various array operations such as insertion, deletion, and searching. ● Linked List ○ Write a program to implement a singly linked list of integers and display its elements. ○ Implement various linked list operations such as insertion, deletion, and searching. ● Queue ○ Implement various queue operations such as insertion, deletion, and searching. ○ Write a program to implement a queue using a linked list. ● Stack ○ Implement various stack operations such as push, pop, and searching ○ Write a program to implement a stack using a linked list
Part B	**Searching and Sorting Algorithm Implementation** ● Linear Search

	○ Write a program to implement linear search algorithm on an array of integers in the selected programming language ○ Display the number of comparisons required to search an element ○ Implement linear search on a linked list/queue/stack ● Insert sort ○ Write a program to implement insertion sort algorithm on an array of integers in the selected programming language ○ Display the sorted array ○ Implement insertion sort on a linked list/queue/stack ● Selection sort ○ Write a program to implement selection sort algorithm on an array of integers in the selected programming language ○ Display the sorted array ○ Implement selection sort on a linked list/queue/stack ● Binary Search ○ Write a program to implement binary search algorithm on a sorted array of integers in the selected programming language ○ Display the number of comparisons required to search an element ○ Implement binary search on a binary search tree ● Quicksort ○ Write a program to implement quicksort algorithm on an array of integers in the selected programming language ○ Display the sorted array ○ Implement quicksort on a binary search tree Perform complexity analysis of respective sorting and searching algorithm.

References:

- "Data Structure Using C" by A K Sharma
- "Data Structures and Program Design in C" by Kruse Robert L
- "Data Structures and Algorithm Analysis in C" by Mark Allen Weiss
- "Data Structures and Algorithms" by Alfred V Aho and Jeffrey D Ullman

Ability Enhancement Compulsory Course

(Learners can choose any one)

Number of credits: 6

See Annexure-II

B21EG01AC	**English for Communication**
B21ML01AC	പ്രായോഗിക മലയാളം (Prayogikamalayalam)
B21HD01AC	रोज़मर्रा हिंदी **(Everyday Hindi)**
B21SN01AC	व्यावहारिकसंस्कृतम् **(Vyavaharika Samskrutham)**
B21AR01AC	**Communication in Arabic**

Modern Indian Languages I (MIL-I)

(Learners can choose any one. The same language should be chosen for MIL- II)

Number of credits: 6

See Annexure-II

B21ML01LC	മലയാള സാഹിത്യം : കവിത -കഥ - ഉപന്യാസം - നോവൽ **(Malayala Sahithyam: Kavita- Kadha- Upanyasam-Novel)**
B21HD01LC	हिंदी गद्य साहित्य और संरचना **(Hindi prose and structure)**
B21SN01LC	गद्यं नाटकं व्याकरणं च **(Gadyam Natakam cha)**
B21AR01LC	**Functional Arabic**

THIRD SEMESTER

DISCIPLINE CORE COURSE

B21CA05DC: DATABASE MANAGEMENT SYSTEMS

Number of credits: 6

B21CA05DC: DATABASE MANAGEMENT SYSTEMS	
CO1: To understand and successfully apply logical database design principles, including E-R diagrams and database normalization.	
CO2: To introduce the basic concepts including the structure and operation of the relational data model along with integrity constraints	
CO3: To construct simple and moderately advanced database queries using Structured Query Language (SQL).	
CO4: To understand the design of a database system using normalization	
CO5: To understand the concept of a database transaction and related database facilities, including concurrency control, backup, recovery, locking protocols, Security and Integrity.	
Block 1: Introduction to DBMS, ER Model	
Unit 1	Introduction to DBMS - File system Vs DBMS, Advantages and Structure of DBMS, Other models, Levels of abstraction
Unit 2	Database System Architecture
Unit 3	ER Model - Keys, Relationship
Unit 4	ER Model to database schema
Block II: Relational Database design and SQL	
Unit 1	Functional Dependency - Types, Normalization
Unit 2	SQL Concepts - SQL data types
Unit 3	Built-in Functions
Unit 4	Views and Transaction Control Commands
Block III: PL/SQL	
Unit 1	Introduction to PL/SQL - Advantages and Disadvantages of PL/SQL
Unit 2	Cursors
Unit 3	Procedures and Functions - PL/SQL Procedures, Parameter mode in procedures
Unit 4	Triggers

Block IV: Transaction Management	
Unit 1	Introduction to Transaction Management - Transaction states and Properties
Unit 2	Serializability - Schedule, Types of serializability
Unit 3	Recovery - Types of failures , Recovery outlines
Unit 4	Deadlocks - Lock, Conditions for deadlock, Deadlock prevention
Database Practice	
Practicing basic SQL Queries	Create Table, Constraints, Data Types, Drop Table, Alter Table, Drop a Column (An Attribute), Insert, Delete, Update.
	BASIC QUERIES IN SQL Aliases, * and Distinct, Where-Clause, LIKE, Set Operations, JOINS, Nesting of Queries.
Advanced SQL queries and PL/SQL	THE EXISTS and NOT EXISTS FUNCTION, Aggregate Functions, Grouping, Having-Clause, Substring.
	Views, SQL TRIGGERS, SQL Procedures, Functions, Cursors

References:

- Database Management Systems - Raghu Ramakrishnan and Johannes Gehrke, Third Edition, McGraw Hill, 2003
- Database Systems: Design, Implementation and Management, Peter Rob, Thomson Learning, 7Edn.
- Concept of Database Management, Pratt, Thomson Learning, 5Edn.
- Database System Concepts - Silberschatz, Korth and Sudarsan, Fifth Edition, McGraw Hill, 2006
- The Complete Reference SQL - James R Groff and Paul N Weinberg

DISCIPLINE CORE COURSE

B21CA06DC: COMMUNICATION AND NETWORKING

Number of credits: 6

B21CA06DC: COMMUNICATION AND NETWORKING	
CO1: To understand the concepts of Data Communication.	
CO2: To familiarize with the OSI layer	
CO3: To understand the working of transmission protocols.	
CO4: To learn the concepts of Internetworking and network security.	
Block I: Data Communication	
Unit 1	Basic Concepts of data communication - Components, Data representation, Data flow, Network criteria, Physical structure attribute, Network model
Unit 2	Digital signals and Transmission modes
Unit 3	Digital Transmission concepts - Digital to digital conversion
Unit 4	Types of transmission media - Guided and Unguided media
Block II: Networking Architecture	
Unit 1	Introduction to Networks and Topologies
Unit 2	Switching techniques - Circuit switching, Message switching, Packet switching
Unit 3	The OSI Model - Layers of OSI model
Unit 4	Error detection and correction in OSI model - Types or errors , Error control, Error detection and Correction techniques
Block III: TCP/IP	
Unit 1	TCP/IP Protocol Suite : TCP/IP protocol Architecture
Unit 2	Connection less and connection oriented services

Unit 3	Addressing: Classful and classless
Unit 4	Application Layer Protocols- DNS, HTTP, FTP, PPP, Remote Login
Block IV: Internetworking	
Unit 1	Introduction to internetworking concepts
Unit 2	Internetworking Devices - Routers, Gateway, Switch, Bridge
Unit 3	Congestion Control : Concepts, Congestive-Avoidance Algorithms, Leaky Bucket Algorithm, Token bucket Algorithm
Unit 4	Routing : Purpose of routing, Routing Protocols : Distance Vector Routing Protocol, Link State Routing Protocol, Advanced Distance vector routing protocol (hybrid routing protocol)
Block V: Network Security	
Unit 1	Computer Security Concepts : Three principles of network security
Unit 2	OSI Security Architecture
Unit 3	Network Security Attacks : Types of attacks
Unit 4	Potential Security Mechanisms : Encipherment, Digital Signature, Access Control, Data Integrity, Authentication Exchange, Traffic Padding, Routing Control , Notarization
Block VI: Network Administration	
Unit 1	Overview of Network Administration
Unit 2	Setting Up Networks
Unit 3	Cables and Connectors
Unit 4	Network Configuration

References:

- B. A. Forouzan - Data communication and Networking, Fourth edition-,TMH
- Andrew S Tanenbaum - Computer Networks ,Fourth Edition, Prentice Hall of India.
- Cryptography and Network Security Principles and Practices, William Stallings, Fifth Edition
- Computer networks / Andrew S. Tanenbaum, David J. Wetherall. Fifth Edition
- Bozidar Levi, UNIX Administration: A Comprehensive Sourcebook for Effective Systems & Network Management, CRC Press, 2001

- Tony Bautts, Terry Dawson, Gregor N. Purdy, Linux Network Administrator's Guide, O'Reilly, 2005
- Smith, Linux Network Security, Shroff Publishers.

SKILL ENHANCEMENT COURSE

B21CA01SE: PROGRAMMING IN JAVA

Number of credits: 2

B21CA01SE: PROGRAMMING IN JAVA	
CO1: To introduce java concepts	
CO2: To identify and use Oops concepts	
CO3: To manipulate strings and exceptions	
CO4: To make aware of database connectivity in java	
Block 1: Fundamentals of java programming	
Unit 1	Understanding Java (Writing main(), data types in java, setting up the environment, JVM-platform independence, Compiling and executing)
Unit 2	Concept of class and object, Methods, Constructor, Access specifiers, Static and Final
Unit 3	Packages and Import statements in java, Input-Output Stream, Arrays
Unit 4	Abstraction: Abstract Class, Abstract method, Interface, Inheritance, overriding and Overloading
Block II: Specific features of java programming	
Unit 1	String and string buffer Class, Exception handling
Unit 2	Multithreading - Creating Threads and Runnable Interface
Unit 3	Applets and Event handling - Delegation Event Model
Unit 4	Java Database Connectivity

References:

- Herbert Scheldt, Java The Complete Reference, 8th Edition, Tata McGraw-Hill Edition, ISBN: 9781259002465
- E Balaguruswamy, Programming in Java: A Primer, 4th Edition, Tata Mcgraw Hill Education Private Limited, ISBN: 007014169X.
- Kathy Sierra, Head First Java, 2nd Edition, Shroff Publishers and Distributors Pvt Ltd, ISBN: 8173666024.

English Language Core Course -2

B21EG02LC: Literature and the Contemporary World

Number of credits: 6

See Annexure-III

Skill Enhancement Compulsory Courses (SECC)

B21HL01SC: Humanism and Logic

Number of credits: 2

See Annexure-III

FOURTH SEMESTER

DISCIPLINE CORE COURSE

B21CA07DC: PROGRAMMING WITH PYTHON

(Number of Credits:6)

B21CA07DC: PROGRAMMING WITH PYTHON	
CO1: To attain a strong foundation of the Python data structures and control structures and to learn various comprehensions available with a list, set and dictionaries.	
CO2: To understand the object-oriented programming concepts using Python.	
CO3: To understand the exception handling techniques	
CO4: To learn to use regular expressions in Python programs.	
CO5: To understand how to manage database access in Python.	
CO6: To learn to import and work with third-party modules like NumPy, Matplotlib and Pandas.	
Block 1: Introduction to Python, Data Structures and Operations	
Unit 1	Introduction to Python - High level language, Python interactive mode, Phython IDE, Phython variable name
Unit 2	Operators in Python
Unit 3	Data structures in Python - Data types in Phython, List indexing and slicing, Phython tuples
Unit 4	Built-in methods of Data Structures
Block II: Decision making, Loops, Comprehensions, Functions, Modules & Packages	
Unit 1	Decision Making and Loops
Unit 2	Comprehensions : List, Dictionary, Comprehensions, Set, Generator
Unit 3	Functions : Function declaration, types of functions and usage
Unit 4	Modules & Packages
Block III: File Handling, Object-Oriented Programming, Exception Handling and Regular Expressions	
Unit 1	File Handling - Introduction, open(), read(), write(), Rename a file, Delete a file, seek(), tell(), Truncating file
Unit 2	Object-Oriented Programming - Introduction, OOP concepts,

Unit 3	Exception Handling - Introduction, Exception, Errors
Unit 4	Regular Expressions - Special sequence
Block IV: Database Programming, Familiarizing NumPy, Matplotlib and Pandas	
Unit 1	Database Programming - Introduction, Examples for Database programming
Unit 2	Familiarizing NumPy - Pip in- Significance of data science in python, Creating array, indexing array
Unit 3	Introduction to Matplotlib - Data analysis life cycle, Installation, Scatter graph, Bar chart , Pie chart
Unit 4	Introduction to Pandas - Panel panda, Advantages of panda, Data cleaning
Practicing Python Programming	
PART A	**Data Structures and Functions** ● Write programs using different operators to do various operations ● Write programs to demonstrate string handling ● Write programs using if, if-else, nested if, if else if ladder and switch case ● Write programs using different loops - while, for, do-while ● Comprehensions Write programs to demonstrate different comprehensions - List, Set and Generator Comprehensions ● Functions and Lambda functions Implement different applications by using functions Implement different applications by using lambda functions ● Nested structures Implement different applications by using nested structures ● Modules Implement different applications by using modules
PART B	**File management and Data Analysis** ● Write different programs for file handling operations ● Object-Oriented Programming ● Write different programs for exception handling functions ● Write programs to demonstrate regular expressions ● Write programs to implement Database operations ● Write programs to analysis data using Libraries - NumPy, Matplotlib and Pandas

References:

- Python: The Complete Reference, Martin Brown, McGraw Hill Education.
- How to Think Like a Computer Scientist: Learning With Python, Allen Downey, Green Tea Publications

- Taming Python by Programming, Jeeva Jose, Khanna Publishers, New Delhi, 2016.

Web Resources:

- https://www.python.org
- https://www.w3schools.com/python
- https://www.learnpython.org/
- https://numpy.org

DISCIPLINE CORE COURSE

B21CA08DC: SOFTWARE ENGINEERING

(Number of Credits:6)

B21CA08DC: SOFTWARE ENGINEERING	
• Familiarize the fundamental concepts of software engineering	
• Introduce Software Project Management, SRS, Design, Coding and Testing	
• Apply various life cycle models in the software development projects.	
• Learn Object oriented Software engineering concepts	
• Introduce the concept of software maintenance and new trends in software engineering	
Block I: Software Lifecycle Models	
Unit 1	Evolution, Software Development Projects-Program versus product
Unit 2	Software Development Life Cycle
Unit 3	Traditional process Models: Waterfall model, incremental model, spiral model
Unit 4	Comparison of different life cycle models
Block II: Software Project Management	
Unit 1	Project Planning, Metrics for project size estimations
Unit 2	Project Estimation Techniques
Unit 3	Basic concepts of CPM, PERT and Gantt Chart.
Unit 4	Software Requirements Specification, Requirement Elicitation and Analysis, Requirement Validation, Requirement Management
Block III: Software Design	
Unit 1	System Modeling: Context models, Interaction models, Structural models, Behavioral models
Unit 2	Software Architectural Design and Implementation - views and patterns, Implementation using design patterns
Unit 3	Function oriented design: Overview of SA/SD Methodology
Unit 4	Developing the DFD model of a system
Block IV: Coding and Testing	
Unit 1	Coding standards and Code review
Unit 2	Software Reliability and quality management

Unit 3	Testing: Unit testing, integration testing, validation and system testing
Unit 4	Deployment: Configuration management, deployment tools
BLOCK V : Object-oriented design concepts	
Unit 1	Unified Modeling Language
Unit 2	Static and dynamic diagrams
Unit 3	Design walkthroughs, critical design review, consistency checkers
Unit 4	Other UML diagrams
BLOCK VI : DevOpS	
Unit 1	Introduction to DevOpS
Unit 2	Software Development Life Cycle
Unit 3	Agile manifesto and Agile requirements, Key Aspects of Scrum and Scrum Process Flow
Unit 4	Continuous Integration & Deployment

References:

- Ian Somerville, Software Engineering, 10th Edition, Pearson, 2017.
- Pressman R. S. Software engineering: a practitioner's approach. Palgrave Macmillan; 2005.
- Gamma E, Helm R, Johnson R, Johnson RE, Vlissides J. Design patterns: elements of reusable object-oriented software. Pearson Deutschland GmbH; 1995.
- Rajib Mall, Fundamentals of Software Engineering, Second Edition, PHI
- Pankaj Jalote, An Integrated Approach to Software Engineering, Narosa
- Waman S Jawadekar, Software Engineering, McGraw Hill, 2013

SKILL ENHANCEMENT COURSE

B21CA03SE: WEB DEVELOPMENT USING PHP MVC FRAMEWORK

(Number of Credits:2)

B21CA03SE: WEB DEVELOPMENT USING PHP MVC FRAMEWORK	
CO1: To understand PHP	
CO2: To design a form in PHP	
CO3: To set up Cookies	
CO4: To create a web application	
Block 1: Introduction to PHP	
Unit 1	Introduction to PHP: Setting up XAMPP/WAMPP; php.ini file; PHP syntax
Unit 2	PHP Data types, Operator and Expression, Constants, Conditional Statements, Loops, Functions
Unit 3	Embedding PHP in HTML, Designing a form with PHP, Generate File uploaded form, Read data from Form, form validation, redirecting PHP form after submission
Unit 4	Session Control; Session Functionalities, Cookie, Setting Cookies with PHP; Using Cookies with Sessions; Deleting Cookies; Registering Session variables
Block II : Database Programming; MVC Framework	
Unit 1	Overview of MySQL; Establishing database connection in PHP – MySQLi, PHP Data Objects (PDO), Database Programming using PHP &amp, MySQL
Unit 2	Exception Handling (try, catch, finally, throw), Three-tier architecture , XML, JSON; AJAX; Pagination, REST API
Unit 3	Creating a web application using PHP and MySQL
Unit 4	Concept of Model, View, and Controller (MVC), Various PHP MVC frameworks – CodeIgniter, Laravel. (Benefits of MVC frameworks; Page Validations and Security, Installation and configuration of Laravel, development of the application and its hosting.)

References:

- Julie C.Meloni, PHP, MySQL and Apache, Pearson Education
- Head First PHP & MySQL – by Lynn Beighley & Michael Morrison
  Learning PHP, MySQL, JavaScript, and CSS: A Step-by-Step Guide to Creating Dynamic Websites – by Robin Nixon

MODERN INDIAN LANGUAGES - II (MIL-II))

(Learners should choose the same language chosen for MIL- I)

(Number of credits: 6)

See Annexure-IV

B21ML02LC	മലയാള സാഹിത്യ മാതൃകകൾ : ആത്മകഥ, ജീവചരിത്രം, യാത്രാവിവരണം, അനുഭവ സാഹിത്യം (Malayala Sahithya Mathrukakal: Aathmakadha, Jeevacharitram,Yathravivaranam, Anubhavasahithyam)
B21HD02LC	हिंदी पद्य साहित्य और अनुवाद (Hindi Poetry and Translation)
B21SN02LC	महाकाव्यं गद्यकाव्यं च (Mahakavyam Gadyakavyam cha)
B21AR02LC	Literature in Arabic

GENERAL ELECTIVE - I

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

(Number of credits: 2)

See Annexure-IV

B21ML01GE	ആധുനിക മലയാള സാഹിത്യ ചരിത്രം (Aadhunika Malayala Sahithya Charithram)
B21EG01GE	Appreciating Literature
B21HD01GE	व्यावहारिक हिन्दी (Communicative Hindi)
B21SN01GE	संस्कृतसोपानम् (Samskruthasopanam)

B21AR01GE	**Modern Standard Arabic**

FIFTH SEMESTER

B21CA09DC: WEB TECHNOLOGY

B21CA09DC: WEB TECHNOLOGY	
CO1: To understand the various tools and languages required for the technical and creative design of state-of-the-art web sites	
CO2: To apply the tools for creating static and dynamic web pages.	
CO3: To analyse the current trends and styles in web design and applications	
Block I: Advanced HTML	
Unit 1	Linking - Using image as a Link, Linking to email
Unit 2	Layers and Image maps
Unit 3	Frames, Audio and Embed tag - Form attribute and controls, Button
Unit 4	Form tag
Block II: Javascript	
Unit 1	Javascript, Variables and operators - Features and Code
Unit 2	Control structures, Functions and Objects
Unit 3	Pop up boxes, Line breaks
Unit 4	Javascript with HTML, Predefined objects, Cookies
Block III: Cascading Style Sheets	
Unit 1	Creating Style Sheets
Unit 2	CSS Properties
Unit 3	Alignment of Text, Colour, The Box Model, Background Images, Span and div Tags
Unit 4	CSS overflow, Float, Inline blocks, CSS border images, Rounded corners
Block IV: XML	
Unit 1	Style sheet Basics, CSS, HTML Elements, Selectors
Unit 2	XML overview - Encoding , Declaration, Comments, Tags and Elements
Unit 3	XML processing, Encoding, Validation.
Unit 4	XML DTDs, XML schemas, Tree structure, DOM, XML namespaces.
	Practicing Web Development

Part A (HTML)	1. Practicing basic HTML tags, text tags, paragraph styles, headings, and lists 2. Tables in HTML, nested tables, Frames in HTML, nested frames, Link and Anchor Tags 3. Including graphics, video and sound on web pages 4. Layers & Image Maps 5. Creating animated Gifs, Lists 6. Cascading Style sheets 7. HTML forms and Fields
Part B (JavaScript)	8. Exercises covering basic constructs of JavaScript 9. Form Validation using JavaScript 10. Development of a website involving a variety of tools practiced above

References:

- V.K. Jain, Advanced Programming in Web Design, Cyber Tech Publications Joel Sklar
- Web Design Principles, Vikas, 5thEdition
- The Complete Reference HTML & XHTML, Thomas A Powell, 4thEdition
- H M Deitel, P J Deitel& A B Goldberg, Internet and World Wide Web programming: How to Program, 3/e, Pearson Education
- Heather Williamson 'XML The Complete Reference'

DISCIPLINE SPECIFIC ELECTIVE COURSES - I (DE-I)

(Learners may choose any one of the three courses in DE-I)

B21CA01DE: INTRODUCTION TO DATA SCIENCE

(Number of credits: 6)

B21CA01DE: INTRODUCTION TO DATA SCIENCE	
CO1: Introduce the concepts of data science	
CO2: Describe different ways of collecting data and data processing	
CO3: Introduce the basic concepts of exploratory statistical analysis (using Python)	
CO4 : Describe the creation and validation of basic regression models (using Python)	
CO5: Outline Natural Language Processing using python	
Block 1: Data Science Basics	
Unit 1	Introduction to data science
Unit 2	Application of data science
Unit 3	Attribute Types, Structured and unstructured data
Unit 4	Data Security Issues
Block II: Data collection	
Unit 1	Getting data, reading files
Unit 2	Scraping the web-HTML and parsing thereoF
Unit 3	Using APIs –JSON, Using an unauthenticated API
Unit 4	Finding APIs
Block III: Data Exploration	
Unit 1	Single dimension and multi-dimensional data
Unit 2	Data preparation, Cleaning and Integration,
Unit 3	Data reduction, Data transformation and Discretization
Unit 4	Feature Extraction(concepts only)
Block IV: Exploratory Statistical Analysis	

Unit 1	Statistical inferences, Population and Samples
Unit 2	Central Tendencies
Unit 3	Skewness and Kurtosis – Box Plots – Pivot Table
Unit 4	Heat Map – Correlation Statistics – ANOVA
Block V: Introduction to Machine Learning	
Unit 1	Simple regression
Unit 2	Multiple Regression
Unit 3	Model Evaluation using Visualization;
Unit 4	Measures for -Sample Evaluation, Prediction and Decision Making.
Block VI: Text Data Analysis	
Unit 1	Natural language processing
Unit 2	Network analysis
Unit 3	Map Reduce
Unit 4	Matrix multiplication

References:

- Joel Grus, Data science from scratch O' Reilly Media Inc, 2015 ISBN: 9781491901427
- Cathy o'Neil and Rachel Schutt Doing data science, straight talk from the frontline O'Reilly 2015
- Jiawei Han, Micheline Kamber and jain pei " Data mining concepts and techniques" Third edition ISBN 0123814790,2011.
- Jojo Moolayil, "Smarter Decisions: The Intersection of IoT and Data Science", PACKT, 2016.

DISCIPLINE SPECIFIC ELECTIVE COURSES - I (DE-I)

(Learners may choose any one of the three courses in DE-I)

B21CA11DE: INTRODUCTION TO INFORMATION SECURITY

(Number of credits: 6)

B21CA11DE: INTRODUCTION TO INFORMATION SECURITY	
CO1: To learn the basics of Information security	
CO2: To understand the Public and private key techniques	
CO3: To understand the Authentication techniques	
CO4: To apply the Digital Signature and network Security Applications	
CO5: To understand the basics of email and system security	
Block 1: Introduction to Computer Security	
Unit 1	Security attacks, Services, Mechanisms
Unit 2	Classical Encryption Techniques : substitution and transposition
Unit 3	Substitution techniques
Unit 4	Transposition techniques, Steganography
Block II: Block Ciphers and Key Management	
Unit 1	Data Encryption Standard(DES)
Unit 2	Public-Key Cryptography and RSA
Unit 3	Key Management
Unit 4	Message Authentication and Hash Functions
Block III: Authentication	
Unit 1	Authentication requirements and Models
Unit 2	Two-factor authentication
Unit 3	Message Authentication Codes
Unit 4	Authentication Protocols
Block IV: Digital signature	

Unit 1	Digital signature models
Unit 2	Digital Signature Standard
Unit 3	Network Security Applications:
Unit 4	SSL protocol
Block V: E-Mail security	
Unit 1	Pretty Good Privacy
Unit 2	MIME.
Unit 3	IP Security
Unit 4	IPsec services and components
Module VI: System Security	
Unit 1	Intrusion detection
Unit 2	malicious software
Unit 3	Virus and Malware
Unit 4	Firewall

References:

- William Stallings, "*Cryptography and Network Security: Principles and Practice",* Fifth edition Pearson.
- Mark Stamp's Information Security: Principles and Practice by Deven N Shah, Wiley Publishers.
- Charlie Kaufman, Radia Perlman, Mike Speciner, Network Security- Private Communication in a Public World, Pearson Education
- Atul Kahate, Cryptography& Network Security, TMH, 2013

DISCIPLINE SPECIFIC ELECTIVE COURSES - I (DE-I)

(Learners may choose any one of the three courses in DE-I)

B21CA21DE: INTRODUCTION TO CLOUD COMPUTING

(Number of credits: 6)

B21CA21DE: INTRODUCTION TO CLOUD COMPUTING	
CO1: To remember the concepts of cloud computing	
CO2: To identify cloud computing models and automation tools	
CO3: To understand the key technologies and services involved in cloud computing	
CO4: To implement appropriate technologies	
CO5: To analyze cloud computing solutions	
CO6: To create appropriate cloud solutions	
Block 1: Introduction to Cloud Computing	
Unit 1	Cloud Computing Overview
Unit 2	Evolution of cloud computing
Unit 3	Cloud Computing Deployment Models.
Unit 4	Components of Cloud Computing
Block II: Cloud Computing Services	
Unit 1	SPI Service Models
Unit 2	Storage as a Sevice (STaaS), Database as a Service (DBaaS), Management as a Service(MaaS), Function as a Service (FaaS).), Business Process as a Service(BPaaS), Security as a Service, Identity as a Service(IdMaaS).
Unit 3	Distributed Computing as a Service (DCaaS), Parallelism as a Service, Serverless Computing.
Unit 4	Popular Cloud Computing Service Models.
Block III: Cloud Administration	
Unit 1	Administration Portal, Account Creation and Management
Unit 2	AAA Model, Single Sign-On.
Unit 3	Resource Management

Unit 4	Load balancing, Compliance and Auditability.
Block IV: Related Technologies and Cloud Migration	
Unit 1	Peer to Peer, Client- Server, Distributed Computing, High-Performance Computing, Grid Computing, Utility Computing, Autonomic Computing, Jungle Computing.
Unit 2	Benefits and uses of Cloud
Unit 3	Cloud Migration Process- Plan, Execute, Monitor
Unit 4	Cloud Migration Approaches
Block V: Cloud Automation Tools	
Unit 1	Continuous Integration and Deployment (CI/CD) pipelines
Unit 2	Source code control systems and Version Control Tools.
Unit 3	Survey of Popular CI/CD Tools
Unit 4	Cloud Applications- Popular Cloud Services
Block VI: Mobile Cloud Computing	
Unit 1	Introduction to Mobile Cloud Computing, Need, Features, Benefits
Unit 2	Mobile Cloud Computing Challenges, Challenges at Cloud Ends.
Unit 3	Architecture of Mobile Cloud Computing, Energy-Aware Cloud Computing.
Unit 4	Application development in clouds- Phases in developing private/public clouds

References:

- Cloud Computing Black Book, Kailash Jayaswal, Jaganath Kallakurchi, Donald J Houde, Dr. Deven Shah & Kogent Learning Solutions Inc., dreamtech Press, 2014
- Cloud Computing: A practical approach for learning and implementation, A Srinivasan, J Suresh, Pearson Education, 1 ED, 2014
- Cloud Computing- Kris Jamsa, Jones & Bartlett Student Edition, 1 ED, 2013
- Cloud Computing Principles and paradigms- Rajkumar Buyya, James Broberg, Andrzej Goscinski, Wiley, 1 ED 2013
- Cloud Computing master the Concepts, Architecture and Applications with real world examples and case studies, Kamal Kant Hiran, Ruchi Doshi, Temitayo Fagbola, Mehrul Mahrishi, BPB Publishers, 1 ED, 2019

DISCIPLINE SPECIFIC ELECTIVE COURSES - II (DE-II)

(Learners may choose any one of the three courses in DE-II)

B21CA02DE: DATA MINING AND DATA WAREHOUSING

(Number of credits: 6)

B21CA02DE: DATA MINING AND DATA WAREHOUSING	
CO1: To understand the basic concepts of data mining	
CO2: To apply association rules for mining data	
CO3: To identify and appraise various classification and clustering techniques.	
CO4: To preprocess data for mining applications	
CO5: To compare advanced mining techniques	
CO6: To design and deploy appropriate classification techniques	
Block 1: Introduction to Data Mining	
Unit 1	Fundamentals of data mining, Functionalities and Techniques
Unit 2	Classification of Data Mining Systems, Major issues and Steps in Data Mining.
Unit 3	Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse
Unit 4	Business Applications and Scientific Applications of Data Mining
Block II: Data Warehousing	
Unit 1	Characteristics, Functionality and Tools of Data Warehouse
Unit 2	Multidimensional Data Model, Data Warehouse Architecture and models
Unit 3	Data Warehouse Implementation-
Unit 4	Data Cube and OLAP Technology.
Block III: Association Rules	
Unit 1	Market Basket analysis, Association Rule Mining.
Unit 2	Apriori Algorithm, Finding Frequent Item sets and Association Rules
Unit 3	From Association Mining to Correlation Analysis.
Unit 4	Constraint-Based Association Mining- Meta Rule Guided Mining, Additional Rule Constraints.

Block IV: Classification	
Unit 1	Classification Methods
Unit 2	Decision based algorithms: K Nearest Neighbours, Decision Tree Based Algorithms
Unit 3	Neural Network based Algorithms
Unit 4	Ensembles- Bagging, Boosting, Stacking, Voting, Accuracy and Error measures
Block V: Clustering	
Unit 1	Introduction to Clustering and Cluster Analysis
Unit 2	A Categorization of Major Clustering Methods, Partitioning Methods- k-Means, k- Medoids, Hierarchical Methods- Agglomerative, Divisive Clustering.
Unit 3	Density-Based Methods, Grid-Based Methods- Clustering High-Dimensional Data,.
Unit 4	Model-Based Clustering Methods- Neural Network Approach, Constraint-Based Cluster Analysis, Outlier Analysis
Block VI: Advanced Mining	
Unit 1	Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects.
Unit 2	Spatial Mining- Spatial queries, Spatial Data structures.
Unit 3	Web mining: Web content Mining- Crawlers, harvest system, Virtual Web view, Personalization, Web Structure Mining- Page rank, Clever. Web Usage Mining.
Unit 4	Temporal Mining- Introduction, Modelling Temporal Events, Time Series, Time series analysis, Trend analysis, Transformation, Similarity, Prediction.

References:

- Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber, Morgan Kaufmann Publishers, Elsevier,2nd Edition, 2006.
- Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.
- Data Mining Techniques – Arun K Pujari, 2nd edition, Universities Press.
- Data Warehousing in the Real World – Sam Aanhory & Dennis Murray Pearson Edn Asia.
- Insight into Data Mining, K.P.Soman, S.Diwakar,V.Ajay,PHI,2008.
- Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley student Edition
- Data Mining Introductory and Advanced Topics- Margaret H Dunham, Pearson

DISCIPLINE SPECIFIC ELECTIVE COURSES - II (DE-II)

(Learners may choose any one of the three courses in DE-II)

B21CA12DE: E-COMMERCE AND E-GOVERNANCE

(Number of credits: 6)

B21CA12DE: E-COMMERCE AND E-GOVERNANCE	
CO1: To understand basics of e-commerce	
CO2: To identify the various processes and technologies for setting up an e-Commerce site	
CO3: To understand the concepts of Online/e-Marketing	
Co4: To identify the concepts of e-Governance	
CO5: To Analyse and create e-Governance Models and e-Governance Infrastructure	
CO6: To identify and assess Challenges in implementing e-Governance and status of e-Governance in India	
Block I: Overview of Information & Communication Technologies (ICT) and e-Commerce	
Unit 1	Development in ICT and emergence of e-Commerce
Unit 2	Main Components of e-Commerce; Functions of e-Commerce
Unit 3	Process and types of e-Commerce;
Unit 4	Scope and Benefits of e-Commerce.
Block II: e-Commerce Activities & Building blocks for an e-Commerce platform	
Unit 1	e-Commerce Activities
Unit 2	Elements and Resources Impacting e-Commerce
Unit 3	Technologies and Prerequisites
Unit 4	Building the Business Case for e-Commerce
Block III: Online Marketing and Mobile Platforms	
Unit 1	Online Marketing: Web presence and Accessibility
Unit 2	Web Metrics
Unit 3	Customer Relationship Management (CRM);
Unit 4	E-Commerce mobile apps & progressive web apps.

Block IV: Introduction to E-governance	
Unit 1	Concept of Governance and Good Governance;
Unit 2	e-Governance: Meaning, Scope and Importance;
Unit 3	e-Governance and e-Government;
Unit 4	Types of e-Governance – G2C, G2B, G2G and G2E.
BLOCK V : e-Governance Models & e-Governance Infrastructure	
Unit 1	e-Governance models: Broadcasting / Wider Dissemination Model, Critical Flow Model, Comparative Analysis Model, Mobilization and Lobbying Model, Interactive – Service Model;
Unit 2	Initial success model in India - Indian Railway computerisation; Government Process Re-engineering (GPR) and Service Delivery Improvement;
Unit 3	e-Governance Infrastructure: Data Centres – DC & DR, State Wide Area Networks (SWAN), Common Services Centres (CSC) and Service Delivery Portals & mobile apps;
Unit 4	e-Governance Standards and Frameworks; e-Governance Readiness – Deployment of Local level infrastructure, Training & Handholding
BLOCK VI : Challenges of E-governance and E-Governance in India	
Unit 1	Challenges of e-Governance: Data and Infrastructure Security; Data sharing across departments and Interoperability;
Unit 2	Digital India - UMANG, Digilocker, BBPS;
Unit 3	e-Governance initiatives in India; e-Governance initiatives in Kerala
Unit 4	Challenges of e-Governance: Data and Infrastructure Security; Data sharing across departments and Interoperability;

References:

- E-Commerce-Strategy, Technologies & Applications by David Whitley, TMH
- E-Commerce- The cutting edge of business by Kamlesh K. Bajaj, TMH
- E-Commerce through ASP by W Clarke- BPB

DISCIPLINE SPECIFIC ELECTIVE COURSES - II (DE-II)

(Learners may choose any one of the three courses in DE-II)

B21CA22DE: DIGITAL MARKETING

(Number of credits: 6)

B21CA22DE: DIGITAL MARKETING	
CO1:To learn basic skills required to understand and apply various state-of-the-art digital marketing strategies	
CO2: To learn to grow a business online from scratch	
CO3: To learn and apply Search Engine Optimization techniques and	
CO4: To get exposure to latest trends in digital market space	
CO5: To be equipped to capture job opportunities in social media marketing	
CO6: To learn basic skills required to understand and apply various state-of-the-art digital marketing strategies	
Block 1: Introduction to Digital Marketing	
Unit 1	Marketplace to Marketspace
Unit 2	Goals of Digital Marketing
Unit 3	Platforms and Strategies
Unit 4	Social Media
Block 2: Search Engine Optimization	
Unit 1	Introduction to Search engines
Unit 2	Keywords Search
Unit 3	On-page and Off-Page Optimization
Unit 4	Reporting SEO
Block 3: Google Analytics	
Unit 1	Introduction and Setting up
Unit 2	Performance Matrices
Unit 3	Traffic Management
Unit 4	Behaviour Reports and Conversion Tracking
Block 4:Social Media Marketing	

Unit 1	Introduction
Unit 2	Social Media Statistics
Unit 3	Facebook Marketing
Unit 4	E-mail and SMS
Block 5: Reputation Management	
Unit 1	Blogging
Unit 2	Creating posts
Unit 3	Visual Marketing Tools
Unit 4	Influencer Marketing and Drop shipping
Block 6: Reaching the Top	
Unit 1	Planning and Organizing
Unit 2	Content Writing
Unit 3	SMS and Push Notifications
Unit 4	Visual Marketing Tools

References:

- Ian Dodson-The art of Digital Marketing, Wiley 4.2 Additional
- Puneet Singh Bhatia- Fundamentals of Digital Marketing, Pearson Education

GENERAL ELECTIVE - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

(Number of credits: 2)

See Annexure-V

B21HS01GE	**Modernization of Kerala**
B21CM01GE	**Banking**
B21SO01GE	**Introduction to Sociology**
B21EC01GE	**Economics for everyday life**
B21PH01GE	**Introduction to the philosophy of Sreenarayanaguru**
B21BB01GE	**Entrepreneurship and startup**

SIXTH SEMESTER

DISCIPLINE SPECIFIC ELECTIVE COURSES - III (DE-III)

(Learners may choose any one of the three courses in DE-III)

B21CA03DE: DATA ANALYTICS AND VISUALISATION

(Number of credits: 6)

B21CA03DE: DATA ANALYTICS AND VISUALIZATION	
CO1: To understand the basic concepts, in data analysis	
CO2: To identify Technologies used in Data Analytics	
CO3: To assess the need of and challenges in Visualization	
CO4: To recognize various categories of data	
CO5: To familiarize with Various Visualization Tools	
CO6: To create Visualizations, reports, devise dashboards	
Block 1: Mathematics for Data Analysts	
Unit 1	Descriptive statistics – Mean, Median, Mode, Skewness, Range, Sample, Population, Variance, Standard Deviation, Scaling, Shifting
Unit 2	Anomalies or outliers, Normalization
Unit 3	Distributions: Normal Distribution.
Unit 4	Concept of Probability.
Block II: Introduction to Analytics	
Unit 1	Big data overview, Hadoop Ecosystem, Data ware housing,
Unit 2	Data Analytics Life Cycle – Discovery, Data preparation, Model planning, Model building..
Unit 3	Analytics for Unstructured data. ETL Tools (Talend, SSIS) &
Unit 4	Data analysis tools (Python, R, PowerBI, Tableau, Azure Analytics, AWS analytics, etc)
Block III: Advanced Data Analytics	
Unit 1	Clustering, Regression and Classification: Decision trees, Naïve Bayes Classifier
Unit 2	Correlation coefficient, Root Mean Square Error
Unit 3	Time series analysis, Trend Analysis.

Unit 4	Text analysis (sentiment analysis), Forecasts.
Block IV: Data Visualization	
Unit 1	Introduction, why visualize? Challenges in Visualization,
Unit 2	Visualization of GeoSpatial Data Numerical and Non-Numerical Data.
Unit 3	Interactive Dashboards.
Unit 4	Data Visualization Cycle
Block V: Data Analytics and Visualization using Power BI	
Unit 1	PowerBI versions, Data Connectors (connecting to data sources), Data Loading, Data Cleaning, Data Transformations.
Unit 2	Power Query, Data Modelling, Calculated Columns and Measures, DAX expressions.
Unit 3	Creating Visualizations (Charts, Graphs, Maps, KPIs, Slicers, Filters, Drill Thru, Drill Down, Custom Visuals), Publishing a report.
Unit 4	Data Security, PowerBI embedded, PowerBI Service, On Premise Gateway
Block VI: Data Analytics and Visualization using Tableau	
Unit 1	Version of Tableau, Data Connectors, Data Loading, Cleaning and Transformations,
Unit 2	Data Modelling, Calculated Columns and Measures,
Unit 3	Creating Visualizations (Charts, Graphs, Maps, KPIs, Slicers, Filters, Drill Thru, Drill Down, Custom Visuals), Publishing a report
Unit 4	Data Security A Case Study to create a Dashboard using any data set (end-to-end development). Implementation of IoT application using cloud platforms

References:

- Basic Statistics, B L Agarwal, 2013, New Age International
- Introduction to Big Data and Analytics (Black and White Edition): Understanding of Hadoop and its Ecosystem, Amandeep Kaur, Harish Madan, 2020, Notion Press
- An Introduction to Statistical Learning: with Applications in R, Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, 2017, Springer.
- Data Visualization: Clear Introduction to Data Visualization with Python. Proper Guide for Data Scientist, Alex Campbell, 2020
- Learning Tableau 2020: Create effective data visualizations, build interactive visual analytics, and transform your organization, 4th Edition, Joshua N. Milligan, Packt Publishing
- Mastering Microsoft Power Bi: Expert techniques for effective data analytics and business intelligence, Brett Powell, 2018, Packt Publishing

- Data Analytics Concepts Techniques and Applications 1st Edition 2020 Edition by Mohiuddin Ahmed, Al-Sakib Khan Pathan, Taylor and Francis

DISCIPLINE SPECIFIC ELECTIVE COURSES - III (DE-III)
(Learners may choose any one of the three courses in DE-III)
B21CA13DE: CYBER CRIME
(Number of credits: 6)

B21CA13DE: CYBER CRIME	
CO1: To identify problems in cyberspace	
CO2: To identify various types of attacks	
CO3: To understand cybercrimes in the Cloud environment	
CO4: To understand the regulatory provisions against/for cyber problems	
CO5: To create awareness and rights in cyberspace	
Block 1: Cyber Crime Overview	
Unit 1	Internal and External Attacks
Unit 2	Cyber Crimes against Individuals – E-mail spoofing and online frauds, Phishing and its forms, Spamming
Unit 3	Cyber-defamation, Cyberstalking, Cyber Bullying and Harassment
Unit 4	Crime against women and children.
Block II: Cyber Crime Against Organizations	
Unit 1	Denial-of-service (DOS) attack, Backdoors and Malwares
Unit 2	E-mail Bombing, Salami Attack, Software Piracy, Industrial Espionage, Intruder attacks.
Unit 3	Security policies violations, Crimes related to Social Media, ATM,
Unit 4	Online and Banking fraud. Intellectual Property Frauds
Block III: A Global Perspective of Cyber Crimes	
Unit 1	Phases of cyber-attack – Reconnaissance,
Unit 2	Passive Attacks, Active Attacks, Scanning,
Unit 3	Gaining Access, Maintaining Access,

Unit 4	Lateral movement and Covering Tracks. Detection Avoidance,
Block IV: Cyber Crime and Cloud Computing	
Unit 1	Tools used in cybercrimes
Unit 2	Remote attacks, Random Passwords, Strong and weak passwords.
Unit 3	Viruses and its types. Ransomware and Cryptocurrencies.
Unit 4	Cybercriminal syndicates and Nation-state groups
Block V: Regulatory Framework of IT act 2000	
Unit 1	Information Technology Act 2000, Digital Signature, E-Signature
Unit 2	Electronic Records, Electronic Evidence and Electronic Governance.
Unit 3	Controller, Certifying Authority and Cyber Appellate Tribunal.
Unit 4	Data Security, E Contracts and E Forms.
Block VI: Offenses and Penalties Information Technology (Amendment) Act 2008	
Unit 1	Objective, Applicability and Jurisdiction;
Unit 2	Various cyber-crimes under different Sections, along with respective penalties, punishment and fines
Unit 3	Penal Provisions for Phishing, Spam, Virus, Worms, Malware, Hacking, Trespass and Stalking
Unit 4	Human rights in cyberspace

References:

- Nina Godbole and Sunit Belapore; "Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley Publications, 2011.
- Shon Harris, "All in One CISSP, Exam Guide Sixth Edition", McGraw Hill, 2013.
- Bill Nelson, Amelia Phillips and Christopher Steuart; "Guide to Computer Forensics and Investigations" – 3 rd Edition, Cengage, 2010 BBS.
- William Stallings; "Cryptography and Network Security: Principles and Practices", Fifth Edition, Prentice Hall Publication Inc., 2007.
- Atul Jain; "Cyber Crime: Issues, Threats and Management", 2004.
- Majid Yar; "Cybercrime and Society", Sage Publications, 2006.

- Michael E Whiteman and Herbert J Mattord; “Principles of Information Security”, Vikas Publishing House, New Delhi, 2003.
- Matt Bishop, “Computer Security Art and Science”, Pearson/PHI, 2002.
- Karnika Seth; “Computers, Internet and New Technology Laws”, Lexis Nexis Buttersworth Wadhwa, 2012.
- Vikas Vashishth.; “Law and practice of intellectual property in India”
- Jonathan Rosenoer; “Cyber Law: The Law of Internet”, Springer- Verlag, New York, 1997.
- Sreenivasulu N.S; “Law Relating to Intellectual Property”, Patridge Publishing, 2013
- Pavan Duggal; “Cyber Law – The Indian Perspective”, Saakshar Law Publications.
- Harish Chander; “Cyber Laws and IT Protection”, PHI Learning Pvt. Ltd, 2012.
- Nina Godbole and Sunit Belapore; “Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives”, Wiley Publications, 2011.
- Vakul Sharma; “Information Technology: Law and Practice”, Universal Law Publishing Co., India, 2011.
- The Copyright Act, 1957 10.The Patent Act, 1970 11. The Indian Evidence Act, 1872

DISCIPLINE SPECIFIC ELECTIVE COURSES - III (DE-III)

(Learners may choose any one of the three courses in DE-III)

B21CA23DE: CLOUD COMPUTING ARCHITECTURE

(Number of credits: 6)

B21CA23DE: CLOUD COMPUTING ARCHITECTURE	
CO1: To familiarize and identify cloud computing architecture and infrastructure	
CO2: To explain, analyze, and evaluate various cloud computing solutions.	
CO3: To understand the core issues of cloud computing such as risks, security, privacy, and disaster recovery	
CO4: To evaluate and implement new trends in cloud computing	
CO5: To create/ provide appropriate cloud computing solutions according to the applications	
CO6:To create appropriate cloud solutions	
Block 1: Application Architecture:	
Unit 1	Monolithic, Layered, Client Server, Master-Slave, Peer to Peer
Unit 2	Broker, Event-bus, MVC (Model View Controller), MVP (Model View Presenter), MVVM (Model View View Model), MVT (Model View Template),
Unit 3	Service Oriented Architecture (SOA), Web Services, SOAP, RESTful, Micro-Services, Server Less.
Unit 4	Cloud Reference Model (NIST Architecture)
Block II: Virtualization	
Unit 1	Virtualization-Definition, Benefits, Challenges.
Unit 2	Implementation levels of virtualization-ISA level, HAL level, OS level, Library level, Application level,
Unit 3	Types of Virtualization- Server Virtualization, Network Virtualization, Storage Virtualization, Desktop Virtualization, Application Virtualization, Management Virtualization

Unit 4	Frameworks for virtualization, Virtualization Providers, Containers, Dockers. VMs vs Containers
Block III: Review of Cloud Services	
Unit 1	AWS, Azure, Google Cloud, Platform services, Data analytics services, Big Data services, Warehousing services, Streaming services, Elastic search.
Unit 2	Analytics services, ETL, AI/ML services, Database Services (SQL and NoSQL)
Unit 3	Data lake, Data Storage Services, Authentication Services, Business applications
Unit 4	IoT Services, Communication Services, Serverless services, Containers, developer tools, Monitoring tools]
Block IV: Cloud Life Cycle Model	
Unit 1	Role of Cloud Modelling and Architecture, Reference Model for Cloud Computing, Cloud Industry Standards.
Unit 2	Cloud Application Architecture, Cloud Computing and Logical Architecture. Networking in Cloud.
Unit 3	Key Principles of Cloud Computing - Abstraction, Automation, Elasticity, Cloud Federation, Two-layer connectivity for cloud federation.
Unit 4	Cloud ecosystem model- Cloud Ecosystem, Cloud Broker/ Cloud Agent, Cloud Outlook, Cloud Unified Process.
Block V: Cloud-Native and Emergent Cloud Trends	
Unit 1	Hybrid-Cloud, Multi-Cloud, Configuration Management, Serverless computing, Microservices, Service Mesh, Cloud Native.
Unit 2	DevOps, Application Modernization.
Unit 3	Automated Cloud Deployments: Continuous Integration/Continuous Deployment (CI/CD).
Unit 4	Disaster Recovery in clouds.
Block VI: Cloud Security	
Unit 1	Risks in Cloud Computing, Types-Internal Security Risks, External Security Risks, Data Protection Risk, Data Loss, Security Issues and challenges.
Unit 2	Security Advantages in a cloud environment- Data centralization, Incident response, Logging

Unit 3	Disadvantages in a cloud environment- Investigation, Data Segregation, Long term viability, Compromised servers.
Unit 4	Case Study-Design and develop an application using serverless computing model Automation of infrastructure and deployment of the application using CI/CD tools Monitor the application (utilization: processor, memory, logs, etc.), Test scaling.

References:

- Cloud Computing: Concepts, Technology & Architecture, Ricardo Puttini, Thomas Erl, and Zaigham Mahmood, Prentice Hall, 1 ED
- Cloud Native Architectures: Design high availability and cost effective applications for the cloud, Tom Laszewski, Piyum Zonooz, Erik Farr Kamal Arora
- Cloud Computing Design Patterns, Thomas Erl, Service Tech Press, Prentice hall, 1 ED
- Cloud Migration For Dummies, Brett McLaughin, Virtana Special Edition
- Mastering Cloud Computing, Rajkumar Buya, Christian Vecchiola, S Thamarai Selvi, Mc Graw Hill, 1 ED, 2017

DISCIPLINE SPECIFIC ELECTIVE COURSES - IV (DE-IV)

(Learners may choose any one of the three courses in DE-IV)

B21CA04DE: MACHINE INTELLIGENCE

(Number of credits: 6)

B21CA04DE: MACHINE INTELLIGENCE	
CO1: To understand the concept and Applications of Artificial Intelligence.	
CO2: To identify different categories of ML	
CO3: To understand the concepts and mathematical foundations of Machine Learning	
CO4:Describe Supervised, Unsupervised and Reinforcement Learning	
CO5:Understand the Artificial Neural Networks and basics of Deep Learning	
Block 1: Introduction to Artificial Intelligence	
Unit 1	Definition and Practices of Artificial Intelligence (AI), Cognitive Science, Goals of AI
Unit 2	AI Approaches and Techniques
Unit 3	Intelligent System
Unit 4	Applications of AI
Block II: Introduction to Machine Learning	
Unit 1	Definition and Practices of Machine Learning (ML) and Deep Learning (DL)
Unit 2	Mathematical and Statistical Foundations of Machine Learning
Unit 3	Types of Machine Learning – Supervised, Unsupervised and Reinforcement
Unit 4	Steps in Machine Learning
Block III: Supervised Learning	
Unit 1	Regression – Linear Regression, Polynomial Regression, Regularization Methods
Unit 2	Logistic Regression, Classification, Decision Tree
Unit 3	Support Vector Machine (SVM)

Unit 4	Case Study on Classification
Block IV: Unsupervised Learning	
Unit 1	Clustering – K-Means, K- Nearest Neighbor
Unit 2	Dimensionality Reduction – Principal Component Analysis
Unit 3	Dimensionality Reduction - Singular Value Decomposition
Unit 4	Case Study on Clustering
Block V: Reinforcement Learning and Ensemble Methods	
Unit 1	Markov Decision, Monte Carlo Prediction
Unit 2	Bagging and Boosting
Unit 3	Random Forest Algorithm
Unit 4	Case Study on Dynamic Pricing
Block VI: Advanced Mining	
Unit 1	Artificial Neural Network (ANN) - Perceptron Model, Back Propagation
Unit 2	Multilayer Perceptron and Deep Neural Network
Unit 3	Introduction to Convolutional Neural Network (CNN) and Recurrent Neural Network (RNN)
Unit 4	A Case Study on face recognition

References:

- Stuart Russell, Peter Norvig: "Artificial Intelligence: A Modern Approach ", 4th Ed, Pearson, 2020.
- Elaine Rich, Kevin Knight, B.Nair: "ARTIFICIAL INTELLIGENCE ", 3rd Ed, McGraw Hill, 2017.
- Machine Learning, Tom M. Mitchell, McGraw Hill.
- K. P. Murphy, "Machine Learning: A probabilistic perspective", MIT Press, 2012.
- Stephen Marsland, "Machine Learning An Algorithmic Perspective", CRC Press.
- Yoshua Bengio, "Learning Deep Architectures for AI", Now Publishers Inc (2009)
- Ian Goodfellow, Yoshua Bengio and Aaron Courville, "Deep Learning", MIT Press

DISCIPLINE SPECIFIC ELECTIVE COURSES - IV (DE-IV)

(Learners may choose any one of the three courses in DE-IV)

B21CA14DE: BLOCKCHAIN TECHNOLOGY

(Number of credits: 6)

B21CA14DE: BLOCKCHAIN TECHNOLOGY	
CO1: To understand and recall the concepts, technologies and tools of Blockchain Technology	
CO2: To identify the components of Blockchain	
CO3: To differentiate between various Cryptocurrencies and allied technologies	
CO4: To familiarize with smart contract functionalities	
CO5: To analyse challenges in Blockchain Technology	
CO6: To familiarize with Open source Blockchain platforms	
Block 1: Introduction to Blockchain	
Unit 1	Introduction to Blockchain, How it changes digitalization, Applications of Blockchain.
Unit 2	Blockchain technologies and tools, Introduction to cryptographic concepts
Unit 3	Introduction to distributed processing, Distributed recording keeping, Modelling faults and adversaries, Hash pointers, Consensus, Byzantine fault-tolerant distributed computing, Digital cash.
Unit 4	Blockchain community, Politics and Regulation.
Block II: Basic Cryptography	
Unit 1	Hash functions, Puzzle friendly Hash, Collision resistant hash, Digital signatures, Public-key crypto, Verifiable random functions, Zero-knowledge systems.
Unit 2	Blockchain Basics - How Blockchain achieves, How to store and use, Decentralization-Centralization vs. Decentralization-Distributed consensus, Consensus without identity using a Blockchain, Incentives and proof of work.

Unit 3	Simple Local Storage, Hot and Cold Storage Splitting and Sharing Keys.
Unit 4	Online Wallets and Exchanges, Payment Services, Transaction Fees, Currency Exchange Markets.
Block III: Blockchain 1.0	
Unit 1	Bitcoin Blockchain, Concepts, Consensus mechanisms, Operations
Unit 2	Cryptocurrency as the application of blockchain technology the challenges, and Solutions, Alternatives to Bitcoin consensus
Unit 3	Bitcoin scripting language and their use, Bitcoin Mining, The task of Bitcoin miners, Mining Hardware
Unit 4	Energy consumption and ecology, Mining pools, Mining incentives and strategies.
Block IV: Blockchain 2.0	
Unit 1	Ethereum and Smart Contracts.
Unit 2	The Turing Completeness of Smart Contract Languages and verification challenges.
Unit 3	Using smart contracts to enforce legal contracts.
Unit 4	Comparing Bitcoin scripting vs. Ethereum Smart Contracts.
Block V: Blockchain 3.0	
Unit 1	Permissioned Blockchain – Introduction and use cases
Unit 2	Platforms and Frameworks-Hyperledger, Corda, Hyperledger fabric.
Unit 3	The plug-and-play platform.
Unit 4	Mechanisms in permissioned blockchain
Block VI: Privacy & Security	
Unit 1	Pseudo-anonymity vs. anonymity, Zcash and Zk-SNARKS for anonymity preservation.
Unit 2	Attacks on Blockchains – Such as Sybil attacks, selfish mining, 51% attacks.
Unit 3	Advent of Algorand and Sharding based consensus algorithms to prevent attacks.
Unit 4	Limitations of blockchain as a technology, and myths vs. reality of blockchain technology

References:

- Draft version of "S. Shukla, M. Dhawan, S. Sharma, S. Venkatesan, 'Blockchain Technology: Cryptocurrency and Applications', Oxford University Press, 2019.
- Josh Thompson, 'Blockchain: The Blockchain for Beginnings, Guild to Blockchain Technology and Blockchain Programming', Create Space Independent Publishing Platform, 2017.

DISCIPLINE SPECIFIC ELECTIVE COURSES - IV (DE-IV)

(Learners may choose any one of the three courses in DE-IV)

B21CA24DE: INTERNET OF THINGS

(Number of credits: 6)

B21CA24DE: INTERNET OF THINGS	
CO1: To understand the usage of IoT in some popular IoT applications.	
CO2: To understand the concept of sensors and actuators for engineering IoT networks.	
CO3: To understand and compare the various layers in IoT architecture.	
CO4: To understand the concepts of data handling and analytics in IoT applications.	
CO5: To apply the basic concepts of Security, Arduino Programming and Raspberry Pi.	
Block I: IoT – Applications & Architectures	
Unit 1	Introduction to IoT
Unit 2	IoT Applications – Connected Roadways, Connected Factory, Connected Buildings
Unit 3	Convergence of IT and OT, IoT Challenges
Unit 4	Drivers behind new IoT architecture, Comparison of IoT architectural models, Simplified IoT architecture
Block II: Engineering IoT Networks	
Unit 1	Smart Objects – Sensors & Actuators, Sensor Networks
Unit 2	Communication Criteria

Unit 3	Communication Protocols – WiFi, RFID, Bluetooth, RF, Satellite
Unit 4	IoT Access Technologies – IEEE 802.15.4 - Zigbee, IEEE 802.11ah
Block III: IP as IoT Network Layer	
Unit 1	Business Case for IP – Advantages of IP
Unit 2	Adoption or Adaptation
Unit 3	Need for Optimization of IP
Unit 4	Optimizing IP for IoT
Block IV: Transport Layer & Application Protocols	
Unit 1	Transport Layer
Unit 2	Supervisory Control and Data Acquisition (SCADA)
Unit 3	Generic web-based protocols
Unit 4	IoT application layer protocols
BLOCK V : Data and Analytics for IoT	
Unit 1	Introduction to data analytics for IoT
Unit 2	Big Data Analytics Tools and Technology
Unit 3	Edge Streaming Analytics
Unit 4	Network Analytics
BLOCK VI : IoT Security & Introduction to Arduino and Raspberry Pi	
Unit 1	Common challenges in OT security
Unit 2	Formal Risk Analysis Structures – OCTAVE & FAIR
Unit 3	Arduino – Basics on integration of sensors and actuators
Unit 4	Implementation of IoT using Raspberry Pi – Basic Concepts

References:

- David Hanes “IoT Fundamentals: Networking Technologies, Protocols and Use Cases for the Internet of Things”, Cisco Press, Pearson, 2017

DISCIPLINE SPECIFIC ELECTI

VE COURSES - V (DE-V)

(Learners may choose any one of the three courses in DE-V)

B21CA05DE: HIGH PERFORMANCE COMPUTING
(Number of credits: 6)

B21CA05DE: HIGH PERFORMANCE COMPUTING	
CO1:To understand the parallelism in computing with various type of processors	
CO2: To understand the concept of High Performance Computing	
CO3: To understand the working of Array Processor and Multiprocessor Architectures	
CO4: To describe the working Data Flow Computers	
CO5: To understand the basics of GPU Computing and CUDA program structure	
Block 1: Introduction to Parallel Computing	
Unit 1	High Performance Computing Concept, Definition of Parallel processing, Parallelism in Uniprocessor systems
Unit 2	Parallel computer structures : Pipeline Computer, Array Processors, Multiprocessor systems
Unit 3	Architectural classification schemes : SISD, SIMD, MISD, MIMD
Unit 4	Parallel processing Applications :Examples of Parallel Computing Applications.
Block II: Pipelining and Vector Processing	
Unit 1	Principles of pipeline processors
Unit 2	Instruction and Arithmetic pipelines
Unit 3	Principles of Designing Pipeline Processors
Unit 4	Principles of Vector processing
Block III: Array Processors	
Unit 1	SIMD array processors
Unit 2	SIMD Interconnection networks

Unit 3	Parallel algorithms for array processors
Unit 4	Associative array processing
Block IV: Computer Networks & Internet	
Unit 1	Functional Structures
Unit 2	Interconnection networks
Unit 3	Parallel Memory Organizations
Unit 4	Multiprocessor Operating Systems
Block V: Data Flow Computers, Performance Analysis and Examples	
Unit 1	Data driven computing and Languages
Unit 2	Data flow computers architectures- Static data flow computer, Dynamic data flow computer, Data flow design alternatives.
Unit 3	Performance Analysis of Multiprocessor Systems and Data Flow Computers
Unit 4	Examples of Multiprocessor Systems and Data Flow Computers
Block VI: GPU Computing	
Unit 1	Heterogeneous Parallel Computing, Architecture of a Modern GPU
Unit 2	GPU Computing - Scalable GPUs, Recent Developments and Trends
Unit 3	Data Parallelism, CUDA Program Structure, Device Global Memory and Data Transfer
Unit 4	Kernel Functions and Threading.

References:

- Computer Architecture & Parallel Processing - Kai Hwang & Faye A.Briggs, McGraw Hill.
- D. Kirk, and W. Hwu, “Programming Massively Parallel Processors: A Hands-on Approach,” Morgan Kaufman (pubs).
- Elements of Parallel computing - V. Rajaraman – PHI
- Parallel Processing for Super Computers & AI Kai Hwange & Douglas Degneot McGraw Hill
- High Performance Computer Architecture - Harold S. Stone, Addison Wesley

DISCIPLINE SPECIFIC ELECTIVE COURSES - V (DE-V)

(Learners may choose any one of the three courses in DE-V)

B21CA15DE: QUALITY CONTROL
(Number of credits: 6)

B21CA15DE: QUALITY CONTROL	
CO1: To use efficient quality assurance practices for their software projects.	
CO2: To understand and apply verification and validation standards.	
CO3: To identify the risks and apply techniques to mitigate them.	
CO4: To compare various testing tools and can select the appropriate one for projects.	
CO5: To compare various testing tools and can select the appropriate one for projects.	
Block I: Software Quality Fundamentals and Quality culture	
Unit 1	Software Test Life Cycle
Unit 2	Introduction to Software Quality
Unit 3	Business Models The Five Dimensions of a Software Project
Unit 4	The Software Engineering Code of Ethics, Software Quality Requirements and the Software Quality Plan
Block II: Quality Management Standards and Models	
Unit 1	**Quality** Management Standards, Cost of Quality and Business Models.
Unit 2	**Reviews -** Personal Review and Desk-Check Review, Standards and Models
Unit 3	Walk-Through, Inspection Review
Unit 4	Project Launch Reviews and Project Assessments, Agile Meetings, Reviews and Business Models
Block III: Software Audits	
Unit 1	Types of Audits
Unit 2	Audit Process and the ISO 9001 Standard

Unit 3	Audit According to the CMMI - SCAMPI Assessment Method, Audits for Very Small Entities
Unit 4	Audit and the SQA Plan , Presentation of an Audit Case Study
Block IV: Verification and Validation	
Unit 1	Standards and Process Models
Unit 2	IEEE 1012 , Standard Integrity Levels
Unit 3	Recommended **Verification and Validation** Activities for Software Requirements
Unit 4	ISO/IEC/IEEE 12207, The CMMI Model, Validation Phase of Software Development - Validation Plan
BLOCK V : Measurement and Risk Management	
Unit 1	The Importance of Measurement, Software Measurement According to ISO/IEC/IEEE 12207, Measurement According to ISO 9001
Unit 2	The Practical Software and Systems Measurement Method, Measurement According to the CMMI Model, Measurement in Very Small Entities
Unit 3	The Survey as a Measurement Tool. Risk Management According to Standards and Models
Unit 4	Practical Considerations for Risk Management; Risk Evaluation, Risk Control, Risk Management Roles, SQA Planning and execution
BLOCK VI: Testing Tools	
Unit 1	Categories of testing tools -Test Management Tool
Unit 2	Automated Testing Tools - Selenium, Cross-browser Testing Tools, Load Testing Tools, Defect Tracking Tools
Unit 3	Mobile Testing Tools, API Testing Tools
Unit 4	Security Testing Tools, CSS Validator Tool

References:

- Software Quality Assurance, Claude Y. Laporte, Alain April, © 2018 the IEEE Computer Society, Inc.
- Software Automation Testing Tools for Beginners, Rahul Shende, 1st 2012, Arizona Business Alliance LLC
- Automated Software Testing Foundations, Applications and Challenges, Ajay Kumar Jena, Himansu Das, Durga Prasad Mohapatra · 2020, Springer Singapore.

DISCIPLINE SPECIFIC ELECTIVE COURSES - V (DE-V)

(Learners may choose any one of the three courses in DE-V)

B21CA25DE: BIOINFORMATICS

(Number of credits: 6)

B21CA25DE: BIOINFORMATICS	
CO1: To attain basic knowledge in Biology required to identify the problems in bioinformatics	
CO2: To understand the developments in the emerging field of Bioinformatics.	
CO3: To create ideas on representing the biological terms in Computer Science.	
Block 1: Introduction	
Unit 1	Aim & Scope of Bioinformatics; Biological foundations of Bioinformatics
Unit 2	Storage of Genetic Information
Unit 3	Central Dogma of Molecular Biology
Unit 4	Branches of Bioinformatics
Block II: Biological Databases	
Unit 1	Primary Databases
Unit 2	Protein Sequence databases
Unit 3	Secondary Databases; Metabolite database
Unit 4	Structure databases; Literature database; Data storage and Retrieval Tools
Block III: Sequence Alignment	
Unit 1	Basics of sequence alignment and tools
Unit 2	Introduction to Sequence Comparison
Unit 3	Global & Local Alignments, Gaps
Unit 4	Patterns of Substitution; Scoring Matrices
Block IV: Tools and Related areas	
Unit 1	Sequence comparison Tools.
Unit 2	Prediction Tools

Unit 3	Visualization Tools
Unit 4	Applications
Module V: Related areas	
Unit 1	Understanding Genomics
Unit 2	Proteomics
Unit 3	Pharmacogenomics
Unit 4	DNA Microarray DNA Fingerprinting
Module VI: Application of Bioinformatics	
Unit 1	Computer-Aided Drug Design
Unit 2	protein function analysis
Unit 3	Gene therapy, Drug development
Unit 4	Comparative Studies and also climate change studies

References:

- Core Selzer-Marhofer-Rohwer, Applied Bioinformatics – an introduction, Springer
- Dan-E-Krane, Michael.L.Raymer, Fundamental Concepts of Bioinformatics, Pearson Education
- ZhumurGhosh, BibekanandMallick, Bioinformatics – Principles and Applications, Oxford Higher Education

B21CA01PR : PROJECT

1. AIM

- To equip the learner to be fit to be employed in IT industry with exposure to software development and project management scenario through a real life project facing constraints in terms of deliverables, time and any other relavant .

2. OBJECTIVES

- To apply the knowledge gained through various courses in dealing with the requirements emerging in software development.
- To practice different phases of state-of-the-art software/system development life cycle
- To provide an opportunity to practice and perform with time, resource and person management.

3. PROJECT GUIDELINES

The project work shall help the learner to get exposure to developing industry-standard applications or utility software to be deployed over the web or mobile services.

In order to get the experience of working in a team, it is recommended to do the project as a group of a maximum of three members. But in exceptional cases the learners may be allowed to do individual projects.

3.1 PROJECT GUIDE

The project shall be guided by one of the Counsellors of the corresponding LSC.

An external supervisor shall monitor the activities and review the documents time to time.

The external supervisor shall be a faculty member with minimum three years experience in any of the Universities/Colleges imparting programmes in computer science or allied disciplines.

OR

An expert from IT industry with minimum 5 years of experience.

3.2 PROJECT PHASE

The minimal phases for the project are Project feasibility, Investigation of system requirements, Data and Process Modelling, System Design, Program Design, Program coding and unit testing, System integration, System implementation and acceptance testing.

3.3 PLANNING THE PROJECT

The Major Project is an involved exercise which has to be planned well in advance. Related reading, training and discussions should start from semester 5 itself.

3.4 SELECTION OF TEAM

The Internal Supervisor is responsible for project team formation. A gender mix is strongly suggested in a team. Teams shall maintain team meeting minutes and ensure that every team member has tasks assigned in writing. Team meeting minutes shall form a part of the Project Report. Even if students are doing projects as

groups, each one must independently take up different modules of the work and must submit the reports also independently.

3.5 Selection of Tools: No restrictions shall be placed on the students in the choice of platforms/tools/languages to be utilized for their project work, though open source is strongly recommended, wherever possible. No value shall be placed on the use of tools in the evaluation of the project.

3.6 Selection of Organization : No restrictions shall be placed on the students in the choice of an organization where project work may be done, in terms of locality, type (public/private) etc.

3.7 Project IPR & Utilization: The intellectual property rights in all project work done by the students shall vest with the SGOU, except in cases where some external organizations seek undertaking from students to concede IPR in all work done in their organization or under their guidance. Where possible, students should attempt to obtain at least a joint IPR for the University. In cases where project works are of public utility, students shall be asked to publish their work including source code and documentation, in so far as their rights are clear.

4. PROJECT EVALUATION

4.1 Criteria for continuous internal evaluation of Major Project

The following components are to be assessed for Continuous evaluation.

An interim report after the analysis and design phase is required and a final report should also be submitted. Both these reports shall be assessed.

- Quality of documentation- 50% (milestones tracked-50%, adherence to the format of the report-20%, Documentation of requirements/modules/system inputs and outputs-30%)

- Presentation of work- 50% (Individual involvement & teamwork/ Attendance- 50% , Timely submission-20%, assessment of 2 interim reports -30%)

4.2 End Semester Evaluation of the Major Project

External evaluation will be done by external examiners appointed by the University.

- Quality of documentation- 40% (Project deliverables achieved-40%, Gantt chart-30%, reports-20%, Test cases designs-10%)
- Presentation of work- 30%
- Viva – 30%

Note: Further details will be provided by the counsellors of the LSC from time to time.

Annexure-I

LANGUAGE CORE COURSE

B21EG01LC: READING AND WRITING ENGLISH

(Number of credits: 6)

OBJECTIVES

1. Introduction to fundamental concepts and principles of communication, enabling students to identify and appreciate the skills and techniques involved.
2. Reinforcement of critical thinking through various technicalities of reading.
3. Familiarisation with the nuances of language in literature.
4. Recognition and understanding of the grammatical structures of language to communicate effectively and learning to self-edit documents.
5. Development of the skill to use appropriate and contextual vocabulary and use of the skill to integrate the resources effectively.
6. Cultivation of the skills to merge the thoughts into verbal expressions, utilizing the techniques involved in writing academic documents to achieve specific purposes.

Learning Outcomes:

Upon completing the course students will

1. Have knowledge of various communication contexts which will enable the use of context -specific appropriate language
2. Be equipped with the skills to appreciate and evaluate a text, gaining the acquired skills in comprehending, even complex passages.
3. Will have the competency to handle language in various literary and life contexts.
4. Display acquired knowledge in structuring grammatical sentences while writing and speaking.
5. Be able to process information from various sources and present it in a coherent manner.
6. Understand the relevance of writing academic documents and display proficiency in using language in different styles and formats.

COURSE OUTLINE:

1. BLOCK1 – GLIMPSES OF COMMUNICATION
2. BLOCK 2 – READING- THE EFFECTIVE SKILL
3. BLOCK 3 – LANGUAGE DEVELOPMENT
4. BLOCK 4 – BASICS OF WRITING IN COMMUNICATION
5. BLOCK 5 – SUMMARY, ESSAYS AND REPORTS
6. BLOCK 6 – PRACTICE, PRACTICE, PRACTICE

BLOCK – 1: Glimpses of Communication	
Unit 1	Introduction to Communication
Unit 2:	Different Forms and techniques of Communication
Unit 3:	Role of Language in Communication
Unit 4:	Barriers and Guidelines for Effective Communication

BLOCK – 2: Reading- The Effective Skill	
Unit 1	Introduction to Reading
Unit 2	Types of Reading - Methods and Techniques involved in Reading
Unit 3	Reading Comprehension
Unit 4	Analysing Literature Essay - "The Dream and the Message" (Chapter 1 of Ignited Minds) - A. P. J. Abdul Kalam Short Story - "The Open Window" - H.H. Munro Poetry – "The Blessed Damozel"- Dante Gabriel Rossetti
BLOCK – 3: Language Development	
Unit 1	Parts of Speech
Unit 2	Sentences
Unit 3	Concord
Unit 4	Tenses
Unit 5:	Reported Speech
Unit 6	Active and Passive Voice
Unit 7	Sentence Transformation
BLOCK – 4: Basics of Writing In Communication	
Unit : 1	Fundamental Approach to Writing
Unit : 2	Process Involved in Answering Questions
Unit : 3	Use Vocabulary to Express Thoughts
Unit: 4	Pre-Requisites for Writing
Unit : 5	Taking Examination- Routes to Success
BLOCK – 5: Summary, Essays And Reports	
Unit : 1	Summary Vs Precis

Unit : 2	Writing Abstract
Unit : 3	Essays
Unit : 4	Reports
Unit : 5	Editing and Proofreading
BLOCK – 6: Practice, Practice, Practice	
Unit 1:	Reading Comprehension Passages
Unit 2:	Analysing Literature
Unit 3:	Grammar and Vocabulary
Unit 4:	Precis
Unit 5:	Essay Writing
Unit 6:	Report Writing

Reference:

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ABILITY ENHANCEMENT COMPULSORY COURSE

B21ES01AC: ENVIRONMENTAL STUDIES

(Number of credits: 4)

Total Hours: 60

Aim:

Environmental education is essential for imparting knowledge about the existing environmental situations and to explore possible problems related to the environment and engage in sustainable ways of protecting it. By introducing 'Environmental Studies' as an esEssay - "The Dream and the Message" (Chapter 1 of Ignited Minds) - A. P. J. Abdul Kalam Short Story - "The Open Window" - H.H. Munro Poetry – "The Blessed Damozel"- Dante Gabriel Rossetti sential subject in all courses offered by SOU, it is aimed to make the students more sensitized and encourage them to find out innovative solutions and methods for the way ahead for the protection of our nature and thereby the survival of our own.

Objectives:

1. To understand the basic concepts of Environment and its linkages
2. To learn about the ecosystems, importance of biodiversity, renewable energy and sustainable development
3. To study the various environmental degradation problems and environmental management
4. To understand the various social issues related to environment

Course Outcomes:

At the end of the course, the student will be able to:

1. Articulate the basic concepts of Environmental Studies and can apply the knowledge practically
2. Describe the various natural resources and enumerate the conservation strategies
3. Articulate the importance of ecosystems, biodiversity and the need of environmental restoration
4. Explain different kinds of ecosystem
5. Explain the concept and types of biodiversity, and conservation strategies
6. Describe methods for the protection and health of environment and the well-being of people and economic development

Course Content:

BLOCK I: ENVIRONMENT AND NATURAL RESOURCES (15 Hours)

(Pre-requisite: An awareness regarding their environment, the components of environment and the services provided by environment to our life, An idea about natural and energy resources and a basic idea on renewable and non-renewable aspects of these resources)

UNIT 1:	Definition, scope and multidisciplinary nature of environmental studies, Basic concepts of the environmental segments -lithosphere, hydrosphere, biosphere and atmosphere and layers of atmosphere, Concepts of climate and weather. (2 Hours)
UNIT 2:	Definition and classification of renewable and non-renewable resources with examples, Concept and major types of natural resources. (1 Hour)
UNIT 3:	Forest resources: overview of types and classification of forest in India; threats to forest ecosystem- over-exploitation, timber extraction, deforestation, mining in forest areas, dams and their effects on forest ecosystem, resettlement of people (definition and basic concepts only); Conservation strategies – concept and definition of reforestation, afforestation, social forestry, agroforestry. (2 Hours)
UNIT 4:	Water resources: Global distribution of water; water resource types – surface water (pond, lake, river, estuary), ground water; basic concept of water availability and uses, freshwater shortages, threats to water sources: over-exploitation of surface and ground water, water pollution, water logging, floods, drought (definition and basic concepts); conservation and management of water resources – treatment and reuse of wastewater, concepts of sanitary disposal of solid waste, rainwater harvesting and groundwater recharging, watershed management, Coastal Regulation Zone - CRZ (definition and basic concept). (4 Hours)
UNIT 5:	Land and Mineral resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification, Minerals - Use and exploitation, environmental effects of extracting mineral resources. (3 Hours)
UNIT 6:	Energy resources: types and classification, energy use pattern in India, growing energy needs, energy scarcity, fossil fuels and their environmental impact; Clean energy sources –bioenergy/biofuels, solar, wind, tidal, geothermal energy, nuclear energy (concepts and definition only), Future fuels: Hydrogen (Basics only). (3 Hours)
BLOCK II: ECOSYSTEMS, BIODIVERSITY AND CONSERVATION (15 Hours)	
(*Pre-requisite: Awareness regarding ecosystem and the components of ecosystem, an understanding of the importance of life)*	
UNIT 1:	Concept, Structure and function of an ecosystem Producers, consumers and decomposers; concept and definition of food chains, food webs, and ecological pyramids (Brief Note). (2 Hour)
UNIT 2:	Basic awareness on various ecosystems – forest, desert, grassland, wetland, aquatic ecosystems (Brief note). (2 Hours)
UNIT 3:	Definition and levels of Biodiversity - genetic, species and ecosystem, Value of

	biodiversity - consumptive use, productive use, social, ethical, and aesthetic and option values diversity (Detailed note). (3 Hours)
UNIT 4:	Brief note on India as a mega-diversity nation; hot-spots of biodiversity (basic awareness). (2 Hours)
UNIT 5:	Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Concept and definition of Rare, Threatened, Vulnerable, Endangered, Extinct and Endemic species, Examples of IUCN threatened species of plants and animals, Red Data Book. (3 Hours)
UNIT 6:	Biodiversity conservation at global, national and local levels. Convergence and divergence in species; In-situ and Ex-situ conservation of biodiversity (detailed note) (3 Hours)
BLOCK III: SOCIAL ISSUES AND SUSTAINABLE DEVELOPMENT **(15 Hours)**	
(Pre-requisite: A basic understanding on the health effects of poor environmental quality and the proble*ms of population growth)*	
UNIT 1:	Environment and human health: Environmental quality, human exposure and health impact; types of environmental diseases – occupational diseases/health hazards -asbestosis, silicosis, asthma, fluorosis and allergies (concept and definition only). (3 Hours)
UNIT 2:	Epidemiological issues in health –vector borne diseases, water borne diseases, water related diseases, airborne diseases (Definition and Examples). (3 Hours)
UNIT 3:	Need for public awareness on aspects related to environment - History of environmental movements in India - Chipko movement, Narmada Bachao Andolan.
UNIT4:	Current environment conservation activities - Swachh Bharat Abhiyan, Haritha Keralam Mission, Role of eco-club, nature club (Basic concepts only). (3 Hours)
UNIT5:	Population growth, population explosion and associated issues. (2 Hours)
UNIT6:	Sustainable development: definition and concept; overview and listing of 17 sustainable development goals (SDGs) (Detailed note). (4 Hours)
BLOCK IV: ENVIRONMENTAL ETHICS AND CONTEMPORARY ENVIRONMENTAL ISSUES **(15 Hours)**	

	(*Pre-requisite: Awareness on the current environmental issues)*
UNIT 1:	Concept of Environmental ethics: definition of anthropocentrism, biocentrism, ecocentrism, ecofeminism, environmental equity and justice, food security and social security. (3 Hours)
UNIT 2:	Overview of solid waste segregation and management, zero waste concept, Basic awareness on plastics and microplastics in environment. (2 Hours)
UNIT 3:	Concept of global warming and climate change – major drivers of climate change (greenhouse gases and aerosols), GreenHouse Effect, major impacts of climate change on agriculture, forest, water resources, Management options to tackle climate change (Detailed note), Overview of acid rain, ozone layer depletion. (3 Hours)
UNIT 4:	Concept and definition of carbon sequestration, carbon foot print, carbon credit, carbon Trading, Environmental Politics, Environmental Economics, Green Economy, Circular Economy, Environmental Impact Assessment. (3 Hours)
UNIT 5:	A brief overview of prominent natural disasters in India – earthquake, landslide, flood, cyclone. (2 Hours)
UNIT 6:	UNIT 6: List of important Acts and Rules for the conservation of environment - Wildlife Protection Act (1972), Water (Prevention and control of Pollution) Act (1981), Air (Prevention and Control of Pollution) (1974), Environment Protection Act (1986) (2 Hours)
Field/Industrial/Institutional Visit for experiential learning of environmental issues and management, and familiarization of equipment used for that.	

References

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4. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd.,Ahmedabad –380 013, India.
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of Environmental Education and Research, Pune p. 288.
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16. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p.
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20. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science.
21. Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R).
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ANNEXURE-II

ABILITY ENHANCEMENT COMPULSORY COURSE

(Learners can choose any one)

B21EG01AC: ENGLISH FOR COMMUNICATION
(Number of Credits: 4)

Objectives:
1. To reinforce the importance of English as a tool for global communication. 2. To develop the linguistic and communicative competence of students. 3. To initiate the learner to explore practical applications of language in real life contexts. 4. To make students understand the nuances of communication and its effective usage by enhancing their LSRW and cultural skills. 5. To enhance the skills of the learner to be an effective communicator in a digitally interconnected world.

Course Outcomes:
Upon completing the course students will,
1. Have been exposed to a variety of learner -friendly modes of language use and practice. 2. Be proficient in LSRW skills, along with social media language. 3. Be capable of using language related to digital and electronic technology, by employing the advantages of ICT enabled learning. 4. Be oriented to the possibilities and pitfalls of communication in formal and informal situations.

COURSE OUTLINE	
BLOCK 1:	**COMMUNICATION AND LANGUAGE**
BLOCK 2:	**RECEPTIVE OR PASSIVE SKILLS**
BLOCK 3:	**PRODUCTIVE OR ACTIVE SKILLS**
BLOCK 4:	**COMMUNICATION AND TECHNOLOGY**

COURSE DETAILS	
BLOCK 1: Communication and Language	
UNIT 1	Introduction to Communication – Language – Origin and Development – Evolution within Languages – Development of Speech and Writing
UNIT 2	Barriers of Communication through Language – Formal and Informal Communication – Communication Etiquettes – Written Versus Oral Communication

UNIT 3	The Four Skills of Communication – LSRW – The Fifth Skill of Cultural Awareness – Bilingualism – The Need and Role of Translation
UNIT 4	Significance of English as a Global Language – Communication in English – English in India – The Inhibited Introvert – Literature as a Creative Application of Language
BLOCK 2: Receptive or Passive Skills	
UNIT 1	Learning to Listen – Listening skills in Synchronous Communication – Listening Etiquettes – Problems Affecting Effective Listening – Developing Listening Skills
UNIT 2	Listening to the Media – Audio Files: Transfer and Storage – Enhancement of Listening Through the Internet: TED Talks – Music with Lyrics on YouTube
UNIT 3	Ready to Read – Enhancing Vocabulary – Scanning and Skimming – Speed Reading – Decoding the Dictionary
UNIT 4	Print and Online Reading – Navigating through the Internet – Links and Hypertexts – Online Resources for Literary Reading
BLOCK 3: Productive or Active Skills	
UNIT 1	Speaking it Out – Speaking to the Mirror – Understanding Your Audience – Overcoming Inhibitions
UNIT 2	Audio Chats to Enhance Speaking – The Practice of Self-Recording – Online Pronunciation Aids
UNIT 3	The Written Word – The Writing Process - Writing Plan-Drafts and Revisions – The Well Written Sentence – Concision, Emphasis, Rhythm, Variety – Diction – Meaning, Clarity and Simplicity – Figurative Language – Collocations – Punctuations
UNIT 4	Conventions of Social Media Writing – Linguistic Checks – Online Tools to Help – The Long and Short of it: Facebook Posts to Blog Articles – Forwards and Shares: Possibilities and Problems.
BLOCK 4: Communication and Technology	
UNIT 1	Origins of Technology in Language – The Evolution of Writing – Print and Publication – Technology in Language – Systems of Sound and Motion Recording
UNIT 2	Evolution of Electronic and Digital Technology – Language and the Cyberspace – Language and ICT – Technical Terms Commonly Used in ICT – The Internet: Aspects of Efficiency and Economy – Applying the Social Media for Language Enhancement – File Formats and Mutual Conversions – Search Tools and Techniques
UNIT 3	Authenticity of New Media – Possibility of Linguistic Errors – Cyber Laws – Misuse and Abuse in Cyber Space

UNIT 4	Contributing to Social Media – Appropriate and Upright Conduct on Social Media Platforms – Electronic Tools and Health Hazards

Reference

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11. Mukhopadhyay, Lina et al. *Polyskills: A Course in Communication Skills and Life Skills*. Foundation, 2012.
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13. Robert, Barraas. *Students Must Write*. London: Routledge, 2006.
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ABILITY ENHANCEMENT COMPULSORY COURSE

(Learners can choose any one)

B21ML01AC: പ്രായോഗികമലയാളം

(Prayogikamalayalam)

(Number of Credits: 4)

Objectives
1. മാതൃഭാഷയിലുള്ള ആശയവിനിമയശേഷി മെച്ചപ്പെടുത്തുകയും ഫലപ്രദമാക്കുകയും ചെയ്യുക. 2. മാതൃഭാഷയിൽ പ്രാവീണ്യം നേടുന്നതിനാവശ്യമായ പരിശീലനം നേടുക. 3. മലയാളഭാഷയുടെ വ്യത്യസ്തങ്ങളായ പ്രയോഗ മേഖലകളെ പരിചയപ്പെടുക. 4. വ്യത്യസ്തങ്ങളായ നാല് പ്രയോഗമേഖലകളിലൂടെ ഭാഷ തെറ്റുകൂടാതെ പ്രയോഗിക്കാനുള്ള ശേഷി ആർജ്ജിക്കുക. 5. മലയാള ഭാഷയെ കൂടുതൽ അടുത്തറിയാനും പഠിക്കാനും പ്രയോഗിക്കാനും സാധിക്കുക.

Course Outcome
1. മാതൃഭാഷയിൽ ഫലപ്രദമായും സംവേദന പരമായും ആശയ വിനി മയം നടത്താനുള്ള ശേഷി ആർജ്ജിക്കുന്നു. 2. മാതൃഭാഷയുടെ വ്യത്യസ്ത പ്രയോഗ മേഖലകളെ പരിചയപ്പെടുന്നു. 3. മാതൃഭാഷയിലെ സാഹിത്യ സമ്പത്തുക്കളെക്കുറിച്ച് അറിവുനേടു ന്നു. 4. മാതൃഭാഷയുടെ പ്രയോഗത്തിൽ പ്രാവീണ്യം നേടുന്നു. 5. മാതൃഭാഷയുടെ വിജ്ഞാന നിർമ്മാണ പ്രക്രിയയിൽ പങ്കാളിയാവു ന്നു.

	COURSE DETAILS
ബ്ലോക്ക് **1** - എഴുത്ത്	വിശദപഠനം 1. മലയാളശൈലി (മൂന്നാം അദ്ധ്യായം) - കുട്ടികൃഷ്ണമാരാര് 2. ഭാഷാഗദ്യശൈലി (സാഹിത്യവിചാരം)- എം. പി. പോൾ 3. ശൈലിയെപ്പറ്റി ചില ചിന്തകൾ - (സമാലോചന)- എസ്. ഗുപ്തൻ നായർ 4. ഭാഷയും ആശയവിനിമയവും (ഭാഷയും മനഃശാസ്ത്രവും)- ഡോ. കെ. എം. പ്രഭാകരവാര്യർ 5. അല്പം ഭാഷാവിചാരം (തെരഞ്ഞെടുത്ത ലേഖനങ്ങൾ)- പ്രൊഫ. കെ. ഗോപാലകൃഷ്ണൻ

	6. ഭാഷ: ശുദ്ധവും കരട് കലർന്നതും (ഗദ്യശില്പി)- കെ. പി. വിജയൻ 7. അക്ഷരത്തെറ്റുകൾ (തെറ്റും ശരിയും)- പന്മന രാമചന്ദ്രൻ നായർ
ബ്ലോക്ക് **2** – പ്രഭാഷണം	ആധുനിക കേരളത്തിന്റെ സൃഷ്ടിയിൽ നവോത്ഥാന നായകരും സാംസ്കാരിക പ്രവർത്തകരും നിർവ്വഹിച്ച പ്രഭാഷ ണങ്ങൾ നിർണ്ണായക പങ്ക് വഹിച്ചിട്ടുണ്ട്. പ്രഭാഷണ കലയെ ക്കുറിച്ച് മനസ്സിലാക്കുകയും മികച്ച പ്രഭാഷണ മാതൃകകൾ പരിചയിക്കുകയും ചെയ്യുക യെന്നതാണ് പഠനോദ്ദേശ്യം. വിശദപഠനം 1. പ്രഭാഷണകല- സുകുമാർ അഴീക്കോട് 2. ഭാരതത്തിന്റെ സർഗാത്മകഭാവന (ജ്ഞാനപീഠപുരസ്കാര സ്വീകരണപ്രസംഗം)- ജി. ശങ്കരക്കുറുപ്പ് 3. എന്റെ മണ്ണ്- വി. ടി. ഭട്ടതിരിപ്പാട് 4. മരുഭൂമികൾ പൂക്കുമ്പോൾ- എം. എൻ. വിജയൻ
ബ്ലോക്ക് **3** - മാധ്യമങ്ങൾക്കുവേണ്ടിയുള്ള രചന	വിശദപഠനം 1. വാർത്താമൂലകങ്ങൾ, വാർത്താഘടന (വാർത്ത വോള്യം 2)- ജോയി തിരുമൂലപുരം 2. പംക്തിയെഴുത്തിന്റെ രാഷ്ട്രീയം (പത്രാനന്തര വാർത്തയും ജനാധിപത്യവും)- എൻ. പി. രാജേന്ദ്രൻ 3. അഭിമുഖങ്ങൾ ആഭിചാരമാകുമ്പോൾ (ക്ലാസ്സിക് ഇന്റർവ്യൂസ് എന്ന പുസ്തകത്തിൽ)- ജമാൽ കൊച്ചങ്ങാടി 4. സ്വാതന്ത്ര്യം വിലപേശാനുള്ളതല്ല - മഹാത്മാഗാന്ധിയുമായി ഹെൻറി ബ്രെയിൽ സഫോസ് നടത്തിയ അഭിമുഖ സംഭാ ഷണം. (ക്ലാസ്സിക് ഇന്റർവ്യൂസ് എന്ന പുസ്തകത്തിൽ) 5. കോവിലനുമായി എസ്. വി. വേണുഗോപൻനായർ നടത്തിയ അഭിമുഖസംഭാഷണം. (കോവിലൻ, മൾബറി ബുക്സ്, കോഴിക്കോട്, എന്ന പുസ്തകത്തിൽ) 6. കവിതയിലെ ശുദ്ധനാദങ്ങൾ - ആർ. രാമചന്ദ്രനുമായി പി. എം. നാരായണൻ നടത്തിയ അഭിമുഖസംഭാഷണം. (കോലായ ചർച്ചകൾ എന്ന പുസ്തകത്തിൽ)
ബ്ലോക്ക് **4** - വിവർത്തനം	മലയാളഭാഷയുടെയും സാഹിത്യത്തിന്റെയും വികാസ പരി ണാമങ്ങളിൽ വിവർത്തനം നിർണ്ണായക പങ്ക് വഹിച്ചിട്ടുണ്ട്. തുടക്കത്തിൽ സംസ്കൃതത്തിൽ നിന്നും തമിഴിൽ നിന്നുമായി രുന്നു വിവർത്തനമെങ്കിൽ ആധുനികമായ പാശ്ചാത്യാശയ ങ്ങൾ മലയാളത്തിൽ കടന്നെത്തുന്നത് ഇംഗ്ലീഷിലൂടെയാണ്. വിവർത്തനം എന്ന പ്രക്രിയയെ ശാസ്ത്രീയമായി ഗ്രഹിക്കു കയും സ്വയം പരിശീലിക്കുകയും ചെയ്യുകയാണ് പഠനോദ്ദേ ശ്യം. വിശദപഠനം 1 വിവർത്തനം എന്ന ഗ്രന്ഥത്തിന്റെ അവതാരിക- എൻ. വി. കൃഷ്ണവാര്യർ

	2. പാശ്ചാത്യവിവർത്തനസിദ്ധാന്തങ്ങൾ (വിവർത്തനവിചാരം എന്ന പുസ്തകത്തിൽ)- ഡോ. എൻ. ഇ. വിശ്വനാഥയ്യർ 3. തർജ്ജമപഠനത്തിലെ പുത്തൻ പുതുമകൾ (തർജ്ജമ സിദ്ധാന്തവും പ്രയോഗവും മലയാളത്തിൽ പുസ്തകത്തിന്റെ ആമുഖപഠനം)- ഡോ. സ്കറിയ സക്കറിയ 4. ഇംഗ്ലീഷിൽ നിന്നും മലയാളത്തിലേക്കുള്ള വിവർത്തന പരിശീലനം.

റഫറൻസ്

1 . പ്രൊഫ.പന്മന രാമചന്ദ്രൻനായർ,നല്ല ഭാഷ - ഡി സി ബുക്സ്, കോട്ടയം.
2. സ്കറിയ സക്കറിയ, ജയ സുകുമാരൻ, തർജമ - സിദ്ധാന്തവും പ്രയോഗവും - താപസം, ചങ്ങനാശ്ശേരി.
3. പി. കെ രാജശേഖരൻ,മലയാളിയുടെ മാധ്യമജീവിതം - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം.
4. രാമകൃഷ്ണപിള്ള, കെ, വൃത്താന്തപത്രപ്രവർത്തനം - മാളുബെൻ, തിരുവനന്തപുരം.
5. പി കെ അനിൽകുമാർ, പ്രഭാഷണകലയിലെ വചനവഴികൾ - സൈന്ധവ ബുക്സ്, കൊല്ലം.
6 Stephen E. Lucas,The Art of Public Speaking - McGraw Hill, New York.
7. K. Tim Wulfemeyer, Contemporary Media: Structures, Functions, Issues and Ethics- Kendall Hunt Publishing Company, Dubuque.
8. Douglas Robinson, Western Translation Theory from Herodotus to Nietzsche-Routledge, London

ABILITY ENHANCEMENT COMPULSORY COURSE

(Learners can choose any one)

B21HD01AC: रोजमर्रा हिंदी **(EveryDay Hindi)**

Number of Credits: 4

पाठ्यक्रम उद्देश्य (Curricular Objectives)
छात्रों को हिंदी भाषा में प्रभावी और धारा प्रवाही ढंग से बोलने के लिए प्रशिक्षित करना | हिंदी भाषा में कम या बिल्कुल क्षमता वाले छात्रों को जीवन के सभी क्षेत्रों में हिंदी बोलने में सक्षम बनाना और उन्हें हिंदी के विभिन्न साहित्यिक रूपों और लेखकों से परिचित कराना।

पाठ्यक्रम परिणाम (Course Outcome)
1.जीवन के सभी क्षेत्रों में हिंदी भाषा बोलने में सक्षम बनाना और हिंदी के सामान्य व्याकरण के सही उपयोग को समझता है । 2. वाक्यों, संवादों आदि के अनुवाद करने में सक्षम बनता है और कहानी कहने या किसी घटना के वर्णन करने में सक्षम बनता है ।

पाठ्यक्रम रूपरेखा (Course Outline)

ब्लॉक 1 :	भाषा की बुनियादी संरचना और दैनिक गतिविधियाँ
ब्लॉक 2 :	शुभकामनाएं, अभिलाषाएँ एवं कहानी
ब्लॉक 3 :	मेरी छुट्टी ,दोस्त और यात्रा।
ब्लॉक 4 :	पशु-पक्षी ,त्यौहार-मेले,पेशा-धंधा ,मनपसंद फिल्म आदि |

ब्लॉक 1 : भाषा की बुनियादी संरचना समझना ।	
इकाई 1 :	नाम और स्थानों के अक्षरों को पहचानें और लिखें और मूल वाक्य संरचना को समझें। एक दूसरे को संबोधन करें और उचित तरीके से विदा लेने की अनुमति मांगें|

इकाई 2 :	क्या' और 'कहां' जोड़कर प्रश्न पूछना । वाक्य संरचना समझें और 'होना' क्रिया का प्रयोग समझें ।वहाँ 'क्या है' और 'क्या नहीं' के बारे में समझना। 'प्रत्यय जैसे में, पर, के पास, से दूर और निश्चयवाचक सर्वनाम जैसे ये, वे, यह, वह का प्रयोग करें। विशेषणों का प्रयोग करें: जैसे बड़ा, छोटा, गंदा, साफ, थोडा, ज्यादा, कम, बहुत आदि।
इकाई 3 :	नाम और घरेलू वस्तुओं से परिचय पाना, योजकों को समझना और उनका उपयोग करना। एकवचन/बहुवचन स्त्रीलिंग /पुलिंग आदि का प्रयोग समझना | दैनिक दिनचर्या के बारे में प्रश्न पूछें और उत्तर दें। विभिन्न दैनिक गतिविधियों की सूची बनाएं और उन्हें समझाएं। समय के बारे में जानें और सप्ताह के दिनों को पहचानें।
इकाई 4 :	संज्ञा, सर्वनाम, विशेषण, लिंग आदि के प्रयोग समझना। उसके व्यावहारिक रूपों से परिचय पाना।दैनिक जीवन का अनुभव बॉट लें। निजवाचक सर्वनाम का प्रयोग करें। मित्रों से दैनिक कार्य और उनकी प्राथमिकताओं के बारे में प्रश्न पूछें और उत्तर दें।फलों और सब्जियों के नाम समझें और पहचानें। भारत के क्षेत्रीय वस्तुओं को पहचानें और नाम दें।
इकाई 5 :	संज्ञा के साथ क्रियाओं का प्रयोग समझ लें । "चाहिए" क्रिया का विशेष प्रयोग समझ लें।
ब्लॉक 2 :शुभकामनाएं, अभिलाषाएँ एवं कहानी ।	
इकाई 1 :	परिवार और दोस्तों के साथ की जाने वाली गतिविधियों के बारे में जानकारी प्राप्त करें। व्यक्तियों, व्यक्तित्व और उपस्थिति के बारे में पूछें और उनका वर्णन करें। इच्छाओं और वरीयताओं के बारे में पूछें और व्यक्त करें। सप्ताह और महीनों के दिनों को पहचानें और उनका उपयोग करें।
इकाई 2 :	चाहना के साथ डायरेक्ट इनफिनिटिव का प्रयोग करें। पसंद होना, अच्छा लगना के साथ इनफिनिटिव का प्रयोग करें। प्रश्नवाचक शब्दों का प्रयोग करें: कैसे, क्यों, किस प्रकार आदि | विशेषणों की तुलनात्मक और अतिशयोक्तिपूर्ण डिग्री का प्रयोग करें।
इकाई 3 :	पिछली घटनाओं की एक श्रृंखला का वर्णन करें। कहानी कहने के लिए परिचयात्मक और समाप्त होने वाले पारंपरिक वाक्यांशों का उपयोग करें। इस्के बाद, इसी लिए, उस्का मतलब, आदि का उपयोग करें।

इकाई 4 :	(बाद ,इसी के लिए ,उसका मतलब)। वस्तुओं पर ध्यान केंद्रित करते हुए पूर्ण काल का प्रयोग करें। पुल्लिंग एकवचन का प्रयोग करें। किसी भी मलयालम या हिंदी फिल्म की कहानी सुनाना।
इकाई 5 :	
ब्लॉक :3 मेरी छुट्टी	
इकाई 1 :	छुट्टी के बारे में जानकारी का आदान-प्रदान करें - कहाँ, क्या, कैसे, किसके साथ | सकना, चुकना और पाना का प्रयोग |
इकाई 2 :	समय के बारे में जानकारी | जैसे सवा तीन ,साढे नौ ,पौने चार आदि | को + INFINITE का प्रयोग (उसको जाना है ,मुझे आना है या आना पडेगा आदि का प्रयोग)
इकाई 3 :	एक यात्रा कार्यक्रम की पहचान करें कारण बताएं कि कोई स्थान देखने लायक क्यों है ? मौसम के अनुसार क्या अच्छा है क्या बुरा है इस बारे में प्रश्न पूछें और उत्तर दें | जितना-उतना ,जैसे-वैसे, जहां-वहां,जिधर-उधर , जब तक -तब तक आदि का प्रयोग समझना |
ब्लॉक4:पशु-पक्षी ,त्यौहार-मेले,पेशा-धंधा ,मनपसंद फिल्म आदि |	
इकाई 1 :	भारत में पाए जानेवाले पशु-पक्षियों के बारे में बात करना | भारत के उत्सवों के बारे में बात करना |
इकाई 2 :	विभिन्न प्रकार के पेशे व् धंधे के बारे में बातें करना |
इकाई 3 :	अगर-तो ,ताकि का प्रयोग समझना |
इकाई 4 :	किसी मनपसंद movie के बारे में बताना | उसके पात्रों के बारे में चर्चा करना |

सन्दर्भ ग्रंथ सूची

1.रोजमर्य हिंदी : प्रोफ: डी .पी .वनामामलाइ।
2.Every day : डॉ :सुंगोक होंग ।

3 .सरल सामान्य हिंदी : रजीत कुमार त्रिपाठी ।

ABILITY ENHANCEMENT COMPULSORY COURSE

(Learners can choose any one)

B21SN01AC
व्यावहारिक संस्कृतम् **(Vyavaharika Samskrutham)**
(Number of Credits: 4)

लक्ष्यम् **(Objectives)**
• संस्कृतभाषायाः अनुसञ्चरणे प्रचोदनम् । • संस्कृतभाषायाम् उपलब्धानां प्रसारणमाध्यमानां विषयावगमनम् । • भाषाध्ययने उपयुक्तानां संस्कृतानुप्रयोगाणां जालस्थानानां च अवगमनम् । • निरर्गले भाषणे कौशलोपार्जनम्च।

उद्देश्यानि **(Course Outcomes)**
• संस्कृतभाषाश्रवणेन सम्यगर्थावगमनम्। • संस्कृतभाषायाम् उपलब्धानां प्रसारमाध्यमानां वस्त्ववगमनक्षमता। • निरर्गलभाषणकौशलम्। • भाषाध्ययने उपयुक्तानांसंस्कृतानुप्रयोगाणांजालस्थानानां च यथाविध्युपयोगक्षमता।

	पत्ररूपरेखा **(COURSE OUTLINE)-**
खण्डः**1:**	श्रवणम् ।श्रवणे साक्षात् एवंसङ्गणकाधारितंप्रशिक्षणंदातव्यम्। एतदर्थं
	सम्भाषणकार्यशालायाः समायोजनंस्पृहणीयमेव। 1. 1. वर्णानामुच्चारणम् 1. 2. शब्दसम्पत्तिः 1. 3. कथाश्रवणम् 1. 4. सम्भाषणकार्यशाला- प्राथमिका।
खण्डः **2:**	प्रसारमाध्यमानांभाषा संस्कृते उपलब्धानां प्रसारणमाध्यमानां प्रतिपत्त्यर्थं प्रशिक्षणंदातव्यम्। प्रतिदिनंवार्तापत्रिकाणां वाचने वार्ताप्रसारणानांश्रवणेचप्रोत्साहनंकार्यम्।
	2. 1. वार्ताः एवं विक्कीपीडिया i. DD News Vartah ii. AIR News iii. DD Vartavali iv. Sanskrit Newspaper- Sudharma v. Sanskrit Wikipedia 2. 2. संस्कृतेविज्ञापनचित्राणि i. Sanskrit songs ii. Sanskrit films

	2. 3. संस्कृतगानानि, चलच्चित्राणिच 2. 4. संस्कृतेक्रीडा
खण्डः **3**:	भाषणम्।
	शिक्षकाणां साहाय्येन छात्राः संस्कृतसम्भाषणकुशलाः भवेयुः। कथाकथने, लघुरूपकावतरणे, वार्तावाचने च विशिष्यप्रशिक्षणं देयम्। द्वितीयस्तरीयासंस्कृतसम्भाषणकार्यशाला अपि समायोज्यास्यात्।
	3. 1. अक्षराणांपदानांचमौखिकाभ्यासः। 3. 2. कथाकथनशिक्षणम्। 3. 3. वार्तावाचनशिक्षणम्। 3. 4. सम्भाषणशाला- द्वितीयस्तरीया।
खण्डः **4:**	सङ्गणकयुगेसंस्कृताध्ययनम्।
	भाषाध्ययने उपयुक्तानां संस्कृतानुप्रयोगाणां, जालस्थानानां च परिचयः कर्तव्यः।
	4. 1. प्रत्याह्निकाःसंस्कृतानुप्रयोगाः। i. App for greetings in Sanskrit- ii. Online Spoken Sanskrit Dictionary 4. 2 सङ्गणकाधारिताःसाम्प्रदायिककोशाः I. Amarakosha App Ii. Shabdakalpadruma App 4. 3. भाषाध्ययनेउपयुक्ताःसंस्कृतानुप्रयोगाः i. Sanskrit Verb forms and roots- Sanskrit Dhatu 360o App ii. Shabdroopmala App 4. 4. सङ्गणकाधारिताःलेखागाराः। i. Sanskrit e- books App - Sanskrit Pustakalaya ii. Internet archive

References

Samskrita Vyavahara sahasri, Viswa Samskrita Pratishthan, Kerala,2004.
Kutumbhasastri, V. Vakyavyavahara. New Delhi, 2002.
Poulose. K.G. Lakhusamskritam. Edappal: Kamadhenu Samskrita Pathanakendra, 2006

Web Resources:

Samskrita Bodhini: “A Study Guide for Spoken Sanskrit Language, International edition”, Sanjeev Majalikar,2018
https://store.pothi.com/book/sanjeev-majalikar-samskrita-bodhinii/
Dayanandasarasvati, Samskrita-vakyaprabodha, Sanskrit documents.
(https://sanskritdocuments.org/scannedbooks/ebooks/sanskritavakyaprabodhah_dayanandasaraswati.pdf)
Central Sanskrit University, “Sanskrit Language teaching lecture (1-30)”, 2018.
https://youtube.com/playlist?list=PLNzsbZjYvXf86efy9gd8y9jJQ54ey6Eqa
DD News Vartah (https://youtu.be/e0l7YReMhkc),

AIR News (https://airlive.page.link/installapp);
DD Vartavali(https://www.youtube.com/playlist?list=PLxx0m3vtiqMZGmsUEVeTAuWIXqc9fTMHy);
Sanskrit Newspaper- Sudharma
(http://epapersudharmasanskritdaily.in)
Sanskrit Wikipedia
(https://sa.wikipedia.org/wiki/)
(https://youtu.be/aLxhgAJxpBQ) (https://youtu.be/q2mnJVdtBUU)
Sanskrit songs (https://sa.wikiquote.org/)
Sanskrit films (https://en.wikipedia.org/wiki/Sanskrit_cinema)
Master any Language, "Play Sanskrit Language learning game".
(https://www.masteranylanguage.com/c/r/o/Sanskrit/Games)
Central Sanskrit University, "Sanskrit Language teaching lecture
(31-60, 61-90 & 91-120)", 2018.
(Lectures 31-60)
https://youtube.com/playlist?list=PLNzsbZjYvXf-15Tg9RcMNNuzX0ZvxHZ_u
(Lectures 61-90)
https://youtube.com/playlist?list=PLNzsbZjYvXf9sR2WrFCzNajIc3QOXxb1T
(Lectures 91-120)
https://youtube.com/playlist?list=PLNzsbZjYvXf9D_PkodiOGE5slHZVOdVRO
App for greetings in Sanskrit-
Sansgreet App, Live Sanskrit.
https://play.google.com/store/apps/details?id=com.sans.greet.livesanskrit
Online Spoken Sanskrit Dictionary, Klaus Glashoff, Lugano, 2017
www.learnsanskrit.cc
Amarakosha App
(https://play.google.com/store/apps/details?id=org.srujanjha.amarkosh);
Shabdakalpadruma App
(https://play.google.com/store/apps/details?id=org.shrutijha.sanskrit_sanskrit)
Sanskrit Verb forms and roots- Sanskrit Dhatu 360° App
(https://play.google.com/store/apps/details?id=com.labs.aeiun.sanskritDhatu360)
Shabdroopmala App (https://play.google.com/store/apps/details?id=org.shrutijha.shabdroopmala
Sanskrit e- books App - Sanskrit Pustakalaya
(https://play.google.com/store/apps/details?id=org.srujanjha.sanskritbooks
Internet archive
www.archive.org

ABILITY ENHANCEMENT COMPULSORY COURSE

(Learners can choose any one)

B21AR01AC: Communication in Arabic

(Number of Credits: 4)

OBJECTIVES
• The learner would identify the basic structure of Arabic Language. • The learner would acquire essential vocabularies in Arabic for various situations • The learner would be able to construct sentences in Arabic • The learner would be able to communicate in Arabic in various situations

COURSE OBJECTIVES
1. Identify the basic structure of Arabic Language. 2. Acquire essential vocabularies in Arabic for various situations 3. Construct sentences in Arabic 4. Communicate in Arabic in various situations

COURSE OUTLINE	
Block 1	Greetings and Introduction in Arabic - **التحيات والتعارف**
Block 2	Conversations and Interviews - **لقاء ومقابلات**
Block 3	Numbers and Days in a week **العدد وأيام الأسبوع**
Block 4	Time - التوقيت.
Block 5	Arabian Food -الطعام العربي
BLOCK 1:	**Greetings and Introduction in Arabic - والتعارف التحيات**

	Units: 1. Greetings in Arabic تحيات 2. Self-Introduction in Arabic.التعريف بنفسه 3. Introduce Others in Arabicتعريف الآخرين 4. Pronouns - Hadha, Hadhihi الضمائر : هذا، هذه
BLOCK 2	**Conversations and Interviews - ومقابلات لقاء**
	Units: 1. Interview. - مقابلة 2. In the Airport -Conversation -في المطار 3. Meet - لقاء 4.أدوات الاستفهام -Question words
BLOCK 3	**: Numbers and Days in a week العدد وأيام الأسبوع**
	Units: 1. In the library - Conversation. -في المكتبة 2. What does he do- Conversation - ماذا يفعل؟ 3. I am Busy - Conversation.أنا مشغول 4. الفعل المضارع
BLOCK 4	**Time - التوقيت .**
	Units: 1. In a travel agency in the Airport - conversation - في مكتب الطيران في المطار 2. Reception - conversation - استقبال 3. Between two students - conversation -بين الطالبين
BLOCK 5	Arabian Food - **الطعام العربي** .
	Units:

	1. Arabian Food - conversation - الطعام العربي 2. In a hotel - conversation - في المطعم 3. Lunch - conversation - غداء 4. الأسماء الموصولة.

Book for study:
العربية للحياة: منهج متكامل في تعليم العربية لغير الناطقين بها، (الكتاب الأول)، تأليف: ناصيف مصطفى عبد العزيز ومحي الدين صالح، الناشر: عمادة شؤون المكتبات، جامعة الملك سعود، الرياض، المملكة العربية السعودية، ط3، 1994 **(Al Arabiyya Li l-Hayath – Book 1, by Nasif Musthafa Abdul Aziz and Muhyudhin Swalih, Published by: Kind Saud University, Riyadh, Ed:3, 1994)** **Reference.** **'Al Arabiyya Li N-naashieen', Book of Students, Part 3, Published by Educa- tion Ministry, Kingdom of Saudi Arabia**

Modern Indian Languages I (MIL)

(Learners can choose any one. The same language should be chosen for MIL- II)

B21ML01LC: മലയാള സാഹിത്യം : കവിത -കഥ - ഉപന്യാസം - നോവൽ

(Malayala Sahithyam: Kavita- Kadha- Upanyasam-Novel)

Number of credits: 6

Objectives
1. ആധുനികതയുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള സാഹിത്യവുമായി പരിചയം നേടുക 2. കവിത,കഥ,ഉപന്യാസം,നോവൽ എന്നീ സാഹിത്യ സാഹിത്യ രൂപങ്ങളെ പരിചയപ്പെടുക 3. പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുക 4. സാഹിത്യ രൂപം എന്ന നിലയിൽ കഥ ,കവിത ഉപന്യാസം ,നോവൽ എന്നിവയുടെ ചരിത്രത്തെ വിമർശനാത്മകമായി സമീപിക്കുക

Course Outcomes
1. നവോത്ഥാനകാല കാഥികരുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള കഥകളുടെ ചരിത്രത്തെ പരിചയപ്പെടുന്നു. 2. പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുന്നു. 3. ഉപന്യാസ സാഹിത്യത്തിന്റെ വൈവിധ്യം തിരിച്ചറിയുകയും പ്രതിപാദനരീതി പരിചയിക്കുകയും ചെയ്യുന്നു 4. മലയാള നോവലിന്റെ ചരിത്രവും പരിണാമവും മനസിലാക്കുന്നു

ബ്ലോക്ക് - 1	കവിത
	ആധുനികതയുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള

	കവിതാസാഹിത്യവുമായി പരിചയം നേടുക, പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുക എന്നിവയാണ് ബോധനോദ്ദേശ്യം. കവിതകൾ എല്ലാം വിശദപഠനത്തിനായി നിർദ്ദേശിക്കപ്പെട്ടവയാണ്.
	വിശദപഠനം 1 വിഷുക്കണി- വൈലോപ്പിള്ളി 2. പൂക്കളം-ചങ്ങമ്പുഴ 3. എനിക്കു മരണമില്ല- വയലാർ 4. ഉപ്പ്- ഒ. എൻ. വി. കുറുപ്പ് 5. അമ്പലമണി- സുഗതകുമാരി 6. കടമ്മനിട്ട - കടമ്മനിട്ട 7. നാടെവിടെ മക്കളേ- അയ്യപ്പപ്പണിക്കർ 8. ഭാരതീയം- വി. മധുസൂദനൻ നായർ 9. ചാർവ്വാകൻ- കുരീപ്പുഴ ശ്രീകുമാർ 10. ആൾമറ -റഫീക്ക് അഹമ്മദ് 11. ഇൻസ്റ്റലേഷൻ- വീരാൻകുട്ടി 12. കണ്ണ്- എസ്. ജോസഫ്
ബ്ലോക്ക് - 2	**കഥകൾ**
	നവോത്ഥാനകാല കാഥികരുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള കഥകളുമായുള്ള പരിചയം നേടുക, പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുക എന്നിവയാണ് ബോധനോദ്ദേശ്യം. കഥകൾ എല്ലാം വിശദപഠനത്തിനായി നിർദ്ദേശിക്കപ്പെട്ടവയാണ്
	വിശദപഠനം 1. ജന്മദിനം - വൈക്കം മുഹമ്മദ് ബഷീർ 2. മനുഷ്യപുത്രി - ലളിതാംബിക അന്തർജ്ജനം 3. വെള്ളപ്പൊക്കത്തിൽ - തകഴി ശിവശങ്കരപിള്ള 4. മരപ്പാവകൾ - കാരൂർ നീലകണ്ഠപിള്ള 5. കോലാട് - മാധവിക്കുട്ടി 6. ഭീരു - എം. ടി. വാസുദേവൻ നായർ 7. മകൻ - ടി. പത്മനാഭൻ

	8. പാപത്തറ - സാറാ ജോസഫ് 9. ദൽഹി 1981 - എം. മുകുന്ദൻ 10. റെയിൽപ്പാളത്തിലിരുന്ന് ഒരു കുടുംബം ധ്യാനിക്കുന്നു - യു. കെ. കുമാരൻ 11.അളവുകൾ - ഇ. സന്തോഷ്കുമാർ
ബ്ലോക്ക് - 3	**- ഉപന്യാസം**
	ഉപന്യാസസാഹിത്യത്തിന്റെ വൈവിദ്ധ്യം തിരിച്ചറിയുകയും പ്രതിപാദനരീതി പരിചയിക്കുകയും ചെയ്യുക.ആശയാവതരണം ഗ്രഹിക്കുക.
	വിശദപഠനം 1. സത്യവും സൗന്ദര്യവും- കുട്ടികൃഷ്ണമാരാര് 2. കാളിദാസനും കാലത്തിന്റെ ദാസൻ- ജോസഫ് മുണ്ടശ്ശേരി 3. പാത്രാവിഷ്കരണം മലയാള നാടകത്തിൽ - എം.കെ.സാനു 4. ആദർശ മാനവികതയുടെ സംഗീതം- കെ. പി. അപ്പൻ (ചരിത്രത്തെ അഗാധമാക്കിയ ഗുരു എന്ന പുസ്തകത്തിൽ) 5. ആട്ടക്കഥാസാഹിത്യം- എം. കെ. കെ. നായർ 6. വാഗ്ഭടന്റെ പ്രഭയിൽ- സുകുമാർ അഴീക്കോട് 7. ആസ്വാദകരെ ആവശ്യമുണ്ട്- എസ്. ഗുപ്തൻ നായർ (ഇസങ്ങൾക്കപ്പുറം) 8. ലിയോനാർഡോ ഡാവിഞ്ചിയുടെ സർഗ്ഗചേതസ്സ്- എം. ലീലാവതി 9 ജി.ശങ്കരപ്പിള്ളയെ ഓർക്കുമ്പോൾ - എം. തോമസ് മാത്യു. (രുദിതാനുസാരീ കവി) 10. സാമന്തസാഹിത്യം- വി. സി. ശ്രീജൻ 11. മലയാളി കേരളീയനാണോ- എം. എൻ. കാരശ്ശേരി 12. ആർഭാടവും സന്യാസിയും നിഘണ്ടുവും- പി. കെ. രാജശേഖരൻ
ബ്ലോക്ക് - 4 -	**നോവൽ**
	വിശദപഠനം 1എ മൈനസ് ബി- കോവിലൻ 2. ഒരു വഴിയും കുറേ നിഴലുകളും- രാജലക്ഷ്മി 3. ജനകഥ- എൻ. പ്രഭാകരൻ 4. മരുഭൂമികൾ ഉണ്ടാകുന്നത്- ആനന്ദ് 5. കൊച്ചരേത്തി- നാരായൻ

റഫറൻസ്

•. ഡോ. എം. ലീലാവതി ,മലയാളകവിതാസാഹിത്യചരിത്രം - കേരള സാഹിത്യ അക്കാദമി, തൃശ്ശൂർ .

• എം. അച്യുതൻ ,ചെറുകഥ ഇന്നലെ ഇന്ന് - ഡി.സി.ബുക്സ് ,കോട്ടയം

• സുകുമാർ അഴീക്കോട് ,മലയാള സാഹിത്യ വിമർശനം - ഡി.സി.ബുക്സ് ,കോട്ടയം .

• കെ. എം. തരകൻ ,മലയാള നോവൽ സാഹിത്യം -കേരള സാഹിത്യ അക്കാദമി, തൃശ്ശൂർ.

•ഡോ.എം.ലീലാവതി, വർണ്ണരാജി - എൻ.ബി.എസ്., കോട്ടയം .

• ഡോ.കെ.എം. ജോർജ് -ആധുനിക സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡി.സി ബുക്സ് ,കോട്ടയം.

• കെ.പി. അപ്പൻ ,മാറുന്ന മലയാള നോവൽ - ഡി.സി.ബുക്സ് ,കോട്ടയം.

•ഡോ. ഷാജി ജേക്കബ്, ആധുനികാനന്തര മലയാള നോവൽ - വിപണി, കല, പ്രത്യയ ശാസ്ത്രം ,കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം .

• ഡോ.എം.എം.ബഷീർ -മലയാള ചെറുകഥാസാഹിത്യചരിത്രം - കേരള സാഹിത്യ അക്കാദമി, തൃശ്ശൂർ.

• ഡോ.പി.കെ.രാജശേഖരൻ ,അന്ധനായ ദൈവം - ഡി.സി.ബുക്സ് ,കോട്ടയം .

• പന്മന രാമചന്ദ്രൻനായർ ,എഡി. -മലയാള സാഹിത്യനിരൂപണം - , ഡി.സി.ബുക്സ് ,കോട്ടയം.

• വി രാജകൃഷ്ണൻ ,ചെറുകഥയുടെ ഛന്ദസ്സ് - ഡി.സി ബുക്സ് ,കോട്ടയം .

• പി.കെ.രാജശേഖരൻ ,കഥാന്തരങ്ങൾ - മാതൃഭൂമി ബുക്സ് , കോഴിക്കോട് .

• എം.എൻ.വിജയൻ ,കവിതയും മന:ശാസ്ത്രവും - ഡി.സി.ബുക്സ് ,കോട്ടയം .

Modern Indian Languages I (MIL)

(Learners can choose any one. The same language should be chosen for MIL- II)

B21HD01LC: हिंदी गद्य साहित्य और संरचना (Hindi prose and structure)

Number of credits: 6

पाठ्यक्रम उद्देश्य (Curricular Objectives):
छात्रों को हिन्दी साहित्य के विभिन्न गद्य रूपों से परिचित कराना, गद्य और निबंध लेखन के विभिन्न रूपों के बारे में छात्रों को परिचय देना।छात्रों को महत्वपूर्ण विचारों और मूल्यों की पहचान देना, और ऐसी रचनाओं के विश्लेषण, व्याख्या और वर्णन करने में सक्षम बनाना।

पाठ्यक्रम परिणाम (Course Outcome)	
Co-1	हिन्दी कथा साहित्य की विशेषताओं का गहन ज्ञान प्राप्त करना और इसकी पारदर्शी चित्र प्राप्त करने में सक्षम होना। हिन्दी कथा साहित्य की उत्पत्ति और विकास और इसके विभिन्न रूपों से परिचय पाना।
Co-2	प्रतिनिधि लेखकों की मुख्य रचनाओं का परिचय करना, एवं उनके शिल्प को समझना, प्रमुख कहानियों का विश्लेषण करना और प्रमुख लेखकों के योगदान का मूल्यांकन करना।
Co-3	छात्रों को उचित शब्दावली के प्रयोग में सक्षम बनाना, बेहतर अभ्यास विकसित करना, हिन्दी भाषा में बेहतर संचार और लेखन कौशल विकसित करना।
Co-4	छात्रों को कथा लेखन के बारे में समझाना और रचनात्मक कौशल विकसित करने में सक्षम बनाना।
Co-5	गद्य के विभिन्न तत्वों का विश्लेषण करें और छात्रों को महत्वपूर्ण सोच और रचनात्मक कौशल से समृद्ध करें।
Co-6	नाटकों के आस्वादन और उसकी आलोचना करने की क्षमता हासिल करना और एकांकी के बुनियादी तत्व हासिल करना, प्रख्यात नाटककारों के रचनाओं से परिचय पाना।

पाठ्यक्रम रूपरेखा (COURSE Outline)	
ब्लॉक : 1	हिन्दी कहानी का सामान्य परिचय।
ब्लॉक : 2	हिन्दी की प्रमुख कथाएँ।
ब्लॉक : 3	गद्य का उदभव और विकास।
ब्लॉक : 4	विविध गद्य रूपों का परिचय।
ब्लॉक : 5	संरचनात्मक व्याकरण।
ब्लॉक : 6	व्यकरण के व्यावहारिक प्रयोग।
ब्लॉक : 1 हिन्दी कहानी का सामान्य परिचय।	
इकाई : 1	हिन्दी कहानी का विकास ।
इकाई : 2	हिन्दी के प्रमुख कहानीकार ।
इकाई : 3	प्रेमचंद, प्रसाद, जैनेंद्र, अज्ञेय और उषा प्रियंवदा का योगदान ।
ब्लॉक : 2 हिन्दी की प्रमुख कथाएँ।	
इकाई : 1	ईदगाह - प्रेमचंद
इकाई : 2	वापसी - उषा प्रियंवदा
ब्लॉक : 3 गद्य का उदभव और विकास।	
इकाई : 1	गद्य के प्रकार।
इकाई : 2	निबंध , जीवनी,आत्मकथा, यात्रावृत्त सामान्य निबंध।
इकाई : 3	संस्मरण-रेखाचित्र, एकांकी, व्यंग्य आदि।
ब्लॉक : 4 विविध गद्य रूपों का परिचय।	
इकाई : 1	सदाचार का तावीज़ - हरिशंकर परसाई (व्यंग्य)

इकाई : 2	रज़िया - रामवृक्ष बेनीपुरी (संस्मरण)
ब्लॉक : 5 संरचनात्मक व्याकरण।	
इकाई : 1	शब्द-विचार ।
इकाई : 2	संज्ञा, लिंग, वचन, कारक सर्वनाम, विशेषण।
इकाई : 3	क्रिया ,क्रिया विशेषण ,संबंधबोधक, समुच्चय बोधक ,विस्मयाति बोधक और काल।
ब्लॉक : 6 व्याकरण के व्यावहारिक प्रयोग।	
इकाई : 1	शुद्ध कीजिए
इकाई : 2	अभ्यासार्थ अनुच्छेद
इकाई : 3	अभ्यास केलिए रचना ।

Modern Indian Languages I (MIL)

(Learners can choose any one. The same language should be chosen for MIL- II)

B21SN01LC: गद्यं नाटकं व्याकरणं च (Gadyam Natakam cha)

लक्ष्यम्(Objectives)
संस्कृतमण्डले गद्यकाव्यानां सामान्यपरिचयः ।

उद्देश्यानि (Learning Outcomes)
1.ञ्चतन्त्राध्ययनेन पशुपक्षिकथापरिचयः, मूल्यबोधनञ्च । 2.नाट्यशास्त्रस्य नाट्यप्रयोगस्य च सामान्यपरिचयः । 3.नाटकादिदशरूपकाणां सामान्यज्ञानम् । 4.प्राचीनसंस्कृतकथासमग्रज्ञानम्। 5.भासकवेः नाट्यप्रयोगपरिज्ञानम् ।

पत्ररूपरेखा (Course Outline)	
प्रथमखण्ड:	कथासाहित्यमधिकृत्य सामान्यज्ञानम्। पञ्चतन्त्रम् - कथामुखम्, चन्द्रभूपतिकथा च।
द्वितीयखण्ड:	अपरीक्षितकारकाद् उद्धृताः कथाः ।
तृतीयखण्ड:	नाटकसाहित्याविर्भावः, विकासः, सांकेतिकपदानि, रूपकविभागाश्च - एषां सामान्यावगमनम्। नाटककर्तृरूपेण भासस्य योगदानपरिचयः।
चतुर्थखण्ड:	भासस्य मध्यमव्यायोगस्य सविशेषाध्ययनम्
प्रथमखण्ड: - कथासाहित्यमधिकृत्य सामान्यज्ञानम्।	
	1. 1. कथासाहित्यम् । 1. 2 विष्णुशर्मा । 1. 3. पञ्चतन्त्रकथा: ।

	1.4. चन्द्रभूपतिकथा।
द्वितीयखण्ड: - अपरीक्षितकारकाद् उद्धृताः कथाः।	
	2.1. मूर्खब्राह्मणकथा। 2. 2. भारण्डपक्षिकथा । 2. 3. मत्स्यमण्डूककथा । 2. 4. चक्रधरकथा।
तृतीयखण्ड: - नाटकसाहित्याविर्भावः, विकासः, सांकेतिकपदानि,रूपकविभागाश्च इत्येतेषां सामान्यावगमनम्।	
	3. 1. रूपकविभागाः । 3. 2. नाटकसाहित्यं विकासश्च। 3. 3. भासनाटकचक्रम्। 3. 4. नाटकान्तं कवित्वम्।
चतुर्थखण्ड: - भासस्य मध्यमव्यायोगस्य सविशेषाध्ययनम् ।	
	4. 1. व्यायोगस्य सविशेषता। 4. 2. घटोत्कचप्रवेशः। 4. 3. मध्यमस्य रंगप्रवेश: । 4. 4. भीम-हिटिम्बीसमागमः ।

आधारग्रन्था:
1. पञ्चतन्त्रम् - विष्णुशर्मा। 2.मध्यमव्यायोगः - भासः।

सहायका:
1. A Short History of Sanskrit literature - T.K Ramacandra Iyer, R.S Vadyar & Sons, Kalpathy 2. Pancatantra of Vishusarma, Chowkhambha Sanskrit series,Varanasi. 3. Sanskrit Drama- A.B. Keith 4. A History of Sanskrit Literature-A.A. Macdonel, Motilal banarsidas,Delhi

5. Indian Kavya Literature, Vol II, Motilal Banarsidas, Delhi.
6. Madhyamavyayoga of Bhasa with English translation -T.K Ramacandra Iyer, Vadyar & Sons
Kalpthy.

अन्तर्जालसहायकसामग्रयः
1.भासनाटकरङ्गावतरणम्- यूटूब्
SREENARAYANAGURU OPEN UNIVERSITY
BACHELOR OF ARTS IN ARABIC (SINGLE MAJOR)
Semester 2 - Language Course (MIL) - 1

Modern Indian Languages I (MIL)

(Learners can choose any one. The same language should be chosen for MIL- II)

B21AR01LC: Functional Arabic

(Theory -5, Tutorial- 1)

OBJECTIVES
● The student can communicate in Arabic in various situations ● The student can express thoughts in oral and written form through simple sentences in Arabic. ● The student can read and understand literary texts in Arabic ● The student can analyze the literary texts in the light of theories of Arabic Grammar ● The student can assimilate humanistic and moral values in his life

COURSE OUTCOMES
1. Communicate in Arabic in various situations 2. Express thoughts in oral and written form through simple sentences in Arabic. 3. Read and understand literary texts in Arabic 4. Analyze the literary texts in the light of theories of Arabic Grammar 5. Assimilate humanistic and moral values in his life

COURSE OUTLINE
1: رمضان مبارك BLOCK 2: ما رأيك في الواجب المنزلي؟ BLOCK 3: سعاد توفر BLOCK 4: ما رأيك في مصروف الجيب؟ BLOCK 5: القاهرة من فوق البرج BLOCK

BLOCK 1:	**Units:** 1. رمضان مبارك 2. رمضان شهر الصوم 3. هل قضيت إجازة سعيدة 4. قضاء وقت الفراغ 5. مسابقة في المعلومات
BLOCK 2:	**Units:** 1. ما رأيك في الواجب المنزلي؟ 2. الحفل التمثيلي 3. صالح الدين

	4. الوقوف في عرفات 5. جولة في المملكة العربية السعودية
BLOCK 3:	**Units:** 1. سعاد توفر 2. اليوم الرياضي 3. هل تفكر في مستقبلك؟ 4. رحلة إلى المنطقة الشرقية 5. في معرض الفن اإلسالمي
BLOCK 4:	**Units:** 1. ما رأيك في مصروف الجيب؟ 2. اسأل وابحث 3. عيد أألضحى 4. الكلمات المتقاطعة 5. من بيوت هللا
BLOCK 5:	**Units:** 1**.** القاهرة من فوق البرج 2. خالد بن الوليد 3. سيف هللا 4. ما رأيك في الزي المدرسي 5. وداعا أيتها المدرسة
BLOCK 6:	**Tutorial** * All contents in the blocks are taken from the Book 'Al Arabiyya Li N-naashieen', Book of Students, Part 3, Published by Education Ministry, Kingdom of Saudi Arabi**a.**

Reference:

1. A. M. Ashiurakis, (2003), Spoken Arabic self-taught, Islamic Book Service
2. Ali, Sayed, (2003), Let's converse in Arabic, New Delhi: UBS publishers
3. Ali, Sayed, Teach Yourself Arabic, Kazi Publishers
4. Faynan, Rafi 'el Imad, (1998), The Essential Arabic, New Delhi: Good word Books
5. Hashim, Abul, (1997), Arabic made easy, New Delhi: Kitab Bhavan
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Annexure - III

ENGLISH LANGUAGE CORE COURSE - 2

B21EG02LC: LITERATURE AND THE CONTEMPORARY WORLD

Number of credits: 6

Objectives:
1. To expose students to some of the burning contemporary issues. 2. To acquaint them with the way literature takes on these issues. 3. To equip them to critically appraise and shape their own individual opinions.

Course Outcomes
By the end of the course students should be able to,
1. Make sense of the world they live in through the many language devices literature employs in its representation of reality. 2. Have an understanding of cross-cultural encounters in a globalized world. 3. Debate the pros and cons of current issues in culture using the terminology related to the concerned topics. 4. Discuss how the use of language and choice of genre influence the meaning of the text and the reader's response. 5. Develop skills of textual analysis. 6. Comprehend diverse points of view on the urgent issues facing the world.

	COURSE DETAILS
BLOCK 1	**Climate Change** UNIT 1 - Margaret Atwood: "The Moment" UNIT 2 - Thunberg: "Almost Everything is Black and White" (Speech at Parliament Square, London, 31 October, 2018)
BLOCK 2	**Technology and Human Life**
	UNIT 1 - Gareth Southwell: "Artificial Intelligence" UNIT 2 - Ambrose Bierce: "Moxon's Master"
BLOCK 3	**Gender** UNIT 1 - Maya Angelou: "Still I Rise" UNIT 2 - Sarah Joseph: "The Masculine of Virgin" UNIT 3 - -Malala Yousafzai: "A Daughter is Born"
BLOCK 4	**Human Rights**

	UNIT 1 - Vijayarajamallika: “Injuries” UNIT 2 - Roger Mais: “Blackout” UNIT 3 - Jawaharlal Nehru: “A Tryst with Destiny”
BLOCK 5	**Ethics and Culture** UNIT 1 - John Lennon: “Imagine” UNIT 2 - Rabindranath Tagore: “Housewife”
BLOCK 6	**Globalised Society** UNIT 1 - Pablo Neruda: “The United Fruit Company” UNIT 2 - Edassery Govindan Nair: “The Kuttipuram Bridge” UNIT 3 - Shashi Tharoor: “Globalization and the Human Imagination”

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SKILL ENHANCEMENT COMPULSORY COURSES (SECC)

B21HL01SC: Humanism and Logic
Number of credits: 2

Course Objectives:
1. To introduce the science and art of reasoning 2. To develop analytical skill in reasoning and capacity to argue effectively 3. To impart understanding of the role of logic in other disciplines 4. To develop a blend of logical reason, compassion and love in approach to the world

Course Outcomes
By the end of the course the learners will be able to,
1. Know the role of logical reasoning in daily life 2. Save oneself from linguistic traps 3. Have an understanding of the basic humanistic concepts 4. Get values that embrace multicultural diversity

BLOCK 1 - Foundational Terms and Concepts

Unit 1	Sradha/ Care — Katha Upanisad, Arul — Thirukkural, Jagratha —Dharmapada _ Agape/ Empathetic Love, Kenosis/ Self emptying
Unit 2	Insaniyya / Humanity, Rahma / Mercy. Anukampa / Compassion — Anukambadasakam, Karuna - Budha
Unit 3	Emancipation. Ubuntu/ Fraternal Love
Unit 4	Emancipation. Ubuntu/ Fraternal Love Ahimsa/ Nonviolence in Different Traditions. Equalit
Unit 5	Basheer's short story, "Oru Manushyan".
Unit 6	Human as species - Jathilakshanam, Jatinirnayam - Environmental concerns: Gandhi, Thoreau, Deep Ecology
BLOCK 2: Logic, Language and Other Disciplines	
Unit 1	A very brief history of logic: traditional logic and symbolic logic -What is logic? Definitions - process of reasoning - inductive, deductive and abductive reasoning- Propositions and arguments - recognising arguments.Truth and validity - Fallacies: Formal and informal fallacies - Classification of fallacies: Fallacies of relevance, defective induction, presumption and ambiguity.
Unit 2	Fundamentals of Traditional Logic and Symbolic Logic - Categorical Propositions:The four kinds of categorical propositions - Quality, quantity and distribution -Standard form - The traditional square of opposition - Categorical Syllogisms:Standard form - Rules and fallacies - Venn diagram to test the Validity - Logical connectives: symbols for conjunction, negation, disjunction, material implication and equivalence- Logical paradoxes: Liar's paradox
Unit 3	Language and Logic - The basic functions of language: Informative - Expressive -Directive – Ceremonial Performative - Emotively neutral language -What are definitions - Kinds of definitions: Stipulative - Lexical – Precising - Theoretical - Persuasive - Intension and extension
Unit 4	Logic and Other Disciplines - Logic and Science: Hypothetico - models of explanations - Covering Law model - mathematics and logic
Unit 5	Logic and Literature.
Unit 6	Logic and Social science

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Annexure - IV

Modern Indian Languages (MIL))

(Learners can choose any one. The same language should be chosen for MIL- II)

B21ML02LC: മലയാള സാഹിത്യ മാതൃകകൾ : ആത്മകഥ, ജീവചരിത്രം, യാത്രാവിവരണം, അനുഭവ സാഹിത്യം

(Malayala Sahithya Mathrukakal: Aathmakadha, Jeevacharitram,Yathravivaranam, Anubhavasahithyam)

Number of Credits:6

Objectives
1. ആത്മകഥാസാഹിത്യത്തിന്റെ ചരിത്രത്തെക്കുറിച്ച് സാമാന്യമായ അറിവ്. 2. ജീവചരിത്ര മാതൃകകളുടെ പരിചയം. 3. യാത്രാവിവരണ സാഹിത്യം എന്ന വിവരണാത്മക സാഹിത്യശാഖയുമായുള്ള പരിചയം. 4. അനുഭവ സാഹിത്യ മാതൃകകളുമായി ബന്ധപ്പെട്ട അറിവ്.

Course Outcome
1. ആത്മകഥയിലെ ആത്മം എന്ന സങ്കല്പത്തിലെ വ്യക്തി, ആത്മകഥയിലെ കർത്തൃത്വം, പ്രതിനിധാനങ്ങൾ, ലിംഗഭേദം, രാഷ്ട്രീയം എന്നിവ മനസ്സിലാക്കുന്നു. 2. ജീവചരിത്രരചനയുടെ ചരിത്രരചനാസങ്കേതങ്ങൾ, ജീവചരിത്രത്തിന്റെ തിരഞ്ഞെടുപ്പുകൾ, വ്യക്തിജീവിതവും സമൂഹവും തമ്മിലുള്ള ബന്ധം എന്നിവയെ കുറിച്ച് ധാരണ നേടുന്നു. 3. സ്ഥലപരവും സാംസ്കാരികവും പാരിസ്ഥിതികവും ആത്മീയവുമായ വൈവിദ്ധ്യമാർന്ന യാത്രാവിവരണങ്ങളുടെ സാഹിതീയമൂല്യം തിരിച്ചറിയുന്നു. 4. സ്വത്വത്തോടു ബന്ധപ്പെട്ട ആഖ്യാനങ്ങൾ, ജീവിതരേഖകൾ തുടങ്ങിയവ പരിചയപ്പെടുന്നു.

Course Details	
ബ്ലോക്ക് **1**	ആത്മകഥ
	രചയിതാവ് സ്വന്തം ജീവിതത്തെക്കുറിച്ച് സ്വയം നിർവ്വഹിക്കുന്ന ആഖ്യാനം എന്ന നിലയിൽ ആത്മകഥ എന്ന സാഹിത്യവിഭാഗത്തെ പരിചയപ്പെടുത്തുക, മലയാളത്തിൽ പ്രസിദ്ധീകരിക്കപ്പെട്ട ആത്മകഥകളിൽ നിന്നും കാലികപ്രസക്തിയുള്ളതും പ്രതിനിധാന സ്വഭാവമുള്ളതുമായ ചില കൃതികളെ അടിസ്ഥാനമാക്കി വിശദപഠനം നടത്തുക എന്നതുമാണ് ഈ മൊഡ്യൂളിൽ

	ഉദ്ദേശിക്കുന്നത്. ആത്മകഥാസാഹിത്യത്തിന്റെ ചരിത്ര ത്തെക്കുറിച്ച് സാമാന്യമായ അറിവ് ഉണ്ടാകണം. ആത്മ കഥയിലെ ആത്മം എന്ന സങ്കല്പത്തിലെ വ്യക്തി, ആത്മ കഥയിലെ കർത്തൃത്വം, പ്രതിനിധാനങ്ങൾ, ലിംഗ ഭേദം, രാഷ്ട്രീയം എന്നിവ മനസ്സിലാക്കുക. വിശദപഠനത്തിന് 1. ആശുപത്രിയിൽ - ജീവിതപ്പാത, ചെറുകാട് 2. ഇരന്നുണ്ട ഓണം - ചിദംബരസ്മരണ, ബാലചന്ദ്രൻ ചു ള്ളിക്കാട് 3.ദലിതൻ - കെ. കെ. കൊച്ച് (ആദ്യത്തെ രണ്ട് അദ്ധ്യായ ങ്ങൾ.) 4. വള്ളത്തോളുമായി ഒരു കൂടിക്കാഴ്ച - ജാലകങ്ങൾ: ഒരു ചരിത്രാന്വേഷിയുടെ വഴികൾ, കാഴ്ചകൾ, എം. ജി. എസ്. നാരായണൻ 5. ഒറ്റപ്പെട്ടുപോയ കുട്ടി, സ്വരഭേദങ്ങൾ - ഭാഗ്യലക്ഷ്മി
ബ്ലോക്ക് **2**	ജീവചരിത്രം
	ചരിത്രത്തിലെ പ്രധാന വ്യക്തികളെക്കുറിച്ച് എഴുതപ്പെട്ട കൃതികളെന്ന നിലയിൽ ജീവചരിത്രത്തി ന്റെ മാതൃകകൾ പരിചയപ്പെടുത്തുക. ജീവചരിത്ര രചനയുടെ ചരിത്രരചനാസങ്കേതങ്ങൾ, ജീവചരിത്രത്തി ന്റെ തിരഞ്ഞെടുപ്പുകൾ, വ്യക്തിജീവിതവും സമൂഹ വും തമ്മിലുള്ള ബന്ധം തുടങ്ങിയ വിഷയങ്ങളെ ആസ്പദമാക്കി ജീവചരിത്രങ്ങളെ സമീപിക്കുക. വിശദപഠനത്തിന് 1. ഒരു വലിയ മുഹൂർത്തത്തിന്റെ പശ്ചാത്തലം - നാരായണഗുരു, എം. കെ. സാനു 2. ആ മനുഷ്യൻ നീ തന്നെ - ഇവൻ എന്റെ പ്രിയ സി.ജെ, റോസി തോമസ് 3. ജീനിയസിന്റെ ഗുരു -ബെർട്രാന്റ് റസ്സൽ, വി. ബാബുസേനൻ 4.എ ബ്രീഫ് ഹിസ്റ്ററി ഓഫ് ടൈം - സ്റ്റീഫൻ ഹോക്കിങ്, ഡോ. ജോർജ്ജ് വർഗ്ഗീസ് 5. അദ്ധ്യായം അഞ്ച് - മയിലമ്മ ഒരു ജീവിതം - ജ്യോതിബായി പരിയാടത്ത്
ബ്ലോക്ക് **3**	യാത്രാവിവരണം
	യാത്രാവിവരണ സാഹിത്യം എന്ന വിവരണാത്മക സാഹിത്യശാഖ പരിചയപ്പെടുക. വർത്തമാനപ്പുസ്തകം മുതലുള്ള ആദ്യകാല യാത്രാവിവരണങ്ങളുടെ സാഹിത്യചരിത്രം സാമാന്യമായി മനസ്സിലാക്കുക. സ്ഥലപരവും സാംസ്കാരികവും പാരിസ്ഥിതികവും ആത്മീയവുമായ വൈവിദ്ധ്യമാർന്ന വിവരണങ്ങളുടെ സാഹിതീയമൂല്യം പഠനവിധേയമാക്കുക. വിശദപഠനത്തിന് 1. സ്ത്രീകൾ കള്ളത്താടി വയ്ക്കണോ? - കേരളസഞ്ചാരം, മാധവിക്കുട്ടി. 2. നിലാവ് കോരിക്കുടിച്ച കള്ളിമുൾച്ചെടികൾ - മരുഭൂമിയുടെ ആത്മകഥ, വി. മുസഫിർ മുഹമ്മദ്. 3. വഴിയമ്പലത്തിലും പുൽക്കുടിലിലും - ഹിമവാന്റെ മുകൾത്തട്ടിൽ, രാജൻ കാക്കനാടൻ. 4. ചൂണ്ടക്കാരുടെ സ്വർഗ്ഗം - രണ്ടുയാത്രകൾ, സക്കറിയ. 5. ചീവീടുകൾ ചിലയ്ക്കാൻ മറക്കുമ്പോൾ - നദി തിന്നുന്ന ദ്വീപ് - കെ. എ. ബീന.
ബ്ലോക്ക് **4**	സ്വത്വ-അനുഭവ സാഹിത്യം

	.ഓർമ്മ, സംഭാഷണങ്ങൾ, വ്യക്തികളുമായുള്ള സംഭാഷണത്തെ ആസ്പദമാക്കി എഴുതപ്പെട്ട അനുഭവസാഹിത്യങ്ങൾ, സ്വത്വത്തോടു ബന്ധപ്പെട്ട ആഖ്യാനങ്ങൾ, ജീവിതരേഖകൾ എന്നിവ. വിശദപഠനത്തിന് 1. എന്നെ പാണനെന്ന് വിളിക്കരുത് - എതിര്, എം. കുഞ്ഞാമൻ 2. ആദ്യത്തെ 10 പുറം - ജാനു, ഭാസ്കരൻ 3. ദരിദ്രന്റെ ക്രിസ്മസ് - പച്ചവിരൽ, ദയാഭായി 4. വരുമോ വസന്തം - ഒരു മലയാളി ഹിജഡയുടെ ആത്മകഥ, ജെറീന 5. ശേഷി എന്ന അധികാരഘടനയും ഭിന്നശേഷിയും: ഭിന്നശേഷി ചിന്തകൾക്കൊരാമുഖം- ഡോ. യാക്കോബ് തോമസ്

റഫറൻസ്

- ഡോ. വി. സി. ഹാരിസ്, ആത്മകഥ ജീവിതം സമൂഹം നിരൂപണം - റെയിൻബോ ബുക്സ്, കോഴിക്കോട്.
- ഡോ. കെ. എം. ജോർജ്ജ്, ജീവചരിത്രസാഹിത്യം - ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട് തിരുവനന്തപുരം.
- നടുവട്ടം ഗോപാലകൃഷ്ണൻ, ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ -ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം.
- ഇ. പി. രാജഗോപാലൻ,കഥയും ആത്മകഥയും - ചിന്ത, തിരുവനന്തപുരം.
- പ്രൊഫ. വി. രമേഷ് ചന്ദ്രൻ, സഞ്ചാരസാഹിത്യം മലയാളത്തിൽ -
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Modern Indian Languages (MIL))

(Learners can choose any one. The same language should be chosen for MIL- II)

B21HD02LC: हिंदी पद्य साहित्य और अनुवाद

POETRY AND TRANSLATION

Number of Credits:6

पाठ्यक्रम उद्देश्य **(Course objectives):**
छात्रों को प्राचीन, मध्यकालीन और आधुनिक हिन्दी कविता की अवधारणाओं और इसकी बोलियों से परिचित कराना। दैनिक जीवन में अनुवाद एवं उसके उपयोग से परिचित कराना। इस पाठ्यक्रम का उद्देश्य कविता के प्राचीन रूप और कविता में इस्तेमाल की जाने वाली भाषा शैली के बारे में छात्रों में जागरूकता पैदा करना है। इस प्रकार वे हिन्दी भाषा की मूल संरचना और समय के साथ इसके विकास को समझ सकते हैं ।

पाठ्यक्रम परिणाम **(course outcome):**	
Co. 1 :	प्राचीन और मध्यकाल की कविता के विभिन्न रूपों का विश्लेषण करता है |
Co. 2 :	समाज और साहित्य के बीच संबंध तथा हिन्दी सहित्य और समाज में प्राचीन और मध्यकालीन कवियों द्वारा निभाई गई भूमिका को समझता है । उस काल के प्रख्यात हिन्दी लेखकों के माध्यम से संत कविताओं की विभिन्न शाखाओं का ज्ञान प्राप्त करता है ।
Co. 3	सामाजिक सांस्कृतिक चेतना, को आत्मसात करता है और तुलसीदास, कबीरदास, बिहारी जैसे कवियों से परिचय प्राप्त करता है ।
Co 4	आधुनिक काल की विशेषताओं को समझता है और आधुनिक काल के कवियों के बारे में परिचय प्राप्त करता है ।
Co 5	आधुनिक काल की विभिन्न काव्य शैलियों से परिचित होता है | हाइकु कविताओं के बारे में ज्ञान प्राप्त करता है ।
Co 6	अनुवाद के बारे में ज्ञान प्राप्त करता है और उसका प्रयोग करने में दक्षता प्राप्त करता है |

पाठ्यक्रम रूपरेखा **(COURSE Outline):**	
ब्लॉक **: 1**	प्राचीन और मध्यकालीन रचनाएँ ।
ब्लॉक **: 2**	छात्रावाद की कविताएँ ।
ब्लॉक **: 3**	प्रगतिवादी कविता ।जैसे कवियों से परिचय प्राप्त करता है ।
ब्लॉक **: 4**	समकालीन कविता ।
ब्लॉक **: 5**	हाइकू कविताए ।

ब्लॉक : **6**	अनुवाद ।

ब्लॉक : **1** प्राचीन और मध्यकालीन रचनाएँ ।	
इकाई **– 1**	कबीर – 2 दोहे
इकाई **– 2**	तुलसी – 2 दोहे
इकाई **– 3**	सूरदास – एक पद
ब्लॉक : **2** छात्रावाद की **–** कविताएँ ।	
इकाई **– 1**	निराला – भिक्षुक
इकाई **– 2**	प्रसाद - किरण
ब्लॉक : **3** प्रगतिवादी कविता।	
इकाई **– 1**	नागार्जुन – प्रेत का बयान ।
ब्लॉक : **4** समकालीन कविता ।	
इकाई **– 1**	: अरुण कमल – वक्त ।
ब्लॉक : **5** हाइकू कविताएँ।	
इकाई **– 1**	सुरंगामा यादव – काटे जंगल ।
इकाई **– 2**	रामेश्वर कम्बोज – अक्षर मोती ।
इकाई **– 3**	कुंवर दिनेश – अकेला पेड़ ।
ब्लॉक : **6** अनुवाद ।	
इकाई **– 1**	अंग्रेज़ी से हिन्दी में और हिंदी से अंग्रेज़ी में अनुवाद अभ्यास . छोटी कहानी का अनुवाद

संदर्भ ग्रंथ :

आधुनिक हिंदी साहित्य का इतिहास - बच्चन सिंह
हिंदी कविता का अतीत और वर्तमान - मैनेजर पाण्डेय
समकालीन हिंदी कविता - विश्वनाथ प्रसाद तिवारी
आधुनिक कविता यात्रा - रामस्वरूप चतुर्वेदी
आधुनिक कविता का पुनर्पाठ - करुणाशंकर उपाद्याय
हिंदी कविता का वर्तमान परिदृश्य - डॉ. हरि शर्मा
रीतिकालीन हिंदी कविता और सेनापति - डॉ. राम चंद्र तिवारी

Modern Indian Languages (MIL))

(Learners can choose any one. The same language should be chosen for MIL- II)

B21SN02LC: महाकाव्यं गद्यकाव्यं च (Mahakavyam Gadyakavyam cha)

Number of Credits:6

लक्ष्यम् **(Objectives)**
भारतीयकाव्यशास्त्रे परिचयप्रदानम्।

उद्देश्यानि **(Learning Outcomes)**
1.महाकाव्यमधिकृत्य उद्बोधनम् । 2.महाकाव्यस्वरूपस्य, काव्यसौन्दर्यतत्त्वस्य चाऽवबोधनम्। 3.इतिहासपुराणानां विषये उद्बोधनम् । 4.इतरभाषासाहित्ये महाभारतस्य स्वाधीनताऽवगमनम् । 5.संस्कृतसाहित्ये लक्ष्मणसूरिणः योगदानावगमनम् । 6.संस्कृतगद्यसाहित्यपरिचयः।

पत्ररूपरेखा **- (Course Outline)**	
खण्डः **1**	महाकाव्यपरिचयः।
	1. 1. लौकिकसाहित्यमधिकृत्य सामान्यपरिचयः। 1. 2. महाकाव्यानि, पञ्चमहाकाव्यानि च। 1. 3. महाकाव्यलक्षणम्। 1. 4. कुमारसंभस्य महाकाव्यलक्षणानुसारं अवलोकनम्।
खण्डः **2**	गद्यपरिचयः
	2. 1. पार्वत्याः तपश्चर्योद्यमः – श्लोकाः 1 – 17. 2. 2. महत्तरस्तपश्चर्याविशेषः – श्लोकाः 18 -29. 2. 3.ब्रह्मचारिप्रवेशः,सखीद्वारा पार्वत्याः इङ्गितनिवेदनं च - श्लोकाः –30 – 61. 2. 4. ब्रह्मचारिकृता शिवनिन्दा, पार्वत्या तन्निरासः, फलोदयश्च – श्लोकाः – 62 – 86.
खण्डः **3**	3. 1. गधकाव्यानां सामान्यपरिचयः। 3. 2. इतरसाहित्यरूपेषु इतिहासपुराणानां स्वाधीनम्। 3. 3. महाभारतम्, महाभारतरस्य रचनाकालः, सामान्यपरिचयश्च। 3. 4. संस्कृतसाहित्ये लक्ष्मणसूरिणो योगदानम्।

खण्डः **4**	भारतसङ्ग्रहः – आदिपर्वणः समग्रमध्ययनम् ।
	4. 1. खण्डिकाः 1 – 11. 4. 2. खण्डिकाः 12 – 15. 4. 3. खण्डिकाः 16 – 27. 4. 4. खम्डिकाः 28 – 31.

आवश्यकग्रन्थाः **-**

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- A Short History of Sanskrit Literature, T K RamachandraAiyar, RS Vadhyar& Sons, Palakkad
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Modern Indian Languages (MIL))

(Learners can choose any one. The same language should be chosen for MIL- II)

B21AR02LC: Literature in Arabic

Number of Credits:6

OBJECTIVES
1. The student can communicate in Arabic in various situations 2. The student can express his thoughts in oral and written form through simple sentences in Arabic. 3. The student can read and understand literary texts in Arabic 4. The student can appreciate and analyze the literary texts in Arabic 5. The student can assimilate humanistic and moral values in his life

COURSE OUTCOMES
At the end of the course students will be able to, 1. Communicate in Arabic in various situations 2. Express his thoughts in oral and written form through simple sentences in Arabic. 3. Read and understand literary texts in Arabic 4. Appreciate and analyze the literary texts in Arabic 5. Assimilate humanistic and moral values in his life

COURSE OUTLINE	
Block 1	Conversations in Arabic
Block 2	Reading on Classical Texts in Arabic
Block 3	Reading on Modern Essays in Arabic

Block 4	Appreciating Short Story
Block 5	Appreciating Poetry
Block 6	Tutorial
BLOCK 1: Conversations in Arabic	
Unit 1:	Introduction
Unit 2:	In the House
Unit 3:	In the Hotel
Unit 4:	In the Railway Station
Unit 5:	In the Market
BLOCK 2: Reading on classical texts in Arabic	
Unit 1	سورة الحجرات: الآيات من 9 إلى 13
Unit 2	الأحاديث المختارة من كتاب "الأربعون النووية" (الأحاديث 2، 7، 10، 12، 13، 15، 27، 36)
BLOCK 3: Reading on Modern Essays in Arabic	
Unit 1	"الأرملة وابنها" من كتاب دمعة وابتسامة لجبران خليل جبران
Unit 2	"ما أضعف الإنسان" من كتاب مقالات في كلمات، المجموعة الثانية، لعلي الطنطاوي
BLOCK 4: Appreciating Short Story	
Unit 1	قصة "نصف العلم" من مجموعة القصص "العالم ليس لنا" لغسان كنفاني
BLOCK 5: Appreciating Poetry	
Unit 1	قصيدة "دعوة إلى التنقل والترحال" للإمام الشافعي
Unit 2	قصيدة "أمام البيت الحرام" لأحمد سالم باعطب

Unit 3	قصيدة "المنشق" لأحمد مطر
Unit 4	قصيدة "وداعا أيها الدفتر" لنزار قباني
BLOCK 6: Tutorial	
Practice sheets based on Blocks 1-5	

References:

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3. Muhammed Bin Isma'il Al Bukhaari, Sahihu l-Bukhaari
4. Jubran Khalil Jubran, Dam'athun wa-btisaamatun
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Modern Indian Languages (MIL-II)

(Learners can choose any one. The same language should be chosen for MIL- II)

B21ML01GE: ആധുനികമലയാള സാഹിത്യ ചരിത്രം
(Aadhunika Malayala Sahithya Charithram)

Number of Credits:6

Objectives
1. ആധുനിക മലയാളസാഹിത്യത്തെക്കുറിച്ച് സാമാന്യമായ അറിവ് നേടുക 2. സാഹിത്യ പ്രസ്ഥാനങ്ങളുടെ ലഘുചരിത്രം മനസ്സിലാക്കുക 3. മലയാളത്തിലെ ശ്രദ്ധേയരായ എഴുത്തുകാരെയും അവരുടെ കൃതികളെയും പരിചയപ്പെടുക 4. കവിത , ചെറുകഥ, നോവൽ എന്നി സാഹിത്യരൂപങ്ങളെ പരിചയപ്പെടുക 5. ആധുനിക സാഹിത്യരൂപങ്ങളുടെ ആരംഭ ചരിത്രത്തെ മനസിലാക്കുക

Course Outcome
1. ആധുനിക സാഹിത്യ പ്രസ്ഥാനങ്ങളുടെ ലഘുചരിത്രത്തെക്കുറിച്ച് അറിവ് നേടുന്നു. 2. മലയാളത്തിലെ സാഹിത്യ പ്രസ്ഥാനങ്ങളെക്കുറിച്ച് ധാരണ ലഭിക്കുന്നു 3. ആധുനിക മലയാളകവിതയുടെ സവിശേഷതകൾ മനസിലാക്കുന്നു. 4. മലയാള നോവലിന്റെ ചരിത്രത്തെക്കുറിച്ച് അറിവു നേടുന്നു. 5. മലയാള ചെറുകഥയുടെ ചരിത്രത്തെക്കുറിച്ച് ധാരണ ലഭിക്കുന്നു. 6. മലയാളത്തിലെ ശ്രദ്ധേയരായ എഴുത്തുകാരെയും അവരുടെ കൃതികളെയും പരിചയപ്പെടുന്നു.

COURSE DETAILS	
ബ്ലോക്ക് **1 :** ആധുനിക മലയാളകവിത	
യൂണിറ്റ് **1**	കവിത - കാല്പനികത - കവിത്രയം -ആശാൻ , ഉള്ളൂർ ,വള്ളത്തോൾ
യൂണിറ്റ് **2**	ജി ശങ്കരക്കുറുപ്പ് , ബാലാമണിയമ്മ, പി കുഞ്ഞിരാമൻ നായർ , ഇടപ്പള്ളി ,ചങ്ങമ്പുഴ
യൂണിറ്റ് **3**	യൂണിറ്റ് 3 : ഇടശ്ശേരി , വൈലോപ്പിള്ളി , എൻ. വി കൃഷ്ണവാരിയർ , സുഗതകുമാരി
യൂണിറ്റ് **4**	പി.ഭാസ്കരൻ , വയലാർ ,ഒ. എൻ. വി. അക്കിത്തം,അയ്യപ്പപ്പണിക്കർ
ബ്ലോക്ക് **2 :** നോവലും ചെറുകഥയും	
യൂണിറ്റ് **1**	മലയാള നോവലിന്റെ പശ്ചാത്തലം,ഒ . ചന്തുമേനോൻ - സി വി രാമൻ പിള്ള - മറ്റ് എഴുത്തുകാർ - ആദ്യകാല നോവലുകൾ
യൂണിറ്റ് **2**	കേശവദേവ് ,വൈക്കം മുഹമ്മദ് ബഷീർ ,തകഴി, എസ്.കെ.പൊറ്റക്കാട്, ഉറൂബ് - എം.ടി.വാസുദേവൻ നായർ
യൂണിറ്റ് **3**	എസ്. കെ പൊറ്റക്കാട്, ഉറൂബ് ,എം. ടി വാസുദേവൻ നായർ , കാക്കനാടൻ ,എം.മുകുന്ദൻ ,ഒ. വി വിജയൻ , ആനന്ദ് സാറാ ജോസഫ് ,

യൂണിറ്റ് **4**	ചെറുകഥ -ചെറുകഥയുടെ പശ്ചാത്തലം - ആദ്യകാല കഥകൾ ,കാരൂർ, ലളിതാംബിക അന്തർജനം, ബഷീർ, തകഴി ,കേശവദേവ്, പൊൻകുന്നം വർക്കി ,ഉറൂബ് , ടി .പത്മനാഭൻ ,എം. ടി വാസുദേവൻ നായർ ,മാധവിക്കുട്ടി ,കാക്കനാടൻ , സേതു ,സാറാ ജോസഫ് ,സക്കറിയ

റഫറൻസ്

1. കെ.എം ജോർജ് (എഡി) ,ആധുനിക സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ , ഡി സി ബുക്സ് കോട്ടയം
2.എഴുമേലി പരമേശ്വരൻ പിള്ള ,മലയാള സാഹിത്യം കാലഘട്ടങ്ങളിലൂടെ, കറന്റ് ബുക്ക്സ്
3.കൽപ്പറ്റ ബാലകൃഷ്ണൻ, മലയാള സാഹിത്യ ചരിത്രം,
4.ഡോ. എം ലീലാവതി, കവിതാ സാഹിത്യ ചരിത്രം , കേരള സാഹിത്യ അക്കാദമി
5.എം അച്യുതൻ , ചെറുകഥ ഇന്നലെ ഇന്ന് , ഡി. സി., ബുക്സ്, കോട്ടയം
6.എൻ. അജയകുമാർ, ആധുനികത മലയാള കവിതയിൽ , കറന്റ് ബുക്സ്, കോട്ടയം.
7.തായാട്ട് ശങ്കരൻ, ആശാൻ - നവോത്ഥാനത്തിന്റെ കവി , എൻ.ബി.എസ്., കോട്ടയം.
8.പവിത്രൻ പി., ആശാൻ കവിത ആധുനികാനന്തര പഠനങ്ങൾ , സാംസ്കാരിക പ്രസിദ്ധീകരണ വകുപ്പ്, തിരുവനന്തപുരം
9.ഡോ. വത്സലൻ വാതുശ്ശേരി,കഥയുടെ ന്യൂക്ലിയസ്, ഒലീവ് പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
10. ഡോ. പി. കെ. രാജശേഖരൻ,കഥാന്തരങ്ങൾ, ഡി. സി. ബുക്സ്, കോട്ടയം.
11. ഡോ. എം. എം. ബഷീർ, ചെറുകഥാസാഹിത്യ ചരിത്രം,കേരള സാഹിത്യ അക്കാദമി, തൃശ്ശൂർ.
12.പി. കെ. ബാലകൃഷ്ണൻ ,.ചന്തുമേനോൻ ഒരു പഠനം, ഡി.സി ബുക്സ് ,കോട്ടയം
13.ഡോ. കെ. ഭാസ്കരൻ നായർ , ദൈവനീതിക്ക് ദാക്ഷിണ്യമില്ല ,എസ്.പി.സി. എസ്, കോട്ടയം
14.കെ. എം തരകൻ,. മലയാള നോവൽ സാഹിത്യ ചരിത്രം ,കേരള ശാസ്ത്ര സാഹിത്യ പരിഷത്ത്
15.എം. അച്യുതൻ ,നോവൽ പ്രശ്നങ്ങളും പഠനങ്ങളും ,, എൻ ബി എസ് , കോട്ടയം
16.കെ. പി. അപ്പൻ ,മാറുന്ന മലയാള നോവൽ ,,ഡി.സി ബുക്സ് ,കോട്ടയം

GENERIC ELECTIVES - I

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21EG01GE: APPRECIATING LITERATURE

Number of credits: 2

Objectives
1. To introduce basic theories of film adaptation. 2. To apply those theories to specific movies. 3. To kindle interest in reading literature through adapted movies

Course Outcomes
1. Familiarity with the politics of adaptation. 2. Understanding of cross-cultural changes in cinematic adaptation. 3. Awareness of modes of adaptation.

COURSE OUTLINE	
BLOCK 1	**THEORIES OF ADAPTATION**
BLOCK 2	**MOVIES OF ADAPTATION**
BLOCK 1:	**Theories of Adaptation**
	Defining Adaptation – Translation from One Text Form to Another - The Difference that Genre Makes – Opportunities and Challenges in Adapting a Story from One Form to Another – The Adaptive Technique – Addition, Elimination and Condensation of Plot, Characters and Events – The Politics of Adaptation – Difference between Adaptation and Appropriation – Reinterpretation, Intertextuality, Rewriting, Re-Visioning – Afterlife of Texts – The Question of Authority of Original Text
UNIT 1	Julie Sanders: “What is Adaptation” (Pages 17 – 25) in Sanders. Adaptation and Appropriation
UNIT 2	Leitch, Thomas. “Adaptation and Intertextuality, or What isn’t an Adaptation, and What Does it Matter?” (In Deborah Cartmell Ed. A Companion to Literature, Film and Adaptation”)
UNIT 3	Andrew Robinson: “Apu in Fiction and Film: Adapting the Novels Pather Panchali and

	Aparajito" (In Andrew Robinson: The Apu Trilogy: Satyajit Ray and the Making of an Epic)
BLOCK 2:	**Movies of Adaptation**
UNIT 1	Steven Spielberg (Dir.) The Color Purple
UNIT 2	Satyajit Ray (Dir.) Pather Panchali

References

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GENERIC ELECTIVES - I

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21HD01GE: व्यवहारिक हिंदी (Communicative Hindi)

Number of credits: 2

पाठ्यक्रम का उद्देश्य (Curricular Objectives) :
दैनिक जीवन में भाषाई आदान प्रदान के लिए हिंदी के विविध रूपों से परिचय प्राप्त करना | दैनिक जीवन के विभिन्न प्रसंगों में हिंदी भाषा के प्रयोग करने में सक्षम होना

पाठ्यक्रम परिणाम (Course Outcome):
CO 1: जीवन के सभी क्षेत्रों में हिंदी भाषा बोलने में सक्षम बनता है । **CO 2**: हिंदी के सामान्य व्याकरण के सही उपयोग को समझता है ।

पाठ्यक्रम रूपरेखा – **(Course Outline):**	
ब्लोक **1**	मानक हिन्दी का उच्चारण और बातचीत
ब्लोक **2**	रचनात्मक कार्य (पल्लवन) एवं भाषण कला
ब्लोक **1** मानक हिन्दी का उच्चारण और बातचीत	
इकाई **1**	घर में बाजार में, रसोई में, होटल में, दोस्तों के बीच, बच्चों के बीच, मां बाप के बीच, भाई बहन के बीच के वार्तालाप |
इकाई **2**	विद्यालय में, दफ्तर में, कॉलेज में, डाक घर में, रेलवे स्टेशन में, बैंक में, थाने में, हवाई अड्डे पर, अस्पताल में।
इकाई **3**	सड़क पर, पुस्तकालय में, सब्जीवाले के साथ।
इकाई **4**	किसी वरिष्ठ कवि से साक्षात्कार
इकाई **5**	फिल्म अभिनेता से साक्षात्कार
ब्लोक **2 :** रचनात्मक कार्य (पल्लवन) एवं भाषण कला	
इकाई **1**	कहानी पूरी करना- एक राज था.. |
इकाई **2**	घर में एक अंधी रहती थी...
इकाई **3**	एक दिन....
इकाई **4**	खरगोश और कुछुए ने दौड लगायी...

इकाई **5**	भाषण का अभ्यास

सन्दर्भ ग्रंथ सूची – Reference
1.व्यावहारिक हिंदी और रचना : कृष्णा कुमार गोस्वामी । 2. व्यावहारिक हिंदी शुद्ध प्रयोग : डॉ . ओमप्रकाश । 3. शैक्षिक व्याकरण और हिंदी : कृष्ण कुमार गोस्वामी । 4. व्यावहारिक सामान्य हिंदी : डॉ .सविता पाईवाल ।

GENERIC ELECTIVES - I

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21SN01GE: संस्कृतसोपानम् (Samskruthasopanam)

Number of credits: 2

लक्ष्यम् (Objectives)
संस्कृतभाषायाः अध्ययनाय अलब्धावसराणां अनायासेन संस्कृतप्रवेशाय अवसरप्रदानम्। (To pave an easy way to study Sanskrit for those, who were not getting opportunities to study it.)

उद्देश्यम् (Learning Outcomes)
1. संस्कृताध्ययनस्य प्रारंभाय अवश्यमध्येतव्यानां सुबन्तानां तिङन्तानाञ्च परिचयप्रदानम्। (Study of declensions and conjugations of Sanskrit, which are basic requirements for the study of Sanskrit) 2. छात्राणां पदसम्पदः प्रवृद्धिः (Enrichment of vocabulary.) 3. अन्यासां भारतीयभाषाणामपि पदसम्पदां अवगमने सौकर्यप्रदानम् (Two understand the vocabulary of other Indian languages easily. 4. भारतीयसंस्कृतेः महिमातिरेकं अवगन्तुं, तस्या वाहिनीरूपाया अस्या भाषाया अध्ययनेन छात्रान् प्रभावयितुम्। Familiarize the students with the glorious Indian culture by providing opportunity to learn it through its resource language, Sanskrit. 5. सुसम्पन्ने संस्कृतसाहित्ये परिचयप्रदानम्। (To familiarize the richness of Sanskrit LIterature) 6. काव्यास्वादनक्षमतोत्पादनम्। Development of skill to enjoy the beauty of kavyas.

खण्डः **1.** सुबन्त - तिङन्त - पदपरिचयः – **(Block 1. Declensions and conjugations)** **30** घण्टाः **35** अङ्काः।	
	1.1. पुंलिङ्ग – नपुंसकलिङ्गशब्दाः- बाल, हरि, गुरु, पितृ, राजन् (पुंलिङ्गे)। फल, वारि, दधि, मधु, जगत् (नपुंसकलिङ्गे)। (Declensions of masculine and neutral sabdas - bala, hari, guru, pitr and rajan in masculine; phala, vari, dadhi, madhu and jagat in neutral) 1.2. स्त्रीलिङ्गशब्दाः सर्वनामशब्दाश्च – लता, मति, नदी, स्त्री, मातृ, भास् - स्त्रीलिङ्गशब्दाः। अस्मत्, युष्मत्, तत्, एतत्, किम् – सर्वनामशब्दाः (तत्, एतत्, किं- त्रिषु लिङ्गेषु) (Faminine - latha, mathi, nadee, stree, maatr and bhas. Pronouns - tat, etat and kim – in three genders. And asmad and yushmad sabdas.) 1.3. तिङन्तपरिचयः (Conjugations) -

	भूधातुः (परस्मैपदी) दशलकारेषु)। (The root bhu – parasmaipadi - in all the ten lakaras) 1. 4. वदि (वन्द्) धातुः (आत्मनेपदी) - दशलकारेषु। एधधातुः लिटि केवलम् – अनुप्रयोगलिटः अवगमनाय) (The root vand in all the ten lakaras and the root Edha in lit only, to familiarize with the Anuprayoga Lit.)
खण्डः 2 - काव्यपरिचयः - रघुवंशमहाकाव्यम् (महाकविः कालिदासः) प्रथमसर्गः 1 – 54 श्लोकाः।त् निर्दिष्टश्लेकाः। 30 घण्टाः 35 अङ्काः।(Poetry - Raghuvamsa mahakavya of Kalidasa, 1st canto, slokas 1 to 54.)	
	2. 1. सूर्यवंशस्य महिमा, तस्मिन् वंशे दिलीपस्य जन्म च – 1 – 12 श्लोकाः। (Dignity of Suryavamsa and birth of King Dileepa in that race – slokas 1 to 12) 2. 2. दिलीपस्य गुणवर्णना- श्लोकाः 13 – 30 (The qualities of Dileepa – verses 13 to 30) 2. 3. दिलीपस्य आश्रमयात्रा – श्लोकाः 31 – 47. (Dileepa's journey to the hermitage of his Guru – slokas 31 to 47) 2.4. वसिष्ठाश्रमवर्णना – श्लोकाः 48 – 54) (Discription of the hermitage of Vasishtha – slokas 48 – 54)

आवश्यकग्रन्थाः –
1.रघुवंशमहाकाव्यम् – कालिदासः प्रथमः सर्गः) R.S.Vadyar and Sons, Kalpathy, Palghat.

सहायकग्रन्थाः –
1.शब्दमञ्जरी – विद्यासागर के. एल्. वी. शास्त्री R.S.Vadyar and Sons, Kalpathy, Palghat. 2. धातुरूपमञ्जरी - विद्यासागर के. एल्. वी. शास्त्री R.S.Vadyar and Sons, Kalpathy, Palghat.
सहायकग्रन्थाः - 1. रघुवंशमहाकाव्यम् – With Sanjeevini Vyakhya of Mallinatha Pandurang Jawaji, Bombay. 2. कालिदाससाहित्यसर्वस्वम् – सुधांशु चतुर्वेदी (मलयालम्) Current Books, Kottayam.

GENERIC ELECTIVES - I

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21AR01GE : Modern Standard Arabic

Number of credits: 2

OBJECTIVES
• The learner will be able to understand Arabic Language • The learner will be able to identify the difference between MSA and Colloquial Arabic • The learner will be able to understand Arabic Alphabets, common names and other words in Arabic • The learner will be able to memorize usages, terminologies of different contexts and occasions in Arabic. • The learner will be able to use Arabic Language in real life situations

COURSE OUTCOMES
1. Understand Arabic Language 2. Identify the difference between MSA and Colloquial Arabic 3. Understand Arabic Alphabets, common names and other words in Arabic 4. Memorize usages, terminologies of different contexts and occasions in Arabic. 5. Use Arabic Language in real life situations

COURSE OUTLINE	
Block 01	Introduction to Arabic Language & Basic structures of Arabic Language
Block 02	Use of Arabic in different occasions
Block 03	**: Tutorial**
BLOCK 1: Introduction to Arabic Language & Basic structures of	
	Arabic Language Units: 1. Arabic Language, characteristics of Arabic Language 2. Modern Standard Arabic and Colloquial Arabic 3. Arabic Alphabets, basic structure of sentences in Arabic, 4. Question words, prepositions, name of days and months, date and

	time, cardinal and ordinal numbers, colors, parts of body and common phrases.
BLOCK 2: Use of Arabic in different occasions	
	Units: 1. Self-introduction, Greetings in Arabic 2. In airport, in railway station and in travelling office 3. In market, in hotel, and in textile shop 4. In hospital, in home and walk-in-interview

References:

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2. Abdul Hamid Madani, Cheriyamundam, (2004), Arabian Gulfile Samsarabhasha, Calicut: Al Huda Books
3. Abdul Hamid, V.P. & Abdul Halim, N.K., (2005), Arabic for Various situations, Calicut: Al Huda Books
4. Ali, Sayed, Teach Yourself Arabic, Kazi Publishers
5. Ali, Syed, (2003), Let us Converse in Arabic, New Delhi: USB Publishers.
6. Bahmani, S.K., (2000), Easy Steps to Functional Arabic, Chennai: Alif Books.
7. Faynan, Rafi 'el Imad, (1998), The Essential Arabic, New Delhi: Good word Books
8. Hashim, Abul, (1997), Arabic made easy, New Delhi: Kitab Bhavan
9. Humisa, Michael, (2004), Introducing Arabic, New Delhi: Good word Books
10. Khoury, Sadallah, The Correct Translator: English-Arabic, Arabic-English, New Delhi:Kutub Khana.
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12. Mohiyeedin, Veeran, (2005), Arabic Speaking Course, Calicut: Al Huda Books
13. Mohyideen, Veeran, (2008), Functional Arabic, Calicut: Arabnet
14. Rahman, S.A., (2003), Let's speak Arabic, New Delhi: Good word Books

Annexure - V

GENERIC ELECTIVES - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21HS01GE: MODERNIZATION OF KERALA

Number of credits: 2

Objectives:
The course aims: 1. To trace the historical backdrop of the formation of modern Kerala. 2. To evaluate the nature of the social reform movement in Kerala.

Course Outcomes:
The course would enables the learners: 1. To learn about the role of reform movements in transforming traditional society into a modern one. 2. To understand the character of Kerala renaissance and identify how it revolutionised the social fabric of Kerala.

Course Outline:	
Block 1	Towards Modernity
Block 2	Socio-Religious Reform Movements
BLOCK 1: TOWARDS MODERNITY	
Unit 1	Prelude to Social Reform
Unit 2	Colonial Administration- Modernity
Unit 3	Missionary intervention LMS-CMS-BEM- Channar agitation
Unit 4	Print and Early Newspapers
Unit 5	Western Education - Early Educational efforts
Unit 6	Malayalam Literature and New Social Consciousness
BLOCK 2: SOCIO-RELIGIOUS REFORM MOVEMENTS	
Unit 1	Vaikunda Swamy and Samatva Samajam

Unit 2	Sree Narayana Guru and SNDP Yogam
Unit 3	Ayyankali and SJP Yogam- Poikayil Appachan and PRDS
Unit 4	V.T.Bhattathiripad and Yoga Kshema Sabha
Unit 5	Makthi Tangal, Vakkam Moulavi and Aikya Sangam
Unit 6	Chattambi Swamikal, Mannath Padmanabhan and NSS
Unit 7	Women question in the Social-reform Movements in Kerala

Suggested Readings:

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2. K.E.N.Kunhahammed, *Keraleeya Navodhanathinte Charithravum Varthamanavum*, Lead Books, Calicut, 2012.
3. P.J. Cherian (ed.), *Perspectives in Kerala History,* Kerala State Gazetteers Department, Thiruvananthapuram, 1999.
4. Arunima. G, *There Comes Papa: Colonialism and the Transformation of Matriliny in Kerala, Malabar 1850-1940,* Orient Longman, New Delhi, 2003.
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8. Chen, Martha Allen (ed.), *Widows in India*, Sage Publications, New Delhi, 1998.
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11. Forbes, Geraldine, *The New Cambridge History of India IV.2: Women in Modern India,* Cambridge University Press, Delhi, 2000.
12. Ganesh, K.N, *Culture and Modernity: Historical Explorations,* Publication Division, University of Calicut, 2004.
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14. Heimsath, Charles. H, *Indian Nationalism and Hindu Social reform*, Oxford University Press, Bombay, 1965.
15. Jeffrey, Robin, *Politics, Women and Well-Being – How Kerala Became a Model,* Oxford University Press, New Delhi, 1993.
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17. Kawashima, Koji, *Missionaries and a Hindu State: Travancore 1858-1936,* Oxford University Press, New Delhi, 1988.
18. K.P.Kannan, *Of Rural Proletarian Struggles: Mobilization and Organisation of Rural Workers in South West India*, New Delhi,1988
19. George Mathew, *Communal road to Secular Kerala*, Delhi, 1989.

20. P F Gopakumar (ed.), *Faces of Social Reform in Kerala*, Trivandrum, 2016.
21. P Sanal Mohan, *Modernity of Slavery: Struggles Against Caste Inequality In Colonial Kerala*, OUP, New Delhi, 2015.
22. P.K.K,Menon, *The History of Freedom Struggle in Kerala*,Thiruvananthapuram, 1972.
23. Puthenkalam, Fr. J, *Marriage and Family in Kerala,* University of Calgary, Alberta, 1977.
24. Rao, M.S.A, *Social Change in Malabar,* The Popular Book depot, Bombay, 1957.
25. Saradamoni. K, *Matriliny Transformed: Family, Law and Ideology in Twentieth Century Travancore,* Alta Mira Press, New Delhi, 1999.
26. Sen, Amiya P. (ed.), *Social and Religious Reform: the Hindus of British India*, Oxford University Press, New Delhi, 2003.
27. Menon, A. Sreedhara, Cultural heritage of Kerala, DC Books, 2019.

GENERIC ELECTIVES - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21CM01GE: BANKING

Number of credits: 2

Objectives
1. To familiarize the learners with banking and different types of banks. 2. To enable the learners to acquire knowledge about the Indian banking system and development banks. 3. To familiarise the learners with e-banking and e-banking services. 4. To provide learners with knowledge on core banking, e-banking security and electronic signature.

Course Outcomes:
After completing the Course, the learners shall be able to: 1. Avail the various schemes and programmes by the developments banks in India 2. Use the e-banking service that the banks provide.

Course Outline	
Block 1	**Banking Theory**
Block 2	**E-banking**
BLOCK 1: BANKING THEORY	
UNIT-1	**Introduction to Banking** Evolution of banks- Meaning- Definition of Banks and Banking- Features of banks-Importance of banks- Relationship between Banker and Customer
UNIT-2	**Types of Banks and Banking** Introduction-Commercial Banks-Industrial Banks-Agricultural Banks-Exchange Banks-Saving Banks-Central/National Banks-Types of Banking-Branch-Unit-Group-Chain-Deposit Banking
UNIT-3	**Indian Banking System** Introduction to Indian Banking System-Organised and Unorganised Banks-Commercial Banks-Types of Commercial Banks-Cooperative Banks-Functions of Commercial Banks-Mergers in banks
UNIT-4	**Development Banks** Introduction to Development

	Banks-IDBI-IFCI-ICICI-EXIM-SIDBI-NABARD-IRBI-DFIs-SIDCO
UNIT-5	**Central Banks** Central bank system-Central banks in different countries – Central bank of India-Introduction to RBI- Role of RBI- General policies of RBI-Management-Objectives of RBI-Functions of RB
BLOCK 2 E-BANKING	
UNIT-1	**Introduction to E-Banking** Concept of E-Banking- Features- Challenges of E-Banking- Traditional banking v/s E-banking- Impact of IT on Banking-RBI Guidelines for E-Banking
UNIT-2	**E-Banking Services** Introduction-Meaning-ATM-Credit Card-Debit Card-Smart Card-CDM-POS-Telebanking-E-Cheque- E-cheque and truncated cheque-ECS-CIBIL Score- CORE Banking
UNIT-3	**CORE Banking** EFT-RTGS-NEFT-IFSC-E-Purse-Virtual Banking- SWIFT-UPI-Mobile Banking-Internet banking
UNIT-4	**E-Banking Security** Introduction-Need of Security-Security Concepts-Security Attacks-Cyber Crimes
UNIT-5	**Electronic signature** Meaning of e-signature - Definition of e-signature - Advantages-Disadvantages-Uses of e-signature-Working of e-signature- Application of e-signature in banks-Digital signature v/s e-signature

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- Maheswari S.N . Banking Theory Law and Practice, Kalyani Publishers New Delhi.
- Sekhar K.C. Banking Theory Law and Practice, Vikas Publishing House, New Delhi.
- Gordon E. and Natarajan K. Banking Theory Law and Practice, Himalaya Publishing House, Mumbai.
- Lall Nigam B.M. Banking Law and Practice, Konark Publishers Pvt. Ltd., New Delhi.
- Radhaswami M. Practical Banking, Sultan Chand & Sons, New Delhi.
- Dekock . Central Banking, Crosby Lockwood Staples,

GENERIC ELECTIVES - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21SO01GE: INTRODUCTION TO SOCIOLOGY

Number of credits: 2

Objectives:
The course intends to familiarize the learners about the emergence of Sociology as a distinct social science discipline and introduce the basic concepts of Sociology

Course Outcomes:
1. Comprehends the origin and scope of Sociology 2. Familiarize the basic concepts in Sociology 3. Analyses the significance of social institutions and social groups in society.

Course Outline	
Block 1	**Understanding Sociology**
Block 2	**Basic Concepts in Sociology**
Block 1: Understanding Sociology	
UNIT-1	Socio – Political background of the emergence of Sociology – Scientific Revolution, Twin Revolution, Enlightenment and Renaissance.
UNIT-2	Sociology – Definition, Nature and Scope
UNIT- 3	Sociological Imagination, Sociology and Common Sense
Block 2: Basic Concepts in Sociology	
UNIT-1	Society, Community, Association and Organization - Definition and Characteristics
UNIT-2	Social Institutions – Family, Marriage, Religion - Meaning, Definition and Characteristics.
UNIT- 3	Social Groups - Definition and Characteristics, Role and Status - Meaning and Nature

References
4. Kundu, Abhijit (2009).The Social Sciences; Methodology and Perspectives: Pearson. 5. Giddens, Anthony. (2005) Sociology: Polity Press. 6. Beteille, Andre. (2002) Sociology-Essays on Approach and Methods: Oxford University Press. 7. Abraham M Francis. (2006).Contemporary Sociology-An Introduction to Concepts and Theories: Oxford University Press. 8. Harlambos M, (1980) Sociology: Themes and Perspectives: Oxford University Press.

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GENERIC ELECTIVES - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21EC01GE: ECONOMICS FOR EVERYDAY LIFE

Number of credits: 2

Objectives:
This course is offered to familiarize students with basic concepts of economics. The course would equip them with an understanding of economics that can be used in daily life. It would also help students to apply economics to real life situations.

Course Outcomes:
1. To introduce basic economic concepts to the students 2. To familiarize students with micro and macro approaches to economics 3. To expose students to contemporary economic ideas

Course Outline	
Block 1	**Basic Concepts and Methods of Economics**
Block 2	**Micro Economics and Macro Economic Concepts**
Block 1: Basic Concepts and Methods of Economics	
UNIT-1	**Economic Problem and Scarcity** Economic problem - Scarcity and choice - Definitions of Economics – Wealth definition - Welfare definition - Scarcity definition - Growth definition - Microeconomics Versus Macroeconomics
UNIT-2	**Opportunity Cost** Opportunity cost- Production Possibility Curve (PPC) - Shift in Production Possibility Curve - Solution of basic economic problems in different economic systems.
UNIT- 3	**Approaches to Economic analysis** Positive and normative analysis -Static, comparative, and dynamic analysis - Short run and long run analysis - Partial and General equilibrium analysis
Block 2 : Micro Economic and Macro Economic Concepts	
UNIT-1	**Micro Economic Concepts** Demand and supply- demand function - law of demand - Expansion and contraction of demand curve – Shift in demand curve - determinants of demand - -Supply function-law of supply- Expansion and contraction of supply curve – Shift

	in supply curve - determinants of supply – Elasticity of demand and supply
UNIT-2	**Macro Economic Concepts** **Macroeconomic variables** – Stock and Flow Variables - Exogenous and Endogenous Variables- General Equilibrium and Edgeworth Box- Macro models-Macroeconomic Goals and Instruments- Inflation- Unemployment-Poverty
UNIT- 3	**Contemporary Economics** Monopoly- Oligopoly- Cartels-Mergers and Acquisitions- Multi National Corporations Financial Inclusion-Markets-Budget-RBI- NITI Ayog-Exchange Rate- Bilateral and Multilateral Trade

Unit 1: Unit 2: Unit 3:References

- Pindyck, R.S., Rubinfeld, D. L., & Mehta, P. L. (2013) *Microeconomics* (Seventh edition), Pearson Education Prentice Hall.
- Salvatore, D. (2003) *Microeconomics Theory and Applications* (Fourth Edition), Oxford University Press.
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- Varian, Hal R.(2010) *Intermediate Microeconomics: A Modern Approach,* 8th Edition, W.W Norton and Company/ Affiliated east- West Press(India).
- Dornbusch, Fischer and Startz, *Macroeconomics*, McGraw Hill, 11th edition, 2010.
- N. Gregory Mankiw. *Macroeconomics*, Worth Publishers, 7th edition, 2010.
- Richard T. Froyen, *Macroeconomics,* Pearson Education Asia, 2nd edition, 2005.
- Paul.A. Samuelson and William Nordhaus, *Economics*, McGraw Hill, 19th Ed.

GENERIC ELECTIVES - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21PH01GE: INTRODUCTION TO THE PHILOSOPHY OF SREENARAYANAGURU

Number of credits: 2

Learning Objectives:

- This paper aims to provide an exposition of Sree Narayanaguru's philosophy based on Vedanta.
- To understand Sree Narayanaguru as a mystic, philosopher and social reformer.
- To understand Guru's contributions to social reformation and educational empowerment.
- To provide an outlook of practical approaches of Guru on social matters.

Course Outline	
Block 1	**Vedanta as Background of Guru's Philosophy**
Block 2	**Guru and Social Reformation**
Block 1: Vedanta as Background of Guru's Philosophy	
UNIT-1	Introduction to Vedanta
UNIT-2	Revalued Advaita philosophy of Sreenarayanaguru
UNIT- 3	Reason and mysticism in Guru's philosophy
UNIT - 4	Guru's vision on oneness: one caste, one religion, one God for mankind
Block 2: Guru and Social Reformation	
UNIT-1	Liberation through education
UNIT-2	Abolition of social evils
UNIT- 3	**Guru on gender equality and women empowerment**
UNIT - 4	Guru's vision of unity through social organizations

References:

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8. Narayana Prasad, Muni, *Narayana Guru Sampoorna Kritikal*, National Book Trust, New Delhi, 2015.

MALAYALAM

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9. Jacob, K. Koyikkal, *Sree Narayana Guru*, Poornodaya Books, Kochi, 2015
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12. Narayana Prasad, Muni, *Narayana Smriti Translation, Narayana Gurukulam*, Varkala, 2004.

GENERIC ELECTIVES - II

(Learners can choose any one. General Electives from Core Discipline cannot be chosen)

B21BB01GE: Entrepreneurship and Startups

Number of credits: 2

Objectives:

1. To provide an understanding of entrepreneurship and startups,
2. To understand the scope of an entrepreneur, key areas of development, financial support of organizations, etc.
3. To impart knowledge on how to start new ventures.

Course Outcomes

1. Encourage students to see entrepreneurship as a desirable and practical career option and to develop the necessary skills and motivation.
2. Enables the student to learn about project design, evaluation, financing and implementation.
3. Motivate students to self-employ.

Course Outline

Block 1	**Concepts of Entrepreneur**
Block 2	**Startups**
Block 1: Concepts of Entrepreneur:	
UNIT-1	Meaning - Definitions- Characteristics of entrepreneur -Types of entrepreneurs - Qualities of an entrepreneur- Role of entrepreneurs in the economic development - Women Entrepreneurs – Recent developments- Problems & Remedies, **Entrepreneurship** – Meaning – Definition - Entrepreneurial Development Programmes (EDP) - Objectives of EDP - Phases of EDP
Block 2: Startups	
UNIT-1	Meaning – Definition – Startup India Initiative – Journey of Evolution - Startup Portal and Startup India Hub - Startup Ecosystem- Unicorns Startups- Startup Recognition – Gem Workshops-Startup Management-Various Schemes offered by Government for the Promotion of Startups- Incubators - Startup Finance-Licensing- Exemptions for Startups- Startups in Kerala- Kerala Startup Mission- Process of registering a Startup in Kerala – Basic Start-Up Problems and Remedies. Project appraisal - Project Report-Requirements of a good report - General Principles of a Good Report-Performa of a Project Report.

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- Peter F.Drucker, *Innovation and Entrepreneurship*. (Module I)
- Sangram Keshari Mohanty, *Fundamentals of entrepreneurship*, New Delhi , PHI. (All Modules)
- K. Swapna, John S. Moses and Y. Sarada, *Startup Management*, Himalaya Publishing House (All Modules)
- Peter Thiel, *Zero to One: Notes on Startups, or How to Build the Future* –- Crown Publishing Group, (Module II)
- Deirdre Sartorelli, *Startup Smart, A handbook for entrepreneurs* – (Module II)
- Vasanth Desai, *Small Business Entrepreneurship,* Himalaya Publishing House. (All Modules)
- Renu Arora & S.K. Sood: *Fundamentals of Entrepreneurship and Small Business.* (Module I)
- Abha Mathur, *Entrepreneurship,* Taxman Publishing (All Modules)