

# **SREENARAYANAGURU**

## **O P E N U N I V E R S I T Y**

**BACHELOR OF SCIENCE IN DATA SCIENCE AND ANALYTICS**

**PROGRAMME SYLLABUS**

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



*Dr. Gopakumar C .*  
*HoS.*

**School of Communications  
and Information Science  
Sreenarayanaguru Open University  
Kollam, Kerala - 691 601**

**2024 Admission Onwards  
CBCS-UG Regulations 2021  
June 2024**

*Cuyl-3*

**REGISTRAR**  
**Sreenarayanaguru Open University**  
**Kollam, Kerala -691 601**

**SREENARAYANAGURU OPEN UNIVERSITY**  
**Programme Structure Template -Bachelor of Science in Data Science and Analytics**  
**(BSc in Data Science and Analytics)**

Sem	Discipline Core Course (DC) 6 Credit each	Practical Core Course (PC) 1 Credit each	Discipline Specific Elective courses (DE) 5 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	PC - 1			AC1				23
	DC - 2								
	Eng I(LC)								
II	DC - 3	PC - 2			AC2				23
	DC - 4								
	MIL - I								
III	DC - 5	PC - 3							23
	DC - 6					SE - 1	SC		
	Eng II (LC)								
IV	DC - 7	PC - 4		-					23
	DC - 8			GE - 1		SE - 2			
	MIL - II								
V	DC 9	PC - 5	DE - 1						19
			DE - 2	GE - 2					






## Semester-wise Programme Details

First Semester			
Sl. No	Type of the course	Course Code	Course Name
1	Discipline Core	B24DS01DC	Fundamentals of Information Technology
2	Discipline Core	B24DS02DC	Computational Foundations for Data Science
3	Practical Core	B24DS01PC	Essential Excel Skills for Data Analysis
4	English Language Core Course 1	B21EG01LC	Reading & Writing English
5	Ability Enhancement Compulsory Course	B21ES01AC	Environmental Studies

Second Semester			
Sl. No	Type of the course	Course Code	Course Name
1	Discipline Core	B24DS03DC	Introduction to Data Science and Analytics
2	Discipline Core	B24DS04DC	Database Management System
3	Practical Core	B24DS02PC	DBMS Lab

  
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3	<b>Ability Enhancement Compulsory Course</b>  <b>(Learners can choose any one)</b>	B21EG01AC	English for Communication
		B21ML01AC	പ്രായോഗികമലയാളം (Prayogikamalayalam)
		B21HD01AC	रोज़मर्रा हिंदी (Everyday Hindi)
		B21SN01AC	व्यावहारिकसंस्कृतम् (Vyavaharika Samskrutham)
		B21AR01AC	Communication in Arabic
4	<b>Modern Indian Languages I (MIL)</b>  <b>(Learners can choose any one. The same language should be chosen for MIL- II)</b>	B21ML01LC	മലയാളസാഹിത്യം : കവിത - കഥ - ഉപന്യാസം - നോവൽ (Malayalasaahithyam: Kavita-Kadha- Upanyasam-Novel)
		B21HD01LC	हिंदी गद्य साहित्य और संरचना (Hindi prose and structure)
		B21SN01LC	गद्य नाटकं व्याकरणं च (Gadyam Natakam cha)
		B21AR01LC	Functional Arabic



Third Semester			
SI No	Type of the course	Course Code	Course Name
1	Discipline Core	B24DS05DC	Data Structures
2	Discipline Core	B24DS06DC	Introduction to Python Programming
3	Practical Core	B24DS03PC	Python Programming Lab
3	English Language Core Course 2	B21EG02LC	Literature and the Contemporary World
4	Skill Enhancement Course	B24DS01SE	Data Visualisation
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	B24DS07DC	Machine Intelligence
2	Discipline Core	B24DS08DC	Big Data Analytics



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3	Practical Core	B24DS04PC	Machine Intelligence Lab
4	Skill Enhancement Course (SEC)	B24DS02SE	Data Engineering with Python
5	Modern Indian Languages (MIL)) (Learners can choose any one. The same language should be chosen for MIL- II)	B21ML02LC	<b>മലയാള സാഹിത്യ മാതൃകകൾ : ആത്മകഥ, ജീവചരിത്രം, യാത്രാവിവരണം, അനുഭവ സാഹിത്യം</b>  (Malayala Sahithya Mathrukakal: Aathmakadha, Jeevacharitram, Yathravivaranam, Anubhavasahithyam)
		B21HD02LC	<b>हिंदी पद्य साहित्य और अनुवाद</b>
		B21SN02LC	<b>महाकाव्यं गद्यकाव्यं च (Mahakavyam Gadyakavyam cha)</b>
		B21AR02LC	Literature in Arabic
6	Generic Electives - I (Learners can choose any one. General Electives from Core Discipline cannot be chosen)	B21ML01GE	<b>ആധുനിക മലയാള സാഹിത്യ ചരിത്രം (Aadhunika Malayala Sahithya Charithram)</b>
		B21EG01GE	Appreciating Literature
		B21HD01GE	<b>व्यावहारिक हिन्दी</b> (Communicative Hindi)
		B21SN01GE	<b>संस्कृतसोपानम् (Samskruthasopanam)</b>
		B21AR01GE	Modern Standard Arabic



## Fifth Semester

SI No	Type of the course	Course Code	Course Name
1	Discipline Core	B24DS09DC	Advanced Machine Learning
2	Practical Core	B24DS05PC	AML Lab with Python
3	Discipline Specific Elective Courses (DE)	B24DS01DE	Data Mining and Data Warehousing
		B24DS02DE	Introduction to Cloud Computing
4	Discipline Specific Elective Courses (DE)	B24DS03DE	Internet Of Things
		B24DS04DE	Natural Language Processing (NLP)
5	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



		<b>B21EC01GE</b>	<b>Economics for everyday life</b>
		<b>B21PH01GE</b>	<b>Introduction to the philosophy of Sree Narayana Guru</b>
		<b>B21BB01GE</b>	<b>Entrepreneurship and startup</b>

<b>Sixth Semester</b>			
<b>SI No</b>	<b>Type of the course</b>	<b>Course Code</b>	<b>Course Name</b>
<b>1</b>	<b>Discipline Specific Elective Courses (DE)</b>	<b>B24DS05DE</b>	<b>Digital Marketing</b>
		<b>B24DS06DE</b>	<b>Cloud Computing Architecture</b>
<b>2</b>	<b>Discipline Specific Elective Courses (DE)</b>	<b>B24DS07DE</b>	<b>Blockchain Technology</b>
		<b>B24DS08DE</b>	<b>Introduction to Information Security</b>
<b>3</b>	<b>Discipline Specific Elective Courses (DE)</b>	<b>B24DS09DE</b>	<b>Cyber Crime</b>
		<b>B24DS10DE</b>	<b>Communication and Networking</b>
<b>3</b>	<b>Dissertation / Project Courses (PR)</b>	<b>B24DS01PR</b>	<b>Dissertation / Multimedia Project</b>

### **Evaluation:**

- The evaluation of the programme for Theory Courses 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.

- The evaluation of the programme for practical Courses 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 40:60.



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# FIRST SEMESTER

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**DISCIPLINE CORE COURSE-01**

**B24DS01DC: FUNDAMENTALS OF INFORMATION TECHNOLOGY**

**Number of Credits:6**

<b>B24DS01DC: FUNDAMENTALS OF INFORMATION TECHNOLOGY</b>	
CO1: To learn the functional organization of physical components and architecture of a computer.	
CO2: To understand the working of a PC.	
CO3: To familiarize the different I/O devices.	
CO4: To understand the concept of application software and system software	
CO5: To know about the differences in memory units of a computer	
CO6: Attain skills to create a website using HTML	
<b>Block 1: Computer Fundamentals</b>	
<b>Unit 1</b>	Basic Hardware Concepts - Basic concepts, Working, Hardware fundamentals
<b>Unit 2</b>	Number Systems and Coding : : Decimal number system, Binary number system, Octal number system, Hexadecimal number system, Excess-3 code, BCD, Gray code
<b>Unit 3</b>	Input/ Output Devices : Evolution of I/O devices, new generation I/O devices
<b>Unit 4</b>	Different types of Computing Systems - Evolution, Characteristics, Classification
<b>Block II: Instructions, Memory and Storage</b>	
<b>Unit 1</b>	Memory Representation and Hierarchy
<b>Unit 2</b>	Instruction set and Instruction Cycle - RISC, CISC
<b>Unit 3</b>	Registers, Cache Memory and Virtual Memory
<b>Unit 4</b>	Secondary Storage Devices - Magnetic storage, Optical disc, USB, SSD
<b>Block III: Software</b>	
<b>Unit 1</b>	System boot up and Software Layers - Software, Files and Folders, Booting, POST
<b>Unit 2</b>	Popular Operating Systems : General OS, Mobile OS, Real Time OS (RTOS)
<b>Unit 3</b>	System Software and Utilities - Programming Languages, Language Translators, Database, Utilities, backup, disk defragmenter
<b>Unit 4</b>	Application software, Computer Virus and Protection
<b>Block IV: Networks &amp; Internet</b>	





<b>Unit 1:</b>	Basic Concepts and Devices - Types of network, Network devices, Work stations, Topologies, Network OS
<b>Unit 2</b>	World Wide Web and Search Engines - Websites, Uniform Resource Locator
<b>Unit 3</b>	Internet Connectivity - Internet Service Provider, Connection Types
<b>Unit 4</b>	Electronic mail system - Features, Web based system, Web pages
<b>Block V: Hyper Text Markup Language</b>	
<b>Unit 1</b>	HTML: Basic tags and divisions - HTML as structured language, HTML document type
<b>Unit 2</b>	Managing List and Table - Frame
<b>Unit 3</b>	Presenting Multimedia in HTML
<b>Unit 4</b>	Linking in HTML - HTML anchor tag, Creating a website
<b>Block VI: Trends in Information Technology</b>	
<b>Unit 1</b>	Google Productivity Tools - Gmail, Chat, Meet, Calendar, Drive for Storage; Docs, Sheets, Slides, Forms, Keep for notes.
<b>Unit 2</b>	Trending Technologies - Virtual Reality, Augmented Reality, Artificial Intelligence and Automation, Robotics and Blockchain
<b>Unit 3</b>	Computer Security & Malware - Virus, Anti-virus
<b>Unit 4</b>	IT & Sustainability - Green Computing

#### References:

- Introduction to Information Technology, 2<sup>nd</sup> 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 4<sup>th</sup> Edition,
- Dennis P Curtin, 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-02**

**B24DS02DC: COMPUTATIONAL FOUNDATIONS FOR DATA SCIENCE**

**Number of Credits: 6**

<b>B24DS02DC: COMPUTATIONAL FOUNDATIONS FOR DATA SCIENCE</b>	
CO1: To learn the Fundamental properties of matrices, their norms, and their applications.	
CO2: Understanding Differentiation/Integration of multiple variable functions and the role of the hessian matrix.	
CO3 : learners will be able to perform exploratory data analysis to gain insights into datasets, including summary statistics, distribution visualization, and correlation analysis.	
CO4: familiarize the concepts of relations and graph theory.	
<b>Block 1: Introduction to Statistics</b>	
<b>Unit 1</b>	Definition and Importance of Statistics
<b>Unit 2</b>	Methods of Data Collection: Surveys, Experiments, and Observational Studies Sampling Methods: Simple Random, Stratified, Cluster, and Systematic Sampling
<b>Unit 3</b>	Types of Data: Qualitative and Quantitative; Levels of Measurement: Nominal, Ordinal, Interval, and Ratio
<b>Unit 4</b>	Descriptive vs. Inferential Statistics
<b>Block II: Measures of Central Tendency and Dispersion</b>	
<b>Unit 1</b>	Concept of Sampling Distributions; Measure of central tendency; Mean, Median, Mode
<b>Unit 2</b>	Range, Interquartile Range (IQR), Concept of Boxplot
<b>Unit 3</b>	Variance and Standard Deviation; Population and Sample variance;
<b>Unit 4</b>	Coefficient of Variation ; Sampling Distribution of the Sample Mean and Sample Proportion; Summarizing data from more than one variable: graphs and correlation.
<b>Block III: Probability Theory and Distributions</b>	
<b>Unit 1</b>	Basics of Probability - Introduction; Sample Space and Events; Definitions: sample space, events, outcomes; Distributions of functions of random variables. Types of events: simple, compound, independent, dependent, mutually exclusive





<b>Unit 2</b>	Rules of Probability: Addition and Multiplication
<b>Unit 3</b>	Conditional Probability and Independence
<b>Unit 4</b>	Bayes' Theorem
<b>Block IV: Discrete and Continuous Probability Distributions</b>	
<b>Unit 1</b>	Probability Mass functions (PMF); Binomial, Poisson distributions
<b>Unit 2</b>	Probability Density Distribution; Normal distribution, exponential distribution and Uniform distribution
<b>Unit 3</b>	Central limit theorem and its applications
<b>Unit 4</b>	Estimation and confidence level
<b>Block V: Hypothesis Testing</b>	
<b>Unit 1</b>	Null and alternative hypothesis
<b>Unit 2</b>	Type I and Type II errors; p-Value and significance level
<b>Unit 3</b>	Steps in hypothesis testing
<b>Unit 4</b>	Comparing two populations: t-tests and ANOVA
<b>Block VI: Non-parametric testing</b>	
<b>Unit 1</b>	Chi-square test for independence
<b>Unit 2</b>	Mann-Whitney U Test
<b>Unit 3</b>	Wilcoxon Signed-Rank Test
<b>Unit 4</b>	Kruskal-Wallis Test

#### References:

- K Huffman and R Kunze, Linear Algebra, Pearson Education, 2nd Edition, 2005.
- Thomas M. Apostol, Calculus, Wiley, 2nd Edition, 1991 ISBN 960-07-0067-2.
- Michael Spivak. Calculus, publish or Perish, 2008, ISBN 978-0914098911.
- Ross L. Finney, Maurice D.Weir. and Frank R. Giordano. Thomas's Calculus, Pearson 12th Edition 2009.
- Bendat, J. S. and A. G. Piersol. Random Data: Analysis and Measurement Procedures. 4th Edition. John Wiley & Sons, Inc., NY, USA, 2010 3. Montgomery, D. C. and G. C. Runger. Applied Statistics and Probability for Engineers. 5th Edition. John Wiley & Sons, Inc., NY, USA, 2011.
- Kolman, Busby, Ross and Rehman, Discrete Mathematical Structures for Computer Science, Pearson Education, 6th Edition, 2017.
- Erwin Kreyszig, Advanced Engineering Mathematics, Wiley India, 9th Edition, 2011.



## **PRACTICAL CORE COURSE-01**

### **B24DS01PC : Essential Excel Skills for Data Analysis**

**Number of credits: 1**

<b>B24DS01PC : Essential Excel Skills for Data Analysis</b>	
CO1: To familiarize essential navigational controls in Excel, basic data entry with Excel spreadsheets and understand the different cell references.	
CO2: To get in touch with formatting tools like font formatting, borders, alignment, number formatting, Excel styles, themes, and printing options	
CO3: To build charts to represent data visually using Pie, column, and line charts and modify chart elements.	
CO4: To examine multiple sheets and workbooks to combine data, manage datasets and perform calculations across multiple sources.	
<b>Cycle 1: Basics of Data Handling in Excel</b>	
<b>Experiment 1</b>	Introduction to Excel: Overview of Excel interface, Data Entry, Data Types, Editing and Deleting, Fill, Handle, Copy and Paste, Templates,
<b>Experiment 2</b>	Basic Functions & Formulas: SUM, AUTOSUM, AVERAGE, MIN and MAX. Cell References. Calculations across sheets, Formatting and Printing: Formatting, Borders, Alignment Tools, Format Painter, Number Formats, Styles, and Themes.
<b>Experiment 3</b>	Data Sorting & Filtering: Sort data by multiple columns, Apply filters to datasets to display relevant fields.
<b>Experiment 4</b>	Introduction to Charts: Bar, Line, Pie. Chart Elements - Titles, Labels & Legends
<b>Cycle II: Data Analysis Techniques</b>	
<b>Experiment 1</b>	Advanced Formulas: IF, AND, OR. Lookup Functions - VLOOKUP, HLOOKUP
<b>Experiment 2</b>	Data Validation & Conditional Formatting
<b>Experiment 3</b>	Pivot Tables
<b>Experiment 4</b>	Introducing Named Ranges, Creating Named Ranges, Managing, Named Ranges in Formulas
<b>Cycle III: Data Visualisation and Dashboarding</b>	
<b>Experiment 1</b>	Advanced Visualizations - Histograms, Scatter Plots, Combo Charts. Trendlines,



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<b>Experiment 2</b>	Creating interactive dashboards, Using slicers and timelines for filtering data, Data visualization best practice
<b>Experiment 3</b>	Import data from external sources (Websites, CSV files)
<b>Experiment 4</b>	Sharing workbooks with others, Protecting worksheets and workbooks, Tracking changes and comments, Collaborating in real-time using Excel Online or shared workbooks

#### References:

- "Excel Basics to Blackbelt: An Accelerated Guide to Decision Support Designs" by Elliott & Sackett
- "Microsoft Excel Data Analysis and Business Modeling" by Wayne Winston
- "Excel 2019 Bible" by Michael Alexander and Richard Kusleika
- "Excel for Data Analysis: Basic to Expert Level" by Leila Gharani

**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

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**DISCIPLINE CORE COURSE -03**

**B24DS03DC: INTRODUCTION TO DATA SCIENCE AND ANALYTICS**

(Number of credits: 6)

<b>B24DS03DC: FUNDAMENTALS OF DATA SCIENCE AND ANALYTICS</b>	
CO1: To introduce the concepts of data science	
CO2: To describe different ways of collecting data and data processing	
CO3: To introduce the basic concepts of exploratory data analysis	
CO4 : To describe various deployment strategies	
<b>Block 1: Data Science Basics</b>	
<b>Unit 1</b>	Introduction to data science and its applications
<b>Unit 2</b>	Data Science Project Life Cycle
<b>Unit 3</b>	Data Types: Different types of classification
<b>Unit 4</b>	Data Attributes : Different types of data attributes
<b>Block II: Understanding Data Science Project and Data Quality</b>	
<b>Unit 1</b>	Data Quality: Issues related to data
<b>Unit 2</b>	Data Cleaning methods
<b>Unit 3</b>	Data Transformation
<b>Unit 4</b>	Data Discretization & Aggregation
<b>Block III: Feature Engineering</b>	
<b>Unit 1</b>	Importance of feature engineering, Creating new features
<b>Unit 2</b>	Data summarization and anomalies
<b>Unit 3</b>	Data Reduction Techniques: PCA, Wavelet analysis
<b>Unit 4</b>	Parametric data reduction, Sampling techniques for data reduction
<b>Block IV: Exploratory Data Analytics</b>	
<b>Unit 1</b>	Introductory EDA
<b>Unit 2</b>	Average, Sample size, Univariate and multivariate distributions
<b>Unit 3</b>	Working with Text data
<b>Unit 4</b>	Storytelling with data





<b>Block V: Data Warehousing</b>	
<b>Unit 1</b>	Introduction to data warehousing, OLTP, OLAP concepts
<b>Unit 2</b>	Design, Dimension, Star schema, snowflake schema etc
<b>Unit 3</b>	Extract, Transform and Load concepts
<b>Unit 4</b>	Administration and Management of data warehousing
<b>Block VI: Data Responsibility Framework</b>	
<b>Unit 1</b>	Data Ethics
<b>Unit 2</b>	Data Security and Privacy
<b>Unit 3</b>	Data Governance
<b>Unit 4</b>	Data Sharing and Management

#### 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 CORE COURSE**

### **B24DS04DC: DATABASE MANAGEMENT SYSTEMS**

**Number of credits: 6**

<b>B21CA05DC: DATABASE MANAGEMENT SYSTEMS</b>	
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.	
<b>Block 1: Introduction to Database Management Systems</b>	
<b>Unit 1</b>	Basic Concepts - Data and Information, Database Definition and Purpose, File Server Model, Client-Server Model
<b>Unit 2</b>	DBMS Fundamentals - Components of DBMS, DBMS Features, Transaction Management, ACID Properties
<b>Unit 3</b>	Data Abstraction - Levels of Data Abstraction, Data Independence, Importance and Examples
<b>Unit 4</b>	Three-tier Architecture - Centralized and Distributed Databases, Advantages and Disadvantages, Case Studies
<b>Block II: Data Modeling</b>	
<b>Unit 1</b>	Data Model Concepts - Logical Data Models, Physical Data Models, Differences and Use Cases, Introduction to ER Modeling
<b>Unit 2</b>	Entity-Relationship Modeling - Detailed Study of E-R Modeling, Entities, Attributes, and Relationships, ER Diagrams, Case Studies
<b>Unit 3</b>	Record-Based Models and Relational Model - Record-Based Data Models, Relational Model Overview, Relational Concepts: Tables, Keys, Constraints, Data Integrity and Constraints
<b>Unit 4</b>	Normalization and Advanced Topics - Database Normalization, Codd's Rules, Functional Dependencies, Schema and Non-Schema Objects





<b>Block III: Introduction to SQL</b>	
<b>Unit 1</b>	SQL Basics - Introduction to SQL, SQL Features, SQL Operators, SQL Data Types
<b>Unit 2</b>	SQL Command Types - Types of SQL Commands (DML, DDL, DCL, TCL), SQL Parsing, Querying Data from the Database, Basic Queries
<b>Unit 3</b>	Advanced SQL - Advanced Study of Structured Query Language, Correlated Sub-Queries, Joins (Inner, Outer, Self Joins), Hierarchical Queries
<b>Unit 4</b>	SQL Objects and Procedures - Bind Variables, Cursors, Views Functions, Stored Procedures, and Triggers
<b>Block IV: Distributed Databases</b>	
<b>Unit 1</b>	Distributed Database Concepts - Architectures for Parallel Databases, Parallel Query Evaluation, Parallelizing Individual Operations, Distributed Database Overview
<b>Unit 2</b>	Data Fragmentation and Replication - Data Fragmentation Techniques, Data Replication, Allocation Techniques for Distributed Database Design, Examples and Use Cases
<b>Unit 3</b>	Distributed Query Processing - Query Processing in Distributed Databases, Strategies and Algorithms, Concurrency Control, Recovery Mechanisms in Distributed Databases
<b>Unit 4</b>	Distributed Database Applications - Real-world Applications, Performance Issues and Solutions, Security in Distributed Databases, Case Studies
<b>Block V: NoSQL Databases</b>	
<b>Unit 1</b>	Introduction to NoSQL - Emergence and Relevance of NoSQL, Characteristics of NoSQL Databases, Comparison with RDBMS, Use Cases
<b>Unit 2</b>	Types of NoSQL Databases - Key-Value Store, Document Data Models, Column-Family Store, Graph Databases
<b>Unit 3</b>	NoSQL Database Examples - MongoDB Overview and Use, Cassandra Overview and Use, HBASE Overview and Use, Neo4j Overview and Use
<b>Unit 4</b>	NoSQL in Practice - Application and Challenges, Deployment Strategies, Performance and Scalability, Future Trends
<b>Block VI: Advanced Topics and Applications</b>	
<b>Unit 1</b>	Transaction Management - Advanced Transaction Management, Concurrency Control Techniques, Deadlock Management, Case Studies

<b>Unit 2</b>	Database Security - Database Security Fundamentals, Authentication and Authorization, Encryption Techniques, Secure Database Design
<b>Unit 3</b>	Big Data and Databases - Introduction to Big Data, Big Data Technologies, Integration with Database Systems, Case Studies
<b>Unit 4</b>	Future Trends in Databases- Cloud Databases, In-Memory Databases, Database as a Service (DBaaS), Emerging Technologies and Trends

#### 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

### **PRACTICAL CORE COURSE - 02**

#### **B24DS02PC: DBMS LAB**

**(Number of credits: 1)**

<b>B24DS02PC: DBMS LAB</b>	
CO1: Install and configure PostgreSQL/MySQL databases.	
CO2: Perform basic database operations like creating tables and running queries.	
CO3: Manage database backups, restore data, and monitor performance.	
<b>Cycle I: RDBMS I</b>	
<b>Experiment 1</b>	Setting up PostgreSQL/MySQL, Understand the installation process for PostgreSQL or MySQL.
<b>Experiment 2</b>	Learn how to configure and optimize database settings for performance. Gain hands-on experience with basic database operations
<b>Experiment 3</b>	Basic Operations: Creating databases and tables., Inserting, updating, and deleting data. Performing basic queries and transactions
<b>Experiment 4</b>	Using tools for database management (pgAdmin for PostgreSQL/ MySQL Workbench for MySQL).
<b>Cycle II: RDBMS II</b>	

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<b>Experiment 1</b>	Performing database backups.
<b>Experiment 2</b>	Restoring databases from backups. Understanding the importance of regular backup schedules
<b>Experiment 3</b>	Performance monitoring: Monitoring database performance using built-in tools
<b>Experiment 4</b>	Identifying and troubleshooting performance bottlenecks, Introduction to third-party monitoring tools.
<b>Cycle III: NoSQL</b>	
<b>Experiment 1</b>	Installation of configuration of distributed and wide – column store DB: Cassandra
<b>Experiment 2</b>	Basic operations of cassandra
<b>Experiment 3</b>	Document DB: Installation of MongoDB/introduction to any publicly available MongoDB database
<b>Experiment 4</b>	Basic document DB operations with MongoDB

### **Ability Enhancement Compulsory Course**

(Learners can choose any one)

**Number of credits: 6**

**See Annexure-II**

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



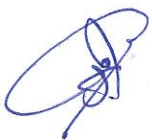
**Modern Indian Languages I (MIL-I)**

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

**Number of credits: 6**

**See Annexure-II**

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





# THIRD SEMESTER

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## **DISCIPLINE CORE COURSE-05**

### **B24DS05DC : DATA STRUCTURES**

**Number of credits: 6**

<b>B24DS05DC : DATA STRUCTURES</b>	
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	
<b>Block 1: Basic Data Structures</b>	
<b>Unit 1</b>	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
<b>Unit 2</b>	Array as a data structure - Declaration, initialization and accessing of array elements. Types of array, memory representation of One dimensional and Two dimensional array, static and dynamic memory allocation
<b>Unit 3</b>	Stack - Representation, Basic Operations of Stack, Polish Notation- Queue - Introduction, Types, Basic operations and Applications of Queue
<b>Unit 4</b>	Circular Queue, Double Ended Queue and Priority- Queue Applications - Introduction to applications of Queue, Recursion, Tower of Hanoi problem
<b>Block II: Linear Structures</b>	
<b>Unit 1</b>	Linked allocations - Linked list - Representation, Implementation, Traversal, Self Referential Structure
<b>Unit 2</b>	Operations on linked list- Search and Sort Linked list vs array
<b>Unit 3</b>	Circular linked list, Doubly linked list, Operations and traversal in circular linked list and doubly linked list
<b>Unit 4</b>	Linked list representation of stack and queue
<b>Block III: Non-Linear Data Structures</b>	
<b>Unit 1</b>	Graphs - Types and Terminology, Graph representation and traversal (DFS, BFS)
<b>Unit 2</b>	Trees - Binary tree (Complete, full, 2-tree), Tree traversal





<b>Unit 3</b>	Binary Search Tree - Searching, Insertion, Deletion
<b>Unit 4</b>	Balancing binary tree , AVL tree, B- tree
<b>Block IV: Designing Algorithms</b>	
<b>Unit 1</b>	Complexity of Algorithms - Best Case, Worst Case, Average case - Time and Space complexity- Asymptotic notation, Estimating complexity - Sequence and Loop Structures
<b>Unit 2</b>	Searching and Sorting - Linear search, Insertion sort and Selection sort
<b>Unit 3</b>	Divide and Conquer Algorithms: Min-Max, Binary search, Quicksort
<b>Unit 4</b>	Minimum cost spanning trees
<b>Block V: Advanced data structures</b>	
<b>Unit 1</b>	Overview of advanced data structures and their significance in solving complex problems, Comparison between basic and advanced data structures, Importance of efficiency and scalability in advanced data structures.
<b>Unit 2</b>	Introduction to hashing and hash functions, Collision resolution techniques: chaining, open addressing (linear probing, quadratic probing, double hashing).
<b>Unit 3</b>	Priority queues and heaps.
<b>Unit 4</b>	Trie Data Structure: Introduction to trie data structure, Trie operations: insertion, deletion, search, Applications of trie: autocomplete systems, dictionary implementations, spell checkers.
<b>Block VI : Dynamic Programming and Application</b>	
<b>Unit 1</b>	Introduction to dynamic programming.
<b>Unit 2</b>	Principles of dynamic programming: overlapping subproblems, optimal substructure.
<b>Unit 3</b>	Real-world applications of data structures in software development.
<b>Unit 4</b>	Case studies demonstrating the use of data structures in solving practical problems.

#### 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



**DISCIPLINE CORE COURSE - 06**

**B24DS06DC: INTRODUCTION TO PYTHON PROGRAMMING**

(Number of Credits: 6)

<b>B24DS06DC: INTRODUCTION TO PYTHON PROGRAMMING</b>	
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	
CO5: To learn to import and work with third-party modules like NumPy, Matplotlib and Pandas.	
<b>Block 1: Introduction to Python, Data Structures and Operations</b>	
<b>Unit 1</b>	Introduction to Python - High level language, Python interactive mode, Python IDE, Python variable name
<b>Unit 2</b>	Operators in Python
<b>Unit 3</b>	Data types in Python, Data structures in Python -, List indexing and slicing, Python tuples,dictionary,set
<b>Unit 4</b>	Built-in methods of Data Structures
<b>Block II: Decision making, Loops and Strings</b>	
<b>Unit 1</b>	Decision Making Statements ,if,elif,else
<b>Unit 2</b>	Loops statements - while loop, for loop
<b>Unit 3</b>	Loop control statements( break, continue)
<b>Unit 4</b>	Strings and String functions
<b>Block III: Functions, Modules &amp; Packages, Regular Expressions</b>	
<b>Unit 1</b>	Functions : Function declaration, types of functions and usage.
<b>Unit 2</b>	Built in functions of Python
<b>Unit 3</b>	Modules and packages
<b>Unit 4</b>	Regular Expressions - Special sequence
<b>Block IV: File Handling, Object-Oriented Programming,</b>	
<b>Unit 1</b>	File Handling - Introduction, open(), read(), write(), Rename a file, Delete a file, seek(), tell(), Truncating file





<b>Unit 2</b>	File operations in Python
<b>Unit 3</b>	Object-Oriented Programming - Introduction, objects, classes
<b>Unit 4</b>	OOPS concepts: inheritance, polymorphism, abstraction
<b>Block V : Exception Handling and Database Programming</b>	
<b>Unit 1</b>	Exception Handling - Introduction, Exception, Errors
<b>Unit 2</b>	Debugging techniques and tools (pdb debugger).
<b>Unit 3</b>	Database Programming - Introduction, Examples for Database programming
<b>Unit 4</b>	Applications of database programming
<b>Block VI : Familiarizing NumPy, Matplotlib and Pandas</b>	
<b>Unit 1</b>	Familiarizing NumPy - Significance of Numpy, Creating array, indexing array
<b>Unit 2</b>	Introduction to Pandas - pandas, Advantages of pandas, Data cleaning
<b>Unit 3</b>	Matplotlib - pyplot Module, Axes Class Methods, Figure Class Methods
<b>Unit 4</b>	Usecase with the library functions

#### 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>



## **PRACTICAL CORE COURSE - 03**

### **B24DS03PC : PYTHON PROGRAMMING LAB**

**Number of credits: 2**

<b>B24DS03PC : PYTHON PROGRAMMING LAB</b>	
CO1: To develop problem-solving skills by implementing algorithms and solving programming challenges using Python.	
CO2: To learn how to connect to databases (SQLite, MySQL, PostgreSQL) using Python and perform database operations (e.g., querying, updating) using SQL.	
CO3: To use Python libraries such as NumPy, Pandas, and Matplotlib for data analysis, data manipulation, and visualization.	
CO4: To acquire skills in debugging Python code, handling errors and exceptions, and writing unit tests using testing frameworks like unittest.	
<b>Cycle I: Introduction to Python</b>	
<b>Experiment 1</b>	Setting up Python environment (Anaconda, Jupyter Notebooks), Basic Python syntax review, Writing and running Python scripts
<b>Experiment 2</b>	Write programs using different operators to do various operations
<b>Experiment 3</b>	Write programs to demonstrate string handling
<b>Experiment 4</b>	Write programs using if, if-else, nested if, if else if ladder, switch case , while, for and do-while
<b>Cycle II: Data Structures and Functions</b>	
<b>Experiment 1</b>	Write programs to demonstrate different comprehensions - List, Set and Generator Comprehensions
<b>Experiment 2</b>	Implement different applications by using functions Implement different applications by using lambda functions
<b>Experiment 3</b>	Implement different applications by using nested structures
<b>Experiment 4</b>	Implement different applications by using modules
<b>Cycle III: File Handling and OOP Concepts, Exception Handling</b>	
<b>Experiment 1</b>	Write different programs for file handling operations
<b>Experiment 2</b>	Object-Oriented Programming
<b>Experiment 3</b>	Write programs to analysis data using Libraries- NumPy, Pandas
<b>Experiment 4</b>	Write programs to analysis data using Libraries - Matplotlib





**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>



## **SKILL ENHANCEMENT COURSES - I (SE-I)**

### **B24DS01SE: DATA VISUALIZATION**

**(Number of credits: 2)**

<b>B24DS01SE: DATA VISUALIZATION</b>	
CO1: To remember the concepts of Data preparation	
CO2: To identify exploratory data analysis techniques	
CO3: To familiarize dealing with data cleaning - outliers and missing values.	
CO4: To know about sampling techniques	
CO5: To make aware of data profiling and quality reports	
<b>Block 1: Introduction to Visualization</b>	
<b>Unit 1</b>	Overview of Data Visualization - Definition and importance, historical context, key applications in various fields. Basic Principles of Visual Design - Clarity, precision, and Efficiency; the role of aesthetics in data visualization.
<b>Unit 2</b>	Visual Perception and Cognition - Understanding Visual Perception: How humans perceive visual information, Gestalt principles of visual perception. Cognitive Load and Information Processing: Reducing cognitive load in data visualization, and Strategies to enhance data comprehension. Tufte's Rules for Data Graphics: Data-Ink Ratio, Importance of context and comparison. Examples of Tufte's Work: Analysis of Tufte's classic visualizations
<b>Unit 3</b>	Designing for Different Audiences - Understanding Your Audience: Tailoring visualizations to different stakeholders. Storytelling with Data: Crafting narratives through data visualization.
<b>Unit 4</b>	Best Practices in Data Visualization - Designing Effective Dashboards: Key components of an effective dashboard, examples and case studies. Avoiding Common Pitfalls: Misleading visualizations, data distortion and how to prevent it. Interactive Visualizations: Creating and using interactive elements. Trends in Data Visualization: Current and emerging trends.
<b>Block II: Data Visualisation Using Power BI</b>	
<b>Unit 1</b>	Power BI versions, Data Connectors (connecting to data sources), Data Loading, Data Cleaning, Data Transformations
<b>Unit 2</b>	Power Query, Data Modelling, Calculated Columns and Measures, DAX expressions
<b>Unit 3</b>	Creating Visualizations (Charts, Graphs, Maps, KPIs, Slicers, Filters, Drill Thru, Drill Down, Custom Visuals), Publishing a report





<b>Unit 4</b>	Data Security, PowerBI embedded, PowerBI Service, On Premise Gateway
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**References:**

- "Data Science
- for Business: What You Need to Know about Data Mining and Data-Analytic Thinking" by Foster Provost and Tom Fawcett.
- "Python Data Cleaning Cookbook" by Michael Walker.
- "Practical Data Cleaning" by Susan Elliot Sim and Hui Bian.

**English Language Core Course -2**

**B21EG02LC: Literature and the Contemporary World Annexure-III**

**Skill Enhancement Compulsory Courses (SECC)**

**B21HL01SC: Humanism and Logic**

**Number of credits: 2**

**See Annexure-III**

# FOURTH SEMESTER



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**DISCIPLINE CORE COURSE - 07**

**B24DS07DC: MACHINE INTELLIGENCE**

**(Number of credits: 6)**

<b>B24DS07DC: MACHINE INTELLIGENCE</b>	
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 concept of Artificial Neural Networks	
<b>Block 1: Introduction to Artificial Intelligence</b>	
<b>Unit 1</b>	Introduction to Artificial Intelligence (AI), Cognitive Science, Goals of AI
<b>Unit 2</b>	AI Approaches and Techniques
<b>Unit 3</b>	Intelligent Systems
<b>Unit 4</b>	Applications of AI
<b>Block II: Introduction to Machine Learning</b>	
<b>Unit 1</b>	Introduction to Machine Learning
<b>Unit 2</b>	Mathematical Foundations of Machine Learning, Optimization
<b>Unit 3</b>	Types of Machine Learning
<b>Unit 4</b>	Model Building and Evaluation
<b>Block III: Supervised Learning - 1</b>	
<b>Unit 1</b>	Regression – Linear Regression, Regularization Methods
<b>Unit 2</b>	Linear regression - Single and Multivariable, logistic regression
<b>Unit 3</b>	Bayesian methods, kNN
<b>Unit 4</b>	Decision Trees, Random Forest, Bagging and Boosting
<b>Block IV: Supervised Learning II</b>	
<b>Unit 1</b>	Support Vector Machines: Linear and Non Linear kernel SVM, hyperplane, and margin,
<b>Unit 2</b>	Probability based methods: Logistic regression



<b>Unit 3</b>	LDA
<b>Unit 4</b>	Case Studies
<b>Block V: Unsupervised Learning</b>	
<b>Unit 1</b>	Clustering: Hierarchical clustering, k-means clustering
<b>Unit 2</b>	Birch clustering; Dbscan
<b>Unit 3</b>	Gaussian Mixture Models, Fuzzy C-Means Clustering, Affinity Propagation
<b>Unit 4</b>	Case studies
<b>Block VI: Basics of Market Basket Analysis &amp; Reinforced Learning</b>	
<b>Unit 1</b>	Introduction to market basket analysis; Importance and applications in retail and e-commerce; Understanding transactional data
<b>Unit 2</b>	Introduction to Apriori Algorithm; Basic concepts and steps; Generating frequent itemsets; Calculating support, confidence, and lift, FP Growth Algorithm
<b>Unit 3</b>	<b>Fundamentals of Reinforcement Learning</b>  Definition and key concepts, differences between supervised, unsupervised, and reinforcement learning, applications of reinforcement learning, elements of reinforcement learning: agent, environment, state, action, reward, Markov Decision Processes (MDP), policy, value function, model, dynamic programming: Bellman Equation, value iteration, policy iteration.
<b>Unit 4</b>	<b>Model-Free Methods and Applications</b>  Model-free methods: Monte Carlo methods, temporal difference learning, Q-Learning, SARSA, deep reinforcement learning: Deep Q-Networks (DQN), experience replay, target networks, practical applications: robotics, game playing, finance, evaluation techniques: rewards, exploration vs. exploitation, convergence analysis.

#### References:

1. Russell, Stuart J., and Peter Norvig. Artificial intelligence: a modern approach. Pearson, 2016.
2. Murphy, K. P. Machine Learning—A probabilistic Perspective. The MIT Press, 2012.
3. Eberhart, Russell C., and Yuhui Shi. Computational intelligence: concepts to implementations. Elsevier, 2011.
4. Flach, Peter. Machine learning: the art and science of algorithms that make sense of data. Cambridge university press, 2012.
5. James, Gareth, et al. An introduction to statistical learning: With applications in python. Springer Nature, 2023.
6. Jiawei, Han, and Kamber Micheline. Data mining: concepts and techniques. Morgan kaufmann, 2006.
7. Ravichandiran, Sudharsan. Deep Reinforcement Learning with Python: Master classic RL, deep RL, distributional RL, inverse RL, and more with OpenAI Gym and TensorFlow. Packt



Publishing Ltd, 2020.

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**DISCIPLINE CORE COURSE**

**B24DS08DC: BIG DATA ANALYTICS**

**Number of credits: 6**

<b>B24DS08DC: BIG DATA ANALYTICS</b>	
CO1: To gain a solid understanding of Big Data fundamentals.	
CO2: To introduce the concepts of Big Data Platforms and the Big Data Ecosystem.	
CO3: To develop scalable Big Data storage solutions using clustering and distributed systems concepts.	
CO4: To process and analyze real-time data streams using sampling, filtering, and aggregation techniques.	
CO5: To implement and optimize Big Data solutions using cloud computing services and platforms.	
<b>Block 1: Introduction to Big Data</b>	
<b>Unit 1</b>	Introduction to Big Data Platform - Challenges of Conventional Systems, 5 V's of Big data
<b>Unit 2</b>	Big Data Ecosystem - Overview of Big Data Technologies, Key Players in the Big Data Landscape, Use Cases of Big Data in Various Industries
<b>Unit 3</b>	Architecture for Bigdata, organization of bigdata - clusters, Bigdata Storage concepts, vertical vs. horizontal storage, distributed storage systems.
<b>Unit 4</b>	History and Overview of Hadoop - Evolution of Hadoop, Key Components of the Hadoop Ecosystem; Hadoop Distributed File System (HDFS) - Design and Features of HDFS, Data Storage and Retrieval in HDFS; MapReduce Framework - Developing a MapReduce Application, How MapReduce Works.
<b>Block II: Apache Spark</b>	
<b>Unit 1</b>	Limitations of hadoop, Introduction to Spark, Advantages of Spark over Hadoop
<b>Unit 2</b>	Spark Concepts, Lazy evaluation, Storage options in spark, Spark Architecture, Components, RDD (Resilient Distributed Dataset)
<b>Unit 3</b>	Machine Learning with Spark - ML Library in Spark, Building Predictive Models





<b>Unit 4</b>	Counting and Aggregating Stream Data - Counting Distinct Elements in a Stream, Aggregation Techniques for Stream Data
<b>Block III: Mining Data Streams</b>	
<b>Unit 1</b>	Introduction to Streams Concepts - Definition and Characteristics of Data Streams, Stream Data Model and Architecture
<b>Unit 2</b>	Stream Computing - Fundamentals of Stream Computing, Key Technologies and Tools
<b>Unit 3</b>	Sampling and Filtering Streams - Techniques for Sampling Data in a Stream, Methods for Filtering Streams
<b>Unit 4</b>	Counting and Aggregating Stream Data - Counting Distinct Elements in a Stream, Aggregation Techniques for Stream Data
<b>Block IV: Introduction to Recommendation Systems</b>	
<b>Unit 1</b>	Overview of Recommendation Systems - Introduction to Recommendation Systems, Types of Recommendation Systems: Content-Based, Collaborative Filtering, Hybrid Methods, Use Cases and Applications in Different Industries
<b>Unit 2</b>	Content-Based Filtering - Basics of Content-Based Filtering, Item Profiles and User Profiles, Similarity Measures: Cosine Similarity, Jaccard Similarity, Advantages and Limitations
<b>Unit 3</b>	Collaborative Filtering - Basics of Collaborative Filtering, User-Based and Item-Based Collaborative Filtering, Matrix Factorization Techniques, Advantages and Limitations
<b>Unit 4</b>	Hybrid Recommendation Systems- Combining Content-Based and Collaborative Filtering, Case Studies of Hybrid Systems, Techniques for Building Hybrid Systems,
<b>Block V: Link Analysis Technique</b>	
<b>Unit 1</b>	Introduction to Link Analysis - Overview of Link Analysis, Importance of Link Analysis in Data Mining, Applications in Web Search and Social Networks, Key Metrics: Degree Centrality, Betweenness Centrality, Closeness Centrality.

<b>Unit 2</b>	Graph Theory Basics and Algorithms - Fundamentals of Graph Theory, Types of Graphs: Directed, Undirected, Weighted, Unweighted, Representing Graphs: Adjacency Matrix, Adjacency List, Basic Graph Algorithms: BFS, DFS.
<b>Unit 3</b>	PageRank and HITS Algorithms - Introduction to PageRank, Mathematical Formulation and Implementation of PageRank, Introduction to HITS (Hyperlink-Induced Topic Search), Hubs and Authorities: Concepts and Calculation, Applications and Differences between HITS and PageRank
<b>Unit 4</b>	Advanced Link Analysis Techniques -Community Detection in Graphs, Algorithms for Community Detection: Girvan-Newman, Louvain, Link Prediction Techniques: Similarity-Based, Probabilistic Models, Influence Maximization in Networks: Concepts and Models
<b>Block VI : Introduction to Cloud Computing</b>	
<b>Unit 1</b>	Overview of Cloud Computing, Definition and key characteristics, Types of cloud services: IaaS, PaaS, SaaS  Major Cloud Service Providers: Overview of major providers (AWS, Google Cloud Platform, Microsoft Azure); Key services offered by each provider for Big Data analytics
<b>Unit 2</b>	Data Storage and Management in the Cloud: Amazon S3, Google Cloud Storage, Azure Blob Storage; Advantages of cloud storage for Big Data (durability, accessibility, cost-effectiveness)
<b>Unit 3</b>	Big Data Processing Frameworks on the Cloud: Introduction to managed Spark services (Databricks, Google Dataproc, Azure Synapse) Advantages of using Spark on the cloud for large scale data processing
<b>Unit 4</b>	Big Data Analytics in the Cloud: Case studies of companies using cloud platforms for Big Data analytics Success stories and lessons learned  Machine Learning and AI in the Cloud: Using cloud services for machine learning (Amazon SageMaker, Google AI Platform, Azure Machine Learning)

#### References:

- Warren, James, and Nathan Marz. Big Data: Principles and best practices of scalable realtime data systems. Simon and Schuster, 2015.



- Karau, Holden, et al. Learning spark: lightning-fast big data analysis. " O'Reilly Media, Inc.", 2015.
- Aggarwal, Charu C., ed. Data streams: models and algorithms. Vol. 31. Springer Science & Business Media, 2007.
- Jannach, Dietmar, et al. Recommender systems: an introduction. Cambridge University Press, 2010.
- Easley, David, and Jon Kleinberg. Networks, crowds, and markets: Reasoning about a highly connected world. Vol. 1. Cambridge: Cambridge university press, 2010.
- White, Tom. Hadoop: The definitive guide. " O'Reilly Media, Inc.", 2012.



**PRACTICAL CORE COURSE - 04**

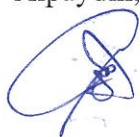
**B24DS04PC: MACHINE LEARNING LAB**

**(Number of credits: 1)**

<b>B24DS04PC: MACHINE LEARNING LAB</b>	
CO1: To do implementations of supervised and unsupervised learning algorithms	
CO2: To implement Ensemble and reinforced learning methods	
CO3: To understand the practical implementations of Artificial Neural Networks and basic Deep Learning techniques	
<b>Cycle I: Supervised Learning I</b>	
<b>Experiment 1</b>	Linear Regression and regularization
<b>Experiment 2</b>	Using IRIS dataset implement decision tree with ID3 algorithm. Compute precision and accuracy
<b>Experiment 3</b>	Implement random forest algorithm with California Housing dataset and perform tree pruning and report confusion matrix
<b>Experiment 4</b>	Implement and evaluate the Linear Discriminant Analysis (LDA) algorithm on the Wine dataset
<b>Cycle II: Supervised Learning II</b>	
<b>Experiment 1</b>	Implement SVM using with IRIS dataset. Try with different kernel methods
<b>Experiment 2</b>	Implement and evaluate logistic regression with titanic dataset
<b>Experiment 3</b>	Create a prediction model for cancer using logistic regression. Use Brest Cancer Wisconsin dataset
<b>Experiment 4</b>	Implement and evaluate the Linear Discriminant Analysis (LDA) algorithm on the Wine dataset
<b>Cycle III: Unsupervised Learning</b>	
<b>Experiment 1</b>	Implement and evaluate Hierarchical clustering using IRIS dataset
<b>Experiment 2</b>	Implement and evaluate Birch clustering & Dbscan with publicly available dataset
<b>Experiment 3</b>	Implement Gaussian Mixture Models with wine dataset
<b>Experiment 4</b>	Implement k-means clustering using titanic dataset

**References:**

1. Bishop, Christopher M. "Pattern recognition and machine learning." Springer google schola 2 (2006): 1122-1128.
2. Alpaydin, Ethem. Introduction to machine learning. MIT press, 2020.



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3. Ian, H. Witten, and Frank Eibe. Data mining: practical machine learning tools and techniques. Morgan Kaufmann Publishers, 2005.
4. James, Gareth, et al. An introduction to statistical learning: With applications in python. Springer Nature, 2023.

### **SKILL ENHANCEMENT COURSES - II (SE-II)**

#### **B24DS02SE: DATA ENGINEERING WITH PYTHON**

**Number of credits: 2**

<b>B24DS02SE: DATA ENGINEERING WITH PYTHON</b>	
CO1: To understand data engineering life cycle	
CO2: To familiarize data cleaning and preprocessing techniques using Python	
CO3: To study the techniques for extracting data from various sources	
CO4: Able to use data security measures	
<b>Block 1: Introduction to Data Engineering and Working with Data in Python</b>	
<b>Unit 1</b>	Overview of data engineering and its role in data-driven organizations
<b>Unit 2</b>	Understanding the data engineering lifecycle, Introduction to Python for data engineering tasks
<b>Unit 3</b>	Data manipulation with libraries like NumPy and pandas
<b>Unit 4</b>	File I/O operations for reading and writing data files
<b>Block 2: Data Processing and Transformation, Data Integration and ETL</b>	
<b>Unit 1</b>	Cleaning and preprocessing data using Python, Techniques for handling missing values and outliers
<b>Unit 2</b>	Techniques for handling missing values and outliers, data normalization and standardization
<b>Unit 3</b>	Introduction to ETL processes and concepts, Extracting data from various sources (e.g., CSV files, databases)
<b>Unit 4</b>	Transforming data using Python libraries and functions, Loading transformed data into target systems, Implementing data security measures in Python.

#### **References:**

- Data Science Essentials in Python: Collect, Organize, Explore, Predict, Value. Dmitry Zinoriev, The Pragmatic Programmers LLC, 2016.



- Introduction to Python Programming. Gowrishankar S., Veena A. CRC Press, Taylor & Francis Group, 2019.
- Glenn J. Myatt, Making sense of Data: A practical Guide to Exploratory Data Analysis and Data Mining, John Wiley Publishers, 2007.

### **MODERN INDIAN LANGUAGES - II (MIL-II)**

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

(Number of credits: 6)

See Annexure-IV

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

### **GENERAL ELECTIVE - I**

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

(Number of credits: 2)

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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

**DISCIPLINE CORE COURSE -09**



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## B24DS09DC: Advanced Machine Learning

(Number of credits: 6)

B24DS09DC: Advanced Machine Learning	
CO1 Illustrate the basic concepts of neural networks and its practical issues	
CO2 Outline the standard regularization and optimization techniques for deep neural network	
CO3 Implement the foundation layers of CNN (pooling, convolutions)	
CO4 Implement a sequence model using recurrent neural networks	
CO5 Use different neural network/deep learning models for practical applications	
Block 1: Neural Networks	
Unit 1	Introduction to neural networks -Single layer perceptrons, Multi Layer Perceptrons (MLPs), Representation Power of MLPs
Unit 2	Activation functions - Sigmoid, Tanh, ReLU, Softmax. , Risk minimization
Unit 3	Loss function, Training MLPs with backpropagation, Practical issues in neural network training
Unit 4	The Problem of Overfitting, Vanishing and exploding gradient problems, Difficulties in convergence, Local and spurious Optima, Computational Challenges. Applications of neural networks.
Block II: Deep learning	
Unit 1	Introduction to deep learning, Deep feed forward network, Training deep models, Optimization techniques - Fine tuning
Unit 2	Gradient Descent (GD), GD with momentum, Nesterov accelerated GD
Unit 3	Stochastic GD, Adam. Regularization Techniques - L1 and L2 regularization, Early stopping, Dataset augmentation
Unit 4	Parameter sharing and tying, Injecting noise at input, Ensemble methods, Dropout, Parameter initialization.
Block III: Convolutional Neural Network	
Unit 1	Convolutional Neural Networks – convolution operation, Padding and stride, Feature maps and receptive fields

<b>Unit 2</b>	Pooling, Convolution and Pooling as an infinitely strong prior, Overfitting and regularization techniques in CNNs
<b>Unit 3</b>	Variants of convolution functions (Dilated convolutions, Transposed convolutions), structured outputs, Transfer learning and pre-trained models
<b>Unit 4</b>	Data types, efficient convolution algorithms, Hardware acceleration (GPUs, TPUs), Frameworks and libraries (TensorFlow, PyTorch, Keras)
<b>Block IV: Recurrent Neural Network</b>	
<b>Unit 1</b>	Recurrent neural networks – Computational graphs,
<b>Unit 2</b>	RNN design, encoder structure, Input preprocessing for RNNs, Applications of RNNs (Language modeling, Time series prediction)
<b>Unit 3</b>	Decoder structure, sequence to sequence architectures, deep recurrent networks, self attention mechanism.
<b>Unit 4</b>	Recursive neural networks, modern RNNs - Long Short-Term Memory (LSTM) networks. Gated Recurrent Units (GRU), Comparison of LSTM and GRU
<b>Block V: Introduction to Generative AI</b>	
<b>Unit 1</b>	Introduction to GenAI. Comparison with traditional approach - Rule based algorithm, Discriminative algorithm.
<b>Unit 2</b>	Autoencoders, VAE, Representation learning, Boltzmann Machines (deep belief networks)
<b>Unit 3</b>	GAN (Generative Adversarial Networks), Transformers with Attention,
<b>Unit 4</b>	GPT and LLMs : GPT-n Models, BERT, RoBERTa

#### References:

1. Goodfellow, I., Bengio, Y., and Courville, A., Deep Learning, MIT Press, 2016.
2. Neural Networks and Deep Learning, Aggarwal, Charu C.
3. Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithms (1st. ed.). Nikhil Buduma and Nicholas Locascio. 2017. O'Reilly Media, Inc.
4. Satish Kumar, Neural Networks: A Classroom Approach, Tata McGraw-Hill Education, 2004.

#### PRACTICAL CORE COURSE - 04

**B24DS05PC: ADVANCED MACHINE LEARNING LAB**



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(Number of credits: 1)

<b>B24DS05PC: ADVANCED MACHINE LEARNING LAB</b>	
CO1: To understand and apply basic neural network architectures and activation functions.	
CO2: To learn and use optimization and regularization techniques in deep learning.	
CO3: To explore and implement CNNs and GANs for practical applications.	
<b>Cycle I: Neural Networks Fundamentals</b>	
<b>Experiment 1</b>	Implement a Single Layer Perceptron for binary classification.
<b>Experiment 2</b>	Implement a Multi-Layer Perceptron (MLP) using a simple dataset.
<b>Experiment 3</b>	Train an MLP with backpropagation and analyze its performance.
<b>Experiment 4</b>	Study the effects of overfitting in neural networks using various regularization techniques
<b>Cycle II: Deep Learning Techniques</b>	
<b>Experiment 1</b>	Implement a deep feedforward network and explore different optimization techniques.
<b>Experiment 2</b>	Experiment with Gradient Descent (GD) and its variants on a complex dataset.
<b>Experiment 3</b>	Apply regularization techniques (L1, L2, Early Stopping) to a deep learning model.
<b>Experiment 4</b>	Implement dropout in a deep neural network and observe its effect on model performance.
<b>Cycle III: Convolutional and Recurrent Neural Networks</b>	
<b>Experiment 1</b>	Build a Convolutional Neural Network (CNN) and evaluate its performance on image classification.
<b>Experiment 2</b>	Implement a Recurrent Neural Network (RNN) for sequence prediction.
<b>Experiment 3</b>	Compare the performance of LSTM and GRU networks on a time-series dataset
<b>Experiment 4</b>	Experiment with a simple Generative Adversarial Network (GAN) for image generation.

**References:**

1. Goodfellow, Ian, et al. *Deep Learning*. MIT Press, 2016.
2. Nielsen, Michael A. *Neural Networks and Deep Learning: A Textbook*. Determination Press, 2015.
3. Chollet, François. *Deep Learning with Python*. Manning Publications, 2018.

## **DISCIPLINE SPECIFIC ELECTIVE COURSES - I (DE-I)**

**(Learners may choose any one of the two courses in DE-I AND II)**

### **B24DS01DE: DATA MINING AND DATA WAREHOUSING**

**(Number of credits: 5)**

<b>B24DS01DE: DATA MINING AND DATA WAREHOUSING</b>	
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	
<b>Block 1: Introduction to Data Mining</b>	
<b>Unit 1</b>	Fundamentals of data mining, Functionalities and Techniques
<b>Unit 2</b>	Classification of Data Mining Systems, Major issues and Steps in Data Mining.
<b>Unit 3</b>	Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse
<b>Unit 4</b>	Business Applications and Scientific Applications of Data Mining
<b>Block II: Data Warehousing</b>	
<b>Unit 1</b>	Characteristics, Functionality and Tools of Data Warehouse
<b>Unit 2</b>	Multidimensional Data Model, Data Warehouse Architecture and models
<b>Unit 3</b>	Data Warehouse Implementation-
<b>Unit 4</b>	Data Cube and OLAP Technology.
<b>Block III: Association Rules</b>	
<b>Unit 1</b>	Market Basket analysis, Association Rule Mining.
<b>Unit 2</b>	Apriori Algorithm, Finding Frequent Itemsets and Association Rules
<b>Unit 3</b>	From Association Mining to Correlation Analysis.
<b>Unit 4</b>	Constraint-Based Association Mining- Meta Rule Guided Mining, Additional Rule Constraints.
<b>Block IV: Advanced Classification and Clustering</b>	





<b>Unit 1</b>	Neural Network based classification Algorithms
<b>Unit 2</b>	Ensembles- Bagging, Boosting, Stacking, Voting, Accuracy and Error measures
<b>Unit 3</b>	Density-Based Methods, Grid-Based Methods- Clustering High-Dimensional Data,.
<b>Unit 4</b>	Model-Based Clustering Methods- Neural Network Approach, Constraint-Based Cluster Analysis, Outlier Analysis
<b>Block V: Advanced Mining</b>	
<b>Unit 1</b>	Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects.
<b>Unit 2</b>	Spatial Mining- Spatial queries, Spatial Data structures.
<b>Unit3</b>	Web mining: Web content Mining- Crawlers, harvest system, Virtual Web view, Personalization, Web Structure Mining- Page rank, Clever. Web Usage Mining.
<b>Unit 4</b>	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 two courses in DE-I AND II)

#### **B24DS02DE: INTRODUCTION TO CLOUD COMPUTING**

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Kollam, Kerala - 691 601

(Number of credits: 5)

<b>B24DS02DE: INTRODUCTION TO CLOUD COMPUTING</b>	
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	
<b>Block 1: Introduction to Cloud Computing</b>	
<b>Unit 1</b>	Cloud Computing Overview
<b>Unit 2</b>	Evolution of cloud computing
<b>Unit 3</b>	Cloud Computing Deployment Models.
<b>Unit 4</b>	Components of Cloud Computing
<b>Block II: Cloud Computing Services</b>	
<b>Unit 1</b>	SPI Service Models
<b>Unit 2</b>	Storage as a Service(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).
<b>Unit 3</b>	Distributed Computing as a Service (DCaaS), Parallelism as a Service, Serverless Computing.
<b>Unit 4</b>	Popular Cloud Computing Service Models.
<b>Block III: Cloud Administration</b>	
<b>Unit 1</b>	Administration Portal, Account Creation and Management
<b>Unit 2</b>	AAA Model, Single Sign-On.
<b>Unit 3</b>	Resource Management
<b>Unit 4</b>	Load balancing, Compliance and Auditability.
<b>Block IV: Related Technologies and Cloud Migration</b>	
<b>Unit 1</b>	Peer to Peer, Client- Server, Distributed Computing, High-Performance Computing, Grid Computing, Utility Computing, Autonomic Computing, Jungle Computing.
<b>Unit 2</b>	Benefits and uses of Cloud





<b>Unit 3</b>	Cloud Migration Process- Plan, Execute, Monitor
<b>Unit 4</b>	Cloud Migration Approaches
<b>Block V: Cloud Automation Tools</b>	
<b>Unit 1</b>	Continuous Integration and Deployment (CI/CD) pipelines
<b>Unit 2</b>	Source code control systems and Version Control Tools.
<b>Unit 3</b>	Survey of Popular CI/CD Tools
<b>Unit 4</b>	Cloud Applications- Popular Cloud Services

### 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 -III (DE-III)**

(Learners may choose any one of the two courses in DE-III AND IV)

**B24DS03DE: INTERNET OF THINGS**

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Sreenarayanaguru Open University  
Kollam, Kerala - 691 601

(Number of credits: 5)

<b>B24DS03DE: INTERNET OF THINGS</b>	
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.	
<b>Block I: IoT – Applications &amp; Architectures</b>	
<b>Unit 1</b>	Introduction to IoT
<b>Unit 2</b>	IoT Applications – Connected Roadways, Connected Factory, Connected Buildings
<b>Unit 3</b>	Convergence of IT and OT, IoT Challenges
<b>Unit 4</b>	Drivers behind new IoT architecture, Comparison of IoT architectural models, Simplified IoT architecture
<b>Block II: Engineering IoT Networks</b>	
<b>Unit 1</b>	Smart Objects – Sensors & Actuators, Sensor Networks
<b>Unit 2</b>	Communication Criteria
<b>Unit 3</b>	Communication Protocols – WiFi, RFID, Bluetooth, RF, Satellite
<b>Unit 4</b>	IoT Access Technologies – IEEE 802.15.4 - Zigbee, IEEE 802.11ah
<b>Block III: IP as IoT Network Layer</b>	
<b>Unit 1</b>	Business Case for IP – Advantages of IP
<b>Unit 2</b>	Adoption or Adaptation
<b>Unit 3</b>	Need for Optimization of IP
<b>Unit 4</b>	Optimizing IP for IoT
<b>BLOCK IV : Data and Analytics for IoT</b>	





<b>Unit 1</b>	Introduction to data analytics for IoT
<b>Unit 2</b>	Big Data Analytics Tools and Technology
<b>Unit 3</b>	Edge Streaming Analytics
<b>Unit 4</b>	Network Analytics
<b>BLOCK V : IoT Security &amp; Introduction to Arduino and Raspberry Pi</b>	
<b>Unit 1</b>	Common challenges in OT security
<b>Unit 2</b>	Formal Risk Analysis Structures – OCTAVE & FAIR
<b>Unit 3</b>	Arduino – Basics on integration of sensors and actuators
<b>Unit 4</b>	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
- Bahga, Arshdeep, and Vijay Madisetti. Internet of Things: A hands-on approach. Vpt, 2014.
- Shori, Prachi, Shalini Shori, and Aastha Gour. "Disputes and Challenges in IoT (Internet of Things) Applications: A Literature Survey." *Green Internet of Things for Smart Cities* (2021): 157-170.
- Uckelmann, Dieter, Mark Harrison, and Florian Michahelles, eds. *Architecting the internet of things*. Springer Science & Business Media, 2011.
- Vermesan, Ovidiu, and Peter Friess, eds. *Internet of things: converging technologies for smart environments and integrated ecosystems*. River publishers, 2013.
- Monk, Simon, and Michael McCabe. *Programming Arduino: getting started with sketches*. Vol. 176. New York: McGraw-Hill Education, 2016.

#### **DISCIPLINE SPECIFIC ELECTIVE COURSES - IV (DE-IV)**

(Learners may choose any one of the two courses in DE-III AND IV)

#### **B24DS04DE- NATURAL LANGUAGE PROCESSING**

(Number of credits: 5)

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## B24DS04DE- NATURAL LANGUAGE PROCESSING

CO1 Summarize basic concepts and learning methods for NLP (Cognitive Knowledge Level: Understand)

CO2 Demonstrate the relevance of pre-processing methods on text data

CO3 Compare different language modeling techniques

CO4 Make use of NLP techniques in Text Classification and Information retrieval

CO5 Explain Information Extraction, Relation Detection, QA Systems and Machine translation

### Block 1: Introduction to NLP

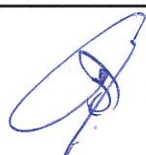
Unit 1	NLP Tasks and Applications, Natural Language vs Computer Language, Unstructured data
Unit 2	NLP Building Blocks, Challenges of processing human Language
Unit 3	Core NLP Tasks:Text Classification,Machine Translation,Text Summarization,Question Answering,Named Entity Recognition (NER)
Unit 4	Approaches to NLP, Heuristics-Based NLP, Machine Learning-based NLP.

### Block II: Pre-processing and Representation Models

Unit 1	NLP System Pipeline Steps,Data Acquisition,
Unit 2	Text Preprocessing for NLP: Cleaning, tokenization, stemming, lemmatization, normalization.
Unit 3	Text Representation-Vector Space Models, Basic Vectorization Approaches
Unit 4	One-Hot Encoding, Bag of Words, Bag of N-Grams TF-IDF; Distributed Representations-- Word Embeddings, Doc2Vec.

### Block III: Classification and Information Extraction

Unit 1	Text Classification--Text classification applications
Unit 2	Pipeline for building text classification systems, Naïve Bayes for Sentiment Classification
Unit 3	Naïve Bayes Classifier Training – Optimizing for Sentiment Analysis, Logistic Regression, Support Vector Machine for Text Classification
Unit 4	Information Extraction(IE)—IE Applications – The General Pipeline for IE -





	Named Entity Recognition(NER), Ambiguity in Named Entity Recognition – NER as Sequence Labeling – Evaluation of NER.
<b>Block IV: Data Integration, Data Quality Assessment</b>	
<b>Unit 1</b>	Relation Detection and Classification – Supervised Learning Approaches to Relation Analysis
<b>Unit 2</b>	Lightly Supervised Approaches to Relation Analysis
<b>Unit 3</b>	Evaluation of Relation Analysis systems
<b>Unit 4</b>	Information Retrieval – Term weighting and document scoring – Inverted Index – Evaluation of Information Retrieval Systems
<b>Block V: QA Systems and Machine Translation</b>	
<b>Unit 1</b>	Question-Answering Systems, Factoid Question Answering, Question Processing, Passage Retrieval
<b>Unit 2</b>	Answer Processing – Evaluation of Factoid Answers , Machine Translation, Why Machine Translation is Hard
<b>Unit 3</b>	Classical Machine Translation, Direct Translation, Transfer, Statistical Machine Translation, The Phrase based Translation model, Alignment in MT, Training Alignment Models
<b>Unit 4</b>	Symmetrizing Alignments for Phrase based MT – Decoding for Phrase-based Statistical MT

#### References:

1. Daniel Jurafsky, James H. Martin , “Speech and Language Processing”(2<sup>nd</sup> and 3<sup>rd</sup> editions), Pearson Prentice Hall
2. Sowmya Vajjala, Bodhisattwa Majumder, Anuj Gupta, Harshit Surana,” Practical Natural Language Processing: A Comprehensive Guide to Building Real-World NLP Systems “ June 2020 Publisher(s): O'Reilly Media, Inc. ISBN: 9781492054054.
3. James Allen, “Natural Language Understanding”, Second Edn , Pearson. 2. Christopher Manning and Hinrich Schutze, Statistical Natural Language Processing, MIT Press.

#### GENERAL ELECTIVE - II

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

(Number of credits: 2)

See Annexure-V

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



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# SIXTH SEMESTER

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**DISCIPLINE SPECIFIC ELECTIVE COURSES - V (DE- V)**

**(Learners may choose any one of the two courses in DE-V AND VI)**

**B24DS05DE: DIGITAL MARKETING**

**(Number of credits: 6)**

<b>B24DS05DE: DIGITAL MARKETING</b>	
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	
<b>Block 1: Introduction to Digital Marketing</b>	
<b>Unit 1</b>	Marketplace to Marketspace
<b>Unit 2</b>	Goals of Digital Marketing
<b>Unit 3</b>	Platforms and Strategies
<b>Unit 4</b>	Social Media
<b>Block 2: Search Engine Optimization</b>	
<b>Unit 1</b>	Introduction to Search engines
<b>Unit 2</b>	Keywords Search
<b>Unit 3</b>	On-page and Off-Page Optimization
<b>Unit 4</b>	Reporting SEO
<b>Block 3: Google Analytics</b>	
<b>Unit 1</b>	Introduction and Setting up
<b>Unit 2</b>	Performance Matrices
<b>Unit 3</b>	Traffic Management
<b>Unit 4</b>	Behaviour Reports and Conversion Tracking





<b>Block 4: Social Media Marketing</b>	
<b>Unit 1</b>	Introduction
<b>Unit 2</b>	Social Media Statistics
<b>Unit 3</b>	Facebook Marketing
<b>Unit 4</b>	E-mail and SMS
<b>Block 5: Reputation Management</b>	
<b>Unit 1</b>	Blogging
<b>Unit 2</b>	Creating posts
<b>Unit 3</b>	Visual Marketing Tools
<b>Unit 4</b>	Influencer Marketing and Drop shipping, SMS and Push Notifications

#### **References:**

- Ian Dodson-The art of Digital Marketing, Wiley 4.2 Additional
- Puneet Singh Bhatia- Fundamentals of Digital Marketing, Pearson Education
- Ellis-Chadwick, Fiona, and Dave Chaffey. Digital marketing: strategy, implementation and practice. Pearson, 2012.
- Doorley, John, and Helio Fred Garcia. Reputation management: The key to successful public relations and corporate communication. Routledge, 2015.
- Philip, Kotler, Kartajaya Hermawan, and Setiawan Iwan. "Marketing 4.0: Moving from Traditional to Digital." (2017).



## **DISCIPLINE SPECIFIC ELECTIVE COURSES - VI (DE-VI)**

**(Learners may choose any one of the two courses in DE-V AND VI)**

### **B24DS06DE: CLOUD COMPUTING ARCHITECTURE**

**(Number of credits: 5)**

<b>B24DS06DE: CLOUD COMPUTING ARCHITECTURE</b>	
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	
<b>Block 1: Application Architecture:</b>	
<b>Unit 1</b>	Monolithic, Layered, Client Server, Master-Slave, Peer to Peer
<b>Unit 2</b>	Broker, Event-bus, MVC (Model View Controller), MVP (Model View Presenter), MVVM (Model View View Model), MVT (Model View Template),
<b>Unit 3</b>	Service Oriented Architecture (SOA), Web Services, SOAP, RESTful, Micro-Services, Server Less.
<b>Unit 4</b>	Cloud Reference Model (NIST Architecture)
<b>Block II: Virtualization</b>	
<b>Unit 1</b>	Virtualization-Definition, Benefits, Challenges.
<b>Unit 2</b>	Implementation levels of virtualization-ISA level, HAL level, OS level, Library level, Application level,
<b>Unit 3</b>	Types of Virtualization- Server Virtualization, Network Virtualization, Storage Virtualization, Desktop Virtualization, Application Virtualization, Management Virtualization
<b>Unit 4</b>	Frameworks for virtualization, Virtualization Providers, Containers, Dockers. VMs vs Containers





<b>Block III: Review of Cloud Services</b>	
<b>Unit 1</b>	AWS, Azure, Google Cloud, Platform services, Data analytics services, Big Data services, Warehousing services, Streaming services, Elastic search.
<b>Unit 2</b>	Analytics services, ETL, AI/ML services, Database Services (SQL and NoSQL)
<b>Unit 3</b>	Data lake, Data Storage Services, Authentication Services, Business applications
<b>Unit 4</b>	IoT Services, Communication Services, Serverless services, Containers, developer tools, Monitoring tools]
<b>Block IV: Cloud Life Cycle Model</b>	
<b>Unit 1</b>	Role of Cloud Modelling and Architecture, Reference Model for Cloud Computing, Cloud Industry Standards.
<b>Unit 2</b>	Cloud Application Architecture, Cloud Computing and Logical Architecture. Networking in Cloud.
<b>Unit 3</b>	Key Principles of Cloud Computing - Abstraction, Automation, Elasticity, Cloud Federation, Two-layer connectivity for cloud federation.
<b>Unit 4</b>	Cloud ecosystem model- Cloud Ecosystem, Cloud Broker/ Cloud Agent, Cloud Outlook, Cloud Unified Process.
<b>Block V: Cloud-Native and Emergent Cloud Trends</b>	
<b>Unit 1</b>	Hybrid-Cloud, Multi-Cloud, Configuration Management, Serverless computing, Microservices, Service Mesh, Cloud Native.
<b>Unit 2</b>	DevOps, Application Modernization.
<b>Unit 3</b>	Automated Cloud Deployments: Continuous Integration/Continuous Deployment (CI/CD).
<b>Unit 4</b>	Disaster Recovery in clouds.

#### 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 McLaughlin, Virtana Special Edition
- Mastering Cloud Computing, Rajkumar Buya, Christian Vecchiola, S Thamarai Selvi, Mc Graw Hill, 1 ED, 2017





**DISCIPLINE SPECIFIC ELECTIVE COURSES - VII (DE-VII)**

(Learners may choose any one of the two courses in DE-VII AND VIII)

**B24DS07DE: BLOCKCHAIN TECHNOLOGY**

(Number of credits: 5)

<b>B24DS07DE: BLOCKCHAIN TECHNOLOGY</b>	
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	
<b>Block 1: Introduction to Blockchain</b>	
<b>Unit 1</b>	Introduction to Blockchain, How it changes digitalization, Applications of Blockchain.
<b>Unit 2</b>	Blockchain technologies and tools, Introduction to cryptographic concepts
<b>Unit 3</b>	Introduction to distributed processing, Distributed recording keeping, Modelling faults and adversaries, Hash pointers, Consensus, Byzantine fault-tolerant distributed computing, Digital cash.
<b>Unit 4</b>	Blockchain community, Politics and Regulation.
<b>Block II: Basic Cryptography</b>	
<b>Unit 1</b>	Hash functions, Puzzle friendly Hash, Collision resistant hash, Digital signatures, Public-key crypto, Verifiable random functions, Zero-knowledge systems.
<b>Unit 2</b>	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.
<b>Unit 3</b>	Simple Local Storage, Hot and Cold Storage Splitting and Sharing Keys.
<b>Unit 4</b>	Online Wallets and Exchanges, Payment Services, Transaction Fees, Currency Exchange Markets.
<b>Block III: Blockchain 1.0</b>	
<b>Unit 1</b>	Bitcoin Blockchain, Concepts, Consensus mechanisms, Operations
<b>Unit 2</b>	Cryptocurrency as the application of blockchain technology the challenges, and Solutions, Alternatives to Bitcoin consensus



<b>Unit 3</b>	Bitcoin scripting language and their use, Bitcoin Mining, The task of Bitcoin miners, Mining Hardware
<b>Unit 4</b>	Energy consumption and ecology, Mining pools, Mining incentives and strategies.
<b>Block IV: Blockchain 2.0</b>	
<b>Unit 1</b>	Ethereum and Smart Contracts.
<b>Unit 2</b>	The Turing Completeness of Smart Contract Languages and verification challenges.
<b>Unit 3</b>	Using smart contracts to enforce legal contracts.
<b>Unit 4</b>	Comparing Bitcoin scripting vs. Ethereum Smart Contracts.
<b>Block V: Blockchain 3.0</b>	
<b>Unit 1</b>	Permissioned Blockchain – Introduction and use cases
<b>Unit 2</b>	Platforms and Frameworks-Hyperledger, Corda, Hyperledger fabric.
<b>Unit3</b>	The plug-and-play platform.
<b>Unit 4</b>	Mechanisms in permissioned blockchain

#### 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.
- Bashir, Imran. "Mastering Blockchain: Unlocking the Power of Cryptocurrencies, Smart Contracts, and Decentralized Applications." (2017).
- Kube, Nicolas. "Daniel Drescher: Blockchain basics: a non-technical introduction in 25 steps: Apress, 2017, 255 pp, ISBN: 978-1-4842-2603-2." (2018): 329-331.



**DISCIPLINE SPECIFIC ELECTIVE COURSES - VIII (DE-VIII)**

**(Learners may choose any one of the two courses in DE-VII AND VIII)**

**B24DS08DE: INTRODUCTION TO INFORMATION SECURITY**

**(Number of credits: 5)**

<b>B24DS08DE: INTRODUCTION TO INFORMATION SECURITY</b>	
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	
<b>Block 1: Introduction to Computer Security</b>	
<b>Unit 1</b>	Security attacks, Services, Mechanisms
<b>Unit 2</b>	Classical Encryption Techniques : substitution and transposition
<b>Unit 3</b>	Substitution techniques
<b>Unit 4</b>	Transposition techniques, Steganography
<b>Block II: Block Ciphers and Key Management</b>	
<b>Unit 1</b>	Data Encryption Standard(DES)
<b>Unit 2</b>	Public-Key Cryptography and RSA
<b>Unit 3</b>	Key Management
<b>Unit 4</b>	Message Authentication and Hash Functions
<b>Block III: Authentication</b>	
<b>Unit 1</b>	Authentication requirements and Models
<b>Unit 2</b>	Two-factor authentication
<b>Unit 3</b>	Message Authentication Codes
<b>Unit 4</b>	Authentication Protocols
<b>Block IV: Digital signature</b>	
<b>Unit 1</b>	Digital signature models
<b>Unit 2</b>	Digital Signature Standard





<b>Unit 3</b>	Network Security Applications:
<b>Unit 4</b>	SSL protocol
<b>Block V: E-Mail security</b>	
<b>Unit 2</b>	MIME.
<b>Unit 3</b>	IP Security
<b>Unit 4</b>	IPsec services and components

**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 - IX (DE-IX)**  
**(Learners may choose any one of the two courses in DE-IX AND X)**  
**B24DS09DE: CYBER CRIME**  
**(Number of credits: 5)**

<b>B24DS09DE: CYBER CRIME</b>	
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	
<b>Block 1: Cyber Crime Overview</b>	
<b>Unit 1</b>	Internal and External Attacks
<b>Unit 2</b>	Cyber Crimes against Individuals – E-mail spoofing and online frauds, Phishing and its forms, Spamming
<b>Unit 3</b>	Cyber-defamation, Cyberstalking, Cyber Bullying and Harassment
<b>Unit 4</b>	Crime against women and children.
<b>Block II: Cyber Crime Against Organizations</b>	
<b>Unit 1</b>	Denial-of-service (DOS) attack, Backdoors and Malwares
<b>Unit 2</b>	E-mail Bombing, Salami Attack, Software Piracy, Industrial Espionage, Intruder attacks.
<b>Unit 3</b>	Security policies violations, Crimes related to Social Media, ATM,
<b>Unit 4</b>	Online and Banking fraud. Intellectual Property Frauds
<b>Block III: A Global Perspective of Cyber Crimes</b>	
<b>Unit 1</b>	Phases of cyber-attack – Reconnaissance,
<b>Unit 2</b>	Passive Attacks, Active Attacks, Scanning,
<b>Unit 3</b>	Gaining Access, Maintaining Access,
<b>Unit 4</b>	Lateral movement and Covering Tracks. Detection Avoidance,
<b>Block IV: Cyber Crime and Cloud Computing</b>	



<b>Unit 1</b>	Tools used in cybercrimes
<b>Unit 2</b>	Remote attacks, Random Passwords, Strong and weak passwords.
<b>Unit 3</b>	Viruses and its types. Ransomware and Cryptocurrencies.
<b>Unit 4</b>	Cybercriminal syndicates and Nation-state groups
<b>Block V: Regulatory Framework of IT act 2000</b>	
<b>Unit 1</b>	Information Technology Act 2000, Digital Signature, E-Signature
<b>Unit 2</b>	Electronic Records, Electronic Evidence and Electronic Governance.
<b>Unit 3</b>	Controller, Certifying Authority and Cyber Appellate Tribunal.
<b>Unit 4</b>	Data Security, E Contracts and E Forms.

#### 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.



**DISCIPLINE SPECIFIC ELECTIVE COURSES - VII (DE-X)**

**(Learners may choose any one of the two courses in DE-IX AND X)**

**B24DS10DE: COMMUNICATION AND NETWORKING**

**(Number of credits: 5)**

<b>B24DS10DE: COMMUNICATION AND NETWORKING</b>	
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.	
<b>Block I: Data Communication</b>	
<b>Unit 1</b>	Basic Concepts of data communication - Components, Data representation, Data flow, Network criteria, Physical structure attribute, Network model
<b>Unit 2</b>	Digital signals and Transmission modes
<b>Unit 3</b>	Digital Transmission concepts - Digital to digital conversion
<b>Unit 4</b>	Types of transmission media - Guided and Unguided media
<b>Block II: Networking Architecture</b>	
<b>Unit 1</b>	Introduction to Networks and Topologies
<b>Unit 2</b>	Switching techniques - Circuit switching, Message switching, Packet switching
<b>Unit 3</b>	The OSI Model - Layers of OSI model
<b>Unit 4</b>	Error detection and correction in OSI model - Types or errors , Error control, Error detection and Correction techniques
<b>Block III: TCP/IP</b>	
<b>Unit 1</b>	TCP/IP Protocol Suite : TCP/IP protocol Architecture
<b>Unit 2</b>	Connection less and connection oriented services
<b>Unit 3</b>	Addressing: Classful and classless



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

#### 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.





## **B24DS01PR : PROJECT**

**Number of Credits : 6**

### **1. AIM**

■ The project allows learners to apply their theoretical knowledge and technical skills to solve real-world problems. It involves comprehensive analysis using data science methodologies and clear, professional presentation of findings. Students will demonstrate their ability to manage a data-driven project from start to finish, showcasing their skills in data collection, processing, analysis, and interpretation.

### **2. OBJECTIVES**

- To apply the knowledge gained through various courses in dealing with the requirements emerging in data science and engineering.
- 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 personnel 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 from 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



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## 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**

<b>Unit 1</b>	Introduction to Communication
<b>Unit 2:</b>	Different Forms and techniques of Communication





<b>Unit 3:</b>	Role of Language in Communication
<b>Unit 4:</b>	Barriers and Guidelines for Effective Communication

<b>BLOCK – 2: Reading- The Effective Skill</b>	
<b>Unit 1</b>	Introduction to Reading
<b>Unit 2</b>	Types of Reading - Methods and Techniques involved in Reading
<b>Unit 3</b>	Reading Comprehension
<b>Unit 4</b>	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
<b>BLOCK – 3: Language Development</b>	
<b>Unit 1</b>	Parts of Speech
<b>Unit 2</b>	Sentences
<b>Unit 3</b>	Concord
<b>Unit 4</b>	Tenses
Unit 5:	Reported Speech
Unit 6	Active and Passive Voice
Unit 7	Sentence Transformation
<b>BLOCK – 4: Basics of Writing In Communication</b>	
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
<b>BLOCK – 5: Summary, Essays And Reports</b>	
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:

1. Barrass, Robert. *Students Must Write: A Guide to Better Writing in Coursework and Examinations*. Routledge, 2006.
2. DeVito, Joseph A. *Communication: Concepts and Processes*. Prentice-Hall Inc, 1976.
3. Mishra, Sunitha and C. Muralikrishna. *Communication Skills for Engineers*. Pearson, 2011.
4. Raman, Meenakshi and Sangeetha Sharma. *Technical Communication: Principles and Practice*. Oxford, 2004.
5. Prasad, Prajapati. *The Fundamental Aspects of Communication Skills*. S. K. Kataria & Sons, New Delhi, 2011-12.
6. Kumar, Sanjay and Pushpalata. *English for Effective Communication*. Oxford, 2013.
7. Greenbaum, Sidney. *Oxford English Grammar*. Indian Edition. Oxford University Press, 2005.
8. Carter, Ronald and Michael McCarthy. *Cambridge Grammar of English*. CUP, 2006.
9. Eastwood, John. *Oxford Guide to English Grammar*. Oxford University Press, 1994.





## **ABILITY ENHANCEMENT COMPULSORY COURSE**

### **B2IES01AC: 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)



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<b>UNIT 2:</b>	Definition and classification of renewable and non-renewable resources with examples, Concept and major types of natural resources. (1 Hour)
<b>UNIT 3:</b>	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)
<b>UNIT 4:</b>	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 )
<b>UNIT 5:</b>	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)
<b>UNIT 6:</b>	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)
<b>BLOCK II: ECOSYSTEMS, BIODIVERSITY AND CONSERVATION</b> (15 Hours)	
<i>(Pre-requisite: Awareness regarding ecosystem and the components of ecosystem, an understanding of the importance of life)</i>	
<b>UNIT 1:</b>	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)
<b>UNIT 2:</b>	Basic awareness on various ecosystems – forest, desert, grassland, wetland, aquatic ecosystems (Brief note). (2 Hours)
<b>UNIT 3:</b>	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)
<b>UNIT 4:</b>	Brief note on India as a mega-diversity nation; hot-spots of biodiversity (basic



	awareness). (2 Hours)
<b>UNIT 5:</b>	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)
<b>UNIT 6:</b>	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)
<b>BLOCK III: SOCIAL ISSUES AND SUSTAINABLE DEVELOPMENT</b> (15 Hours)	
(Pre-requisite: A basic understanding on the health effects of poor environmental quality and the problems of population growth)	
<b>UNIT 1:</b>	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)
<b>UNIT 2:</b>	Epidemiological issues in health –vector borne diseases, water borne diseases, water related diseases, airborne diseases (Definition and Examples). (3 Hours)
<b>UNIT 3:</b>	Need for public awareness on aspects related to environment - History of environmental movements in India - Chipko movement, Narmada Bachao Andolan.
<b>UNIT4:</b>	Current environment conservation activities - Swachh Bharat Abhiyan, Haritha Keralam Mission, Role of eco-club, nature club (Basic concepts only). (3 Hours)
<b>UNIT5:</b>	Population growth, population explosion and associated issues. (2 Hours)
<b>UNIT6:</b>	Sustainable development: definition and concept; overview and listing of 17 sustainable development goals (SDGs) (Detailed note). (4 Hours)
<b>BLOCK IV: ENVIRONMENTAL ETHICS AND CONTEMPORARY ENVIRONMENTAL ISSUES</b> (15 Hours)	
(Pre-requisite: Awareness on the current environmental issues)	
<b>UNIT 1:</b>	Concept of Environmental ethics: definition of anthropocentrism, biocentrism, ecocentrism, ecofeminism, environmental equity and justice, food security and social security. (3 Hours)





<b>UNIT 2:</b>	Overview of solid waste segregation and management, zero waste concept, Basic awareness on plastics and microplastics in environment. (2 Hours)
<b>UNIT 3:</b>	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)
<b>UNIT 4:</b>	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)
<b>UNIT 5:</b>	A brief overview of prominent natural disasters in India – earthquake, landslide, flood, cyclone. (2 Hours)
<b>UNIT 6:</b>	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.	

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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**

<b>BLOCK 1:</b>	<b>COMMUNICATION AND LANGUAGE</b>
<b>BLOCK 2:</b>	<b>RECEPTIVE OR PASSIVE SKILLS</b>
<b>BLOCK 3:</b>	<b>PRODUCTIVE OR ACTIVE SKILLS</b>
<b>BLOCK 4:</b>	<b>COMMUNICATION AND TECHNOLOGY</b>

#### **COURSE DETAILS**

##### **BLOCK 1: Communication and Language**

<b>UNIT 1</b>	Introduction to Communication – Language – Origin and Development – Evolution within Languages – Development of Speech and Writing
<b>UNIT 2</b>	Barriers of Communication through Language – Formal and Informal Communication – Communication Etiquettes – Written Versus Oral Communication
<b>UNIT 3</b>	The Four Skills of Communication – LSRW – The Fifth Skill of Cultural Awareness



	– Bilingualism – The Need and Role of Translation
<b>UNIT 4</b>	Significance of English as a Global Language – Communication in English – English in India – The Inhibited Introvert – Literature as a Creative Application of Language
<b>BLOCK 2: Receptive or Passive Skills</b>	
<b>UNIT 1</b>	Learning to Listen – Listening skills in Synchronous Communication – Listening Etiquettes – Problems Affecting Effective Listening – Developing Listening Skills
<b>UNIT 2</b>	Listening to the Media – Audio Files: Transfer and Storage – Enhancement of Listening Through the Internet: TED Talks – Music with Lyrics on YouTube
<b>UNIT 3</b>	Ready to Read – Enhancing Vocabulary – Scanning and Skimming – Speed Reading – Decoding the Dictionary
<b>UNIT 4</b>	Print and Online Reading – Navigating through the Internet – Links and Hypertexts – Online Resources for Literary Reading
<b>BLOCK 3: Productive or Active Skills</b>	
<b>UNIT 1</b>	Speaking it Out – Speaking to the Mirror – Understanding Your Audience – Overcoming Inhibitions
<b>UNIT 2</b>	Audio Chats to Enhance Speaking – The Practice of Self-Recording – Online Pronunciation Aids
<b>UNIT 3</b>	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
<b>UNIT 4</b>	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.
<b>BLOCK 4: Communication and Technology</b>	
<b>UNIT 1</b>	Origins of Technology in Language – The Evolution of Writing – Print and Publication – Technology in Language – Systems of Sound and Motion Recording
<b>UNIT 2</b>	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
<b>UNIT 3</b>	Authenticity of New Media – Possibility of Linguistic Errors – Cyber Laws – Misuse and Abuse in Cyber Space
<b>UNIT 4</b>	Contributing to Social Media – Appropriate and Upright Conduct on Social Media Platforms – Electronic Tools and Health Hazards





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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 സമ്പത്തുകളെക്കുറിച്ച് അറിവുനേടുന്നു.
4. മാതൃഭാഷയുടെ പ്രയോഗത്തിൽ പ്രാവീണ്യം നേടുന്നു.
5. മാതൃഭാഷയുടെ വിജ്ഞാന നിർമ്മാണ പ്രക്രിയയിൽ പങ്കാളിയാവുന്നു.

	COURSE DETAILS
ബ്ലോക്ക് 1 - എഴുത്ത്	<p>വിശദപഠനം</p> <ol style="list-style-type: none"><li>1. മലയാളശൈലി (മൂന്നാം അദ്ധ്യായം) - കുട്ടികൃഷ്ണമാരാർ</li><li>2. ഭാഷാഗദ്യശൈലി (സാഹിത്യവിചാരം)- എം. പി. പോൾ</li><li>3. ശൈലിയെപ്പറ്റി ചില ചിന്തകൾ - (സമാലോചന)- എസ്. ഗുപ്തൻ നായർ</li><li>4. ഭാഷയും ആശയവിനിമയവും (ഭാഷയും മനഃശാസ്ത്രവും)- ഡോ. കെ. എം. പ്രഭാകരവാര്യർ</li><li>5. അല്പം ഭാഷാവിചാരം (തെരഞ്ഞെടുത്ത ലേഖനങ്ങൾ)- പ്രൊഫ. കെ. ഗോപാലകൃഷ്ണൻ</li><li>6. ഭാഷ: ശുദ്ധവും കർട് കലർന്നതും (ഗദ്യശില്പി)- കെ. പി. വിജയൻ</li><li>7. അക്ഷരത്തെറ്റുകൾ (തെറ്റും ശരിയും)- പത്മന രാമചന്ദ്രൻ നായർ</li></ol>



<p>ബ്ലോക്ക് 2 - പ്രഭാഷണം</p>	<p>ആധുനിക കേരളത്തിന്റെ സൃഷ്ടിയിൽ നവോത്ഥാന നായകരും സാംസ്കാരിക പ്രവർത്തകരും നിർവ്വഹിച്ച പ്രഭാഷണങ്ങൾ നിർണ്ണായക പങ്ക് വഹിച്ചിട്ടുണ്ട്. പ്രഭാഷണ കലയെ കുറിച്ച് മനസ്സിലാക്കുകയും മികച്ച പ്രഭാഷണ മാതൃകകൾ പരിചയിക്കുകയും ചെയ്യുക എന്നതാണ് പഠനോദ്ദേശ്യം.</p> <p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1. പ്രഭാഷണകല- സുകുമാർ അഴീക്കോട്</li> <li>2. ഭാരതത്തിന്റെ സർഗാത്മകഭാവന (ജ്ഞാനപീഠപുരസ്കാര സ്വീകരണപ്രസംഗം)- ജി. ശങ്കരക്കുറുപ്പ്</li> <li>3. എന്റെ മണ്ണ്- വി. ടി. ഭട്ടതിരിപ്പാട്</li> <li>4. മരുഭൂമികൾ പൂക്കുമ്പോൾ- എം. എൻ. വിജയൻ</li> </ol>
<p>ബ്ലോക്ക് 3 - മാധ്യമങ്ങൾക്കുവേണ്ടിയുള്ള രചന</p>	<p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1. വാർത്താമൂലകങ്ങൾ, വാർത്താഘടന (വാർത്ത വോള്യം 2)- ജോയി തിരുമൂലപുരം</li> <li>2. പംക്തിയെഴുത്തിന്റെ രാഷ്ട്രീയം (പത്രാനന്തര വാർത്തയും ജനാധിപത്യവും)- എൻ. പി. രാജേന്ദ്രൻ</li> <li>3. അഭിമുഖങ്ങൾ ആഭിചാരമാകുമ്പോൾ (ക്ലാസ്സിക് ഇന്റർവ്യൂസ് എന്ന പുസ്തകത്തിൽ)- ജമാൽ കൊച്ചുങ്ങാടി</li> <li>4. സ്വാതന്ത്ര്യം വിലപേശാനുള്ളതല്ല - മഹാത്മാഗാന്ധിയുമായി ഹെൻറി ബ്രെയിൽ സഫോസ് നടത്തിയ അഭിമുഖ സംഭാഷണം. (ക്ലാസ്സിക് ഇന്റർവ്യൂസ് എന്ന പുസ്തകത്തിൽ)</li> <li>5. കോവിലനുമായി എസ്. വി. വേണുഗോപൻനായർ നടത്തിയ അഭിമുഖസംഭാഷണം. (കോവിലൻ, മൾബറി ബുക്സ്, കോഴിക്കോട്, എന്ന പുസ്തകത്തിൽ)</li> <li>6. കവിതയിലെ ശുദ്ധനാദങ്ങൾ - ആർ. രാമചന്ദ്രനുമായി പി. എം. നാരായണൻ നടത്തിയ അഭിമുഖസംഭാഷണം. (കോലായ ചർച്ചകൾ എന്ന പുസ്തകത്തിൽ)</li> </ol>
<p>ബ്ലോക്ക് 4 - വിവർത്തനം</p>	<p>മലയാളഭാഷയുടെയും സാഹിത്യത്തിന്റെയും വികാസ പരിണാമങ്ങളിൽ വിവർത്തനം നിർണ്ണായക പങ്ക് വഹിച്ചിട്ടുണ്ട്. തുടക്കത്തിൽ സംസ്കൃതത്തിൽ നിന്നും തമിഴിൽ നിന്നുമായി തന്നെ വിവർത്തനമെങ്കിൽ ആധുനികമായ പാശ്ചാത്യാശയങ്ങൾ മലയാളത്തിൽ കടന്നെത്തുന്നത് ഇംഗ്ലീഷിലൂടെയാണ്. വിവർത്തനം എന്ന പ്രക്രിയയെ ശാസ്ത്രീയമായി ഗ്രഹിക്കുകയും സ്വയം പരിശീലിക്കുകയും ചെയ്യുകയാണ് പഠനോദ്ദേശ്യം.</p> <p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1. വിവർത്തനം എന്ന ഗ്രന്ഥത്തിന്റെ അവതാരിക- എൻ. വി. കൃഷ്ണവാര്യർ</li> <li>2. പാശ്ചാത്യവിവർത്തനസിദ്ധാന്തങ്ങൾ (വിവർത്തനവിചാരം എന്ന പുസ്തകത്തിൽ)- ഡോ. എൻ. ഇ. വിശ്വനാഥയ്യർ</li> <li>3. തർജ്ജമപഠനത്തിലെ പുത്തൻ പുതുമകൾ (തർജ്ജമ സിദ്ധാന്തവും പ്രയോഗവും മലയാളത്തിൽ പുസ്തകത്തിന്റെ ആമുഖപഠനം)- ഡോ. സ്കറിയ സക്കറിയ</li> <li>4. ഇംഗ്ലീഷിൽ നിന്നും മലയാളത്തിലേക്കുള്ള വിവർത്തന പരി</li> </ol>

	ശീലനം.
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### രഹസ്യം

1. പ്രൊഫ.പത്മനാഭൻ രാമചന്ദ്രൻനായർ, നല്ല ഭാഷ - ഡി സി ബുക്സ്, കോട്ടയം.
2. സ്കൂളിനുള്ള സാഹിത്യം, ജയ സുകുമാരൻ, തർജ്ജമ - സിദ്ധാന്തവും പ്രയോഗവും - താപസം, ചങ്ങനാശ്ശേരി.
3. പി. കെ രാജശേഖരൻ, മലയാളിയുടെ മാധ്യമജീവിതം - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം.
4. രാമകൃഷ്ണപിള്ള, കെ, വൃത്താന്തപത്രപ്രവർത്തനം - മാളുബെൻ, തിരുവനന്തപുരം.
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## **ABILITY ENHANCEMENT COMPULSORY COURSE**

(Learners can choose any one)

**B21HD01AC: रोजमरा 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 मैं, 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, थोड़ा, 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 बाँट 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।
<b>ब्लॉक 2 : शुभकामनाएं, अभिलाषाएँ एवं कहानी ।</b>	
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। इसके बाद, इसी लिए, उसका 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 :	
<b>ब्लॉक :3 मेरी छुट्टी</b>	



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 ,साढ़े नौ ,पौने चार आदि । को + INFINITE का प्रयोग (उसको जाना है ,मुझे आना है या आना पड़ेगा 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 व 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 कौशलोपार्जनम्।

### **उद्देश्यानि (Course Outcomes)**

- संस्कृतभाषाश्रवणेन सम्यगर्थावगमनम्।
- संस्कृतभाषायाम् उपलब्धानां प्रसारमाध्यमानां वस्त्ववगमनक्षमता।
- निरर्गलभाषणकौशलम्।
- भाषाध्ययने उपयुक्तानां संस्कृतानुप्रयोगाणां जालस्थानानां च यथाविध्युपयोगक्षमता।

	<b>पत्ररूपरेखा (COURSE OUTLINE)-</b>
<b>खण्डः 1:</b>	<b>श्रवणम्। श्रवणे साक्षात् एवं सङ्गणकाधारितं प्रशिक्षणं दातव्यम्। एतदर्थं</b> <b>सम्भाषणकार्यशालायाः समायोजनं स्पृहणीयमेव।</b> 1. 1. वर्णानामुच्चारणम् 1. 2. शब्दसम्पत्तिः 1. 3. कथाश्रवणम् 1. 4. सम्भाषणकार्यशाला- प्राथमिका।
<b>खण्डः 2:</b>	<b>प्रसारमाध्यमानां भाषा संस्कृते उपलब्धानां प्रसारणमाध्यमानां प्रतिपत्त्यर्थं</b> <b>प्रशिक्षणं दातव्यम्। प्रतिदिनं वार्तापत्रिकाणां वाचने</b> <b>वार्ताप्रसारणानां श्रवणे च प्रोत्साहनं कार्यम्।</b>
	<b>2. 1. वार्ता: एवं विकीपीडिया</b> i. DD News Vartah ii. AIR News iii. DD Vartavali iv. Sanskrit Newspaper- Sudharma

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

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#### Web Resources:



**School of Communications  
and Information Science  
Sreenarayana Guru Open University  
Rullam, Kerala - 691 601**



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DD Vartavali (<https://www.youtube.com/playlist?list=PLxx0m3vtiqMZGmsUEVeTAuWIXqc9fTMHy>);  
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(<http://epapersudharmasanskritdaily.in>)  
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([https://play.google.com/store/apps/details?id=org.shrutijha.sanskrit\\_sanskrit](https://play.google.com/store/apps/details?id=org.shrutijha.sanskrit_sanskrit))  
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(<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>)  
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Internet archive  
[www.archive.org](http://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
<b>BLOCK 1:</b>	<b>Greetings and Introduction in Arabic - التحيات والتعارف</b>
	<b>Units:</b>



	1. Greetings in Arabic تحيات 2. Self-Introduction in Arabic. التعريف بنفسه. 3. Introduce Others in Arabic تعريف الآخرين 4. Pronouns - Hadha, Hadhihi هذه، هذا : الضمائر
<b>BLOCK 2</b>	<b>Conversations and Interviews - ومقابلات لقاء</b>
	<b>Units:</b> 1. Interview. - مقابلة 2. In the Airport -Conversation - في المطار 3. Meet - لقاء 4. Question words - أدوات الاستفهام.
<b>BLOCK 3</b>	<b>: Numbers and Days in a week العدد وأيام الأسبوع</b>
	<b>Units:</b> 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
<b>BLOCK 4</b>	<b>Time - التوقيت .</b>
	<b>Units:</b> 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
<b>BLOCK 5</b>	<b>Arabian Food - الطعام العربي .</b>
	<b>Units:</b> 1. Arabian Food - conversation - الطعام العربي 2. In a hotel - conversation - في المطعم



	<p>3. Lunch - conversation - غداء</p> <p>4. الأسماء الموصولة.</p>
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### 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



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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
<ol style="list-style-type: none"><li>1. ആധുനികതയുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള സാഹിത്യവുമായി പരിചയം നേടുക</li><li>2. കവിത,കഥ,ഉപന്യാസം,നോവൽ എന്നീ സാഹിത്യ സാഹിത്യ രൂപങ്ങളെ പരിചയപ്പെടുക</li><li>3. പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുക</li><li>4. സാഹിത്യ രൂപം എന്ന നിലയിൽ കഥ ,കവിത ഉപന്യാസം ,നോവൽ എന്നിവയുടെ ചരിത്രത്തെ വിമർശനാത്മകമായി സമീപിക്കുക</li></ol>

Course Outcomes
<ol style="list-style-type: none"><li>1. നവോത്ഥാനകാല കാമികരുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള കഥകളുടെ ചരിത്രത്തെ പരിചയപ്പെടുന്നു.</li><li>2. പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുന്നു.</li><li>3. ഉപന്യാസ സാഹിത്യത്തിന്റെ വൈവിധ്യം തിരിച്ചറിയുകയും പ്രതിപാദനരീതി പരിചയിക്കുകയും ചെയ്യുന്നു</li><li>4. മലയാള നോവലിന്റെ ചരിത്രവും പരിണാമവും മനസിലാക്കുന്നു</li></ol>

ബ്ലോക്ക് - 1	കവിത
	ആധുനികതയുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള കവിതാസാഹിത്യവുമായി പരിചയം നേടുക, പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുക എന്നിവയാണ് ബോധനോദ്ദേശ്യം. കവിതകൾ എല്ലാം വിശദപഠനത്തിനായി നിർദ്ദേശിക്കപ്പെട്ടവയാണ്.



	<p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1 വിഷുക്കണി- വൈലോപ്പിള്ളി</li> <li>2. പൂക്കളം-ചങ്ങമ്പുഴ</li> <li>3. എനിക്കു മരണമില്ല- വയലാർ</li> <li>4. ഉപ്പ്- ഒ. എൻ. വി. കുറുപ്പ്</li> <li>5. അമ്പലമണി- സുഗതകുമാരി</li> <li>6. കടമ്മനിട്ട - കടമ്മനിട്ട</li> <li>7. നാടെവിടെ മക്കളേ- അയ്യപ്പപ്പണിക്കർ</li> <li>8. ഭാരതീയം- വി. മധുസൂദനൻ നായർ</li> <li>9. ചാർവ്വകൻ- കുരിപ്പുഴ ശ്രീകുമാർ</li> <li>10. ആൾമറ -റഫീക്ക് അഹമ്മദ്</li> <li>11. ഇൻസ്റ്റലേഷൻ- വിരാൻകുട്ടി</li> <li>12. കണ്ണ് എസ്. ജോസഫ്</li> </ol>
<b>ബ്ലോക്ക് - 2</b>	<b>കഥകൾ</b>
	<p>നവോത്ഥാനകാല കാമികരുടെ കാലം മുതൽ വർത്തമാനകാലം വരെയുള്ള കഥകളുമായുള്ള പരിചയം നേടുക, പ്രമേയത്തിലും കലാതന്ത്രത്തിലും ജീവിതദർശനത്തിലും സംഭവിക്കുന്ന കാലാനുക്രമമായ പരിവർത്തനങ്ങൾ മനസ്സിലാക്കുക എന്നിവയാണ് ബോധനോദ്ദേശ്യം. കഥകൾ എല്ലാം വിശദപഠനത്തിനായി നിർദ്ദേശിക്കപ്പെട്ടവയാണ്</p>
	<p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1. ജന്മദിനം - വൈക്കം മുഹമ്മദ് ബഷീർ</li> <li>2. മനുഷ്യപുത്രി - ലളിതാംബിക അന്തർജ്ജനം</li> <li>3. വെള്ളപ്പൊക്കത്തിൽ - തകഴി ശിവശങ്കരപ്പിള്ള</li> <li>4. മരപ്പാവകൾ - കാരൂർ നീലകണ്ഠപ്പിള്ള</li> <li>5. കോലാട് - മാധവിക്കുട്ടി</li> <li>6. ഭീരു - എം. ടി. വാസുദേവൻ നായർ</li> <li>7. മകൻ - ടി. പത്മനാഭൻ</li> <li>8. പാപത്തറ - സാനാ ജോസഫ്</li> <li>9. ദൽഹി 1981 - എം. മുകുന്ദൻ</li> <li>10. റെയിൽപ്പാളത്തിലിരുന്ന് ഒരു കുടുംബം ധ്യാനിക്കുന്നു - യു. കെ. കുമാരൻ</li> <li>11. അളവുകൾ - ഇ. സന്തോഷ്കുമാർ</li> </ol>
<b>ബ്ലോക്ക് - 3</b>	<b>- ഉപന്യാസം</b>
	<p>ഉപന്യാസസാഹിത്യത്തിന്റെ വൈവിധ്യം തിരിച്ചറിയുകയും പ്രതിപാദനരീതി പരിചയിക്കുകയും ചെയ്യുക. ആശയാവതരണം</p>





	ഗ്രഹിക്കുക.
	<p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1. സത്യവും സൗന്ദര്യവും- കുട്ടികൃഷ്ണമാരാർ</li> <li>2. കാളിദാസനും കാലത്തിന്റെ ദാസൻ- ജോസഫ് മുണ്ടശ്ശേരി</li> <li>3. പാത്രാവിഷ്കരണം മലയാള നാടകത്തിൽ - എം.കെ.സാനു</li> <li>4. ആദർശ മാനവികതയുടെ സംഗീതം- കെ. പി. അപ്പൻ (ചരിത്രത്തെ അഗാധമാക്കിയ ഗുരു എന്ന പുസ്തകത്തിൽ)</li> <li>5. ആട്ടക്കഥാസാഹിത്യം- എം. കെ. കെ. നായർ</li> <li>6. വാഗ്ഭടന്റെ പ്രഭയിൽ- സുകുമാർ അഴീക്കോട്</li> <li>7. ആസ്വാദകരെ ആവശ്യമുണ്ട്- എസ്. ഗുപ്തൻ നായർ (ഇസങ്ങൾക്കപ്പുറം)</li> <li>8. ലിയോനാർഡോ ഡാവിഞ്ചിയുടെ സർഗ്ഗചേതസ്സ്- എം. ലീലാവതി</li> <li>9 ജി.ശങ്കരപ്പിള്ളയെ ഓർക്കുമ്പോൾ - എം. തോമസ് മാത്യു. (രുദിതാനുസാരി കവി)</li> <li>10. സാമന്തസാഹിത്യം- വി. സി. ശ്രീജൻ</li> <li>11. മലയാളി കേരളീയനാണോ- എം. എൻ. കാരശ്ശേരി</li> <li>12. ആർഭാടവും സന്യാസിയും നിഘണ്ടുവും- പി. കെ. രാജശേഖരൻ</li> </ol>
<b>ബ്ലോക്ക് - 4 -</b>	<b>നോവൽ</b>
	<p>വിശദപഠനം</p> <ol style="list-style-type: none"> <li>1.എ മൈനസ് ബി- കോവിലൻ</li> <li>2. ഒരു വഴിയും കുറേ നിഴലുകളും- രാജലക്ഷ്മി</li> <li>3. ജനകഥ- എൻ. പ്രഭാകരൻ</li> <li>4. മരുഭൂമികൾ ഉണ്ടാകുന്നത്- ആനന്ദ്</li> <li>5. കൊച്ചുരേത്തി- നാരായൻ</li> </ol>

<b>റഫറൻസ്</b>
<p>• ഡോ. എം. ലീലാവതി ,മലയാളകവിതാസാഹിത്യചരിത്രം - കേരള സാഹിത്യ അക്കാദമി, തൃശ്ശൂർ .</p> <p>• എം. അച്യുതൻ ,ചെറുകഥ ഇന്നലെ ഇന്ന് - ഡി.സി.ബുക്സ് ,കോട്ടയം</p> <p>• സുകുമാർ അഴീക്കോട് ,മലയാള സാഹിത്യ വിമർശനം - ഡി.സി.ബുക്സ് ,കോട്ടയം .</p> <p>• കെ. എം. തരകൻ ,മലയാള നോവൽ സാഹിത്യം -കേരള സാഹിത്യ അക്കാദമി, തൃശ്ശൂർ.</p> <p>• ഡോ.എം.ലീലാവതി, വർണ്ണരാജി - എൻ.ബി.എസ്., കോട്ടയം .</p> <p>• ഡോ.കെ.എം. ജോർജ്ജ് -ആധുനിക സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡി.സി ബുക്സ് ,കോട്ടയം.</p> <p>• കെ.പി. അപ്പൻ ,മാറുന്ന മലയാള നോവൽ - ഡി.സി.ബുക്സ് ,കോട്ടയം.</p> <p>• ഡോ. ഷാജി ജേക്കബ്, ആധുനികാനന്തര മലയാള നോവൽ - വിപണി, കല, പ്രത്യയ ശാസ്ത്രം ,കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം .</p>



- ഡോ.എം.എം.ബഷീർ -മലയാള ചെറുകഥാസാഹിത്യചരിത്രം - കേരള സാഹിത്യ അക്കാദമി, തൃശൂർ.
- 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 के लिए 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)

प्रथमखण्डः	कथासाहित्यमधिकृत्य सामान्यज्ञानम्। पञ्चतन्त्रम् - कथामुखम्, चन्द्रभूपतिकथा च।
द्वितीयखण्डः	अपरीक्षितकारकाद् उद्धृताः कथाः ।
तृतीयखण्डः	नाटकसाहित्याविर्भावः, विकासः, सांकेतिकपदानि, रूपकविभागाश्च - एषां सामान्यावगमनम्। नाटककर्तृरूपेण भासस्य योगदानपरिचयः।
चतुर्थखण्डः	भासस्य मध्यमव्यायोगस्य सविशेषाध्ययनम्
प्रथमखण्डः - कथासाहित्यमधिकृत्य सामान्यज्ञानम्।	
	1. 1. कथासाहित्यम् । 1. 2 विष्णुशर्मा । 1. 3. पञ्चतन्त्रकथाः । 1.4. चन्द्रभूपतिकथा।



द्वितीयखण्डः - अपरीक्षितकारकाद् उद्धृताः कथाः।	
	2.1. मूर्खब्राह्मणकथा। 2. 2. भारण्डपक्षिकथा । 2. 3. मत्स्यमण्डूककथा । 2. 4. चक्रधरकथा।
तृतीयखण्डः - नाटकसाहित्याविर्भावः, विकासः, सांकेतिकपदानि, रूपकविभागाश्च इत्येतेषां सामान्यावगमनम्।	
	3. 1. रूपकविभागाः । 3. 2. नाटकसाहित्यं विकासश्च। 3. 3. भासनाटकचक्रम्। 3. 4. नाटकान्तं कवित्वम्।
चतुर्थखण्डः - भासस्य मध्यमव्यायोगस्य सविशेषाध्ययनम् ।	
	4. 1. व्यायोगस्य सविशेषता। 4. 2. घटोत्कचप्रवेशः। 4. 3. मध्यमस्य रंगप्रवेशः । 4. 4. भीम-हिटिम्बीसमागमः ।

#### आधारग्रन्थाः

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

#### सहायकाः

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.



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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

<b>BLOCK 1:</b>	<b>Units:</b>  1. رمضان مبارك 2. رمضان شهر الصوم 3. هل قضيت إجازة سعيدة 4. قضاء وقت الفراغ 5. مسابقة في المعلومات
<b>BLOCK 2:</b>	<b>Units:</b>  1. ما رأيك في الواجب المنزلي؟ 2. الحفل التمثيلي 3. صالح الدين 4. الوقوف في عرفات 5. جولة في المملكة العربية السعودية





<b>BLOCK 3:</b>	<b>Units:</b> 1. سعاد توفر 2. اليوم الرياضي 3. هل تفكر في مستقبلك؟ 4. رحلة إلى المنطقة الشرقية 5. في معرض الفن الإسلامي
<b>BLOCK 4:</b>	<b>Units:</b> 1. ما رأيك في مصروف الجيب؟ 2. أسأل وأبحث 3. عيد الأضحى 4. الكلمات المتقاطعة 5. من بيوت هلا
<b>BLOCK 5:</b>	<b>Units:</b> 1. القاهرة من فوق البرج 2. خالد بن الوليد 3. سيف هلا 4. ما رأيك في الزي المدرسي 5. وداعاً أيتها المدرسة
<b>BLOCK 6:</b>	<b>Tutorial</b> * 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 Arabia.

<b>Reference:</b>
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 6. Humisa, Michael, (2004), Introducing Arabic, New Delhi: Good word Books 7. Linguaphone Arabic Course, 2000, London: Linguaphone Institute 8. Mohiyeedin, Veeran, (2005), Arabic Speaking Course, Calicut: Al Huda Books 9. Rahman, S.A., (2003), Let's speak Arabic, New Delhi: Good word Books



# Annexure - III



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## ENGLISH LANGUAGE CORE COURSE - 2

### **B21EG02LC: LITERATURE AND THE CONTEMPORARY WORLD**

**Number of credits: 6**

<b>Objectives:</b>
<ol style="list-style-type: none"><li>1. To expose students to some of the burning contemporary issues.</li><li>2. To acquaint them with the way literature takes on these issues.</li><li>3. To equip them to critically appraise and shape their own individual opinions.</li></ol>

<b>Course Outcomes</b>
<b>By the end of the course students should be able to,</b>
<ol style="list-style-type: none"><li>1. Make sense of the world they live in through the many language devices literature employs in its representation of reality.</li><li>2. Have an understanding of cross-cultural encounters in a globalized world.</li><li>3. Debate the pros and cons of current issues in culture using the terminology related to the concerned topics.</li><li>4. Discuss how the use of language and choice of genre influence the meaning of the text and the reader's response.</li><li>5. Develop skills of textual analysis.</li><li>6. Comprehend diverse points of view on the urgent issues facing the world.</li></ol>

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



	UNIT 2 - Roger Mais: "Blackout" UNIT 3 - Jawaharlal Nehru: "A Tryst with Destiny"
<b>BLOCK 5</b>	<b>Ethics and Culture</b>  UNIT 1 - John Lennon: "Imagine" UNIT 2 - Rabindranath Tagore: "Housewife"
<b>BLOCK 6</b>	<b>Globalised Society</b>  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"

<b>References</b>
1. Morrison, Jago. Contemporary Fiction. Routledge, 2003. 2. Padley, Steve. Key Concepts in Contemporary Literature. Palgrave, 2006. 3. Reddy, Bayapa. Aspects of Contemporary World Literature. Atlantic, 2008.

### **SKILL ENHANCEMENT COMPULSORY COURSES (SECC)**

#### **B21HL01SC: Humanism and Logic** **Number of credits: 2**

<b>Course Objectives:</b>
<ol style="list-style-type: none"> <li>1. To introduce the science and art of reasoning</li> <li>2. To develop analytical skill in reasoning and capacity to argue effectively</li> <li>3. To impart understanding of the role of logic in other disciplines</li> <li>4. To develop a blend of logical reason, compassion and love in approach to the world</li> </ol>

<b>Course Outcomes</b>
By the end of the course the learners will be able to,
<ol style="list-style-type: none"> <li>1. Know the role of logical reasoning in daily life</li> <li>2. Save oneself from linguistic traps</li> <li>3. Have an understanding of the basic humanistic concepts</li> <li>4. Get values that embrace multicultural diversity</li> </ol>

<b>BLOCK 1 - Foundational Terms and Concepts</b>	
<b>Unit 1</b>	Sradha/ Care — Katha Upanisad, Arul — Thirukkural, Jagratha — Dharmapada _ Agape/ Empathetic Love, Kenosis/ Self emptying



<b>Unit 2</b>	Insaniyya / Humanity, Rahma / Mercy. Anukampa / Compassion — Anukambadasakam, Karuna - Budha
<b>Unit 3</b>	Emancipation. Ubuntu/ Fraternal Love
<b>Unit 4</b>	Emancipation. Ubuntu/ Fraternal Love Ahimsa/ Nonviolence in Different Traditions. Equalit
<b>Unit 5</b>	Basheer's short story, "Oru Manushyan".
<b>Unit 6</b>	Human as species - Jathilakshanam, Jatinirnayam - Environmental concerns: Gandhi, Thoreau, Deep Ecology

## **BLOCK 2: Logic, Language and Other Disciplines**

<b>Unit 1</b>	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.
<b>Unit 2</b>	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
<b>Unit 3</b>	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
<b>Unit 4</b>	Logic and Other Disciplines - Logic and Science: Hypothetico - models of explanations - Covering Law model - mathematics and logic
<b>Unit 5</b>	Logic and Literature.
<b>Unit 6</b>	Logic and Social science

## **References**

1. Grayling, A.C. *The History of Philosophy*, Penguin, 2019.
2. Browning, W.R.F. *A Dictionary of the Bible*, Oxford University Press, 2009.
3. John Bowker, *The Concise Oxford Dictionary of World Religions*, Oxford University Press, 2000.
4. Basheer, Vaikkam Muhammad. "Oru Manushyan." *Sampoorna Krithikal Vol 1*. DC, 1994.
5. Guru, Narayana. *Sampoorna Krithikal*. Narayana Gurukulam, 2002.
6. *Dharmapada* ( apramadavarga)
7. *The Quran* ( 49/13, 17/70, 2/256 )
8. Devaraja, N. K. *Humanism in Indian Thought*. Indus, 1988.
9. Khan, Maulana Wahiduddin. *The Prophet of Peace: Teachings of The Prophet Muhammad*.





Penguin, 2009.

10. Butler, Judith. *The Force of Nonviolence: An Ethico- Political Bind*, Verso, 2021.
11. Selected works of Karl Marx and Friedrich Engels - Relevant Volumes
12. Vernon Pratt et al. *Environment and Philosophy*. Routledge, 2000.
13. Rajagopalachari, C. *Kural: The Great Book of Thiruvalluvar*, Bharatiyavidya Bhavan, 1993.
14. Imbo, Samuel Oluoch. *An Introduction to African Philosophy*. Rowman, 1961.
15. Mascaro, Juan. *The Upanishads*. Penguin, 2005.
16. Damien, Keown. *Buddhism*, Oxford UP, 2013.
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18. Naess, Aene. *The Ecology of Wisdom*. Counterpoint, 2010.
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21. Guha, Ramachandra. *Environmentalism: A Global History*. Penguin, 2016.
22. Sainsbury. R.M. *Paradoxes*. Cambridge UP, 2009



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# Annexure - IV



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**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 വൈവിധ്യമാർന്ന യാത്രാവിവരണങ്ങളുടെ സാഹിത്യമൂല്യം 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



	<p>ഉദ്ദേശിക്കുന്നത്. ആത്മകഥാസാഹിത്യത്തിന്റെ ചരിത്രത്തെക്കുറിച്ച് സാമാന്യമായ അറിവ് ഉണ്ടാകണം. ആത്മ കഥയിലെ ആത്മം എന്ന സങ്കല്പത്തിലെ വ്യക്തി, ആത്മ കഥയിലെ കർത്തൃത്വം, പ്രതിനിധാനങ്ങൾ, ലിംഗ ഭേദം, രാഷ്ട്രീയം എന്നിവ മനസ്സിലാക്കുക.</p> <p>വിശദപഠനത്തിന്</p> <ol style="list-style-type: none"> <li>1. ആശുപത്രിയിൽ - ജീവിതപ്പാത, ചെറുകാട്</li> <li>2. ഇരുന്നൂണ്ട ഓണം - ചിദംബരസ്മരണ, ബാലചന്ദ്രൻ ചുളിക്കാട്</li> <li>3. ദലിതൻ - കെ. കെ. കൊച്ചു (ആദ്യത്തെ രണ്ട് അദ്ധ്യായങ്ങൾ.)</li> <li>4. വള്ളത്തോളുമായി ഒരു കൂടിക്കാഴ്ച - ജാലകങ്ങൾ: ഒരു ചരിത്രാന്വേഷിയുടെ വഴികൾ, കാഴ്ചകൾ, എം. ജി. എസ്. നാരായണൻ</li> <li>5. ഒറ്റപ്പെട്ടപോയ കട്ടി, സ്വരഭേദങ്ങൾ - ഭാഗ്യലക്ഷ്മി</li> </ol>
ബ്ലോക്ക് 2	ജീവചരിത്രം
	<p>ചരിത്രത്തിലെ പ്രധാന വ്യക്തികളെക്കുറിച്ച് എഴുതപ്പെട്ട കൃതികളെന്ന നിലയിൽ ജീവചരിത്രത്തിന്റെ മാതൃകകൾ പരിചയപ്പെടുത്തുക. ജീവചരിത്ര രചനയുടെ ചരിത്രരചനാസങ്കേതങ്ങൾ, ജീവചരിത്രത്തിന്റെ തിരഞ്ഞെടുപ്പുകൾ, വ്യക്തിജീവിതവും സമൂഹവും തമ്മിലുള്ള ബന്ധം തുടങ്ങിയ വിഷയങ്ങളെ ആസ്പദമാക്കി ജീവചരിത്രങ്ങളെ സമീപിക്കുക.</p> <p>വിശദപഠനത്തിന്</p> <ol style="list-style-type: none"> <li>1. ഒരു വലിയ മുഹൂർത്തത്തിന്റെ പശ്ചാത്തലം - നാരായണഗുരു, എം. കെ. സാന</li> <li>2. ആ മനുഷ്യൻ നീ തന്നെ - ഇവൻ എന്റെ പ്രിയ സി.ജെ, റോസി തോമസ്</li> <li>3. ജീനിയസിന്റെ ഗുരു - ബെർട്രാൻറ് റസ്സൽ, വി. ബാബുസേനൻ</li> <li>4. എ ബ്രീഫ് ഹിസ്റ്ററി ഓഫ് ടൈം - സ്റ്റീഫൻ ഹോക്കിങ്, ഡോ. ജോർജ്ജ് വർഗ്ഗീസ്</li> <li>5. അദ്ധ്യായം അഞ്ച് - മയിലമ്മ ഒരു ജീവിതം - ജ്യോതിബായി പരിയാടത്ത്</li> </ol>
ബ്ലോക്ക് 3	യാത്രാവിവരണം
	<p>യാത്രാവിവരണ സാഹിത്യം എന്ന വിവരണാത്മക സാഹിത്യശാഖ പരിചയപ്പെടുക. വർത്തമാനപ്പുസ്തകം മുതലുള്ള ആദ്യകാല യാത്രാവിവരണങ്ങളുടെ സാഹിത്യചരിത്രം സാമാന്യമായി മനസ്സിലാക്കുക. സ്ഥലപരവും സാംസ്കാരികവും പാരിസ്ഥിതികവും ആത്മീയവുമായ വൈവിധ്യമാർന്ന വിവരണങ്ങളുടെ സാഹിത്യമൂല്യം പഠനവിധേയമാക്കുക.</p> <p>വിശദപഠനത്തിന്</p> <ol style="list-style-type: none"> <li>1. സ്ത്രീകൾ കള്ളത്താടി വയ്ക്കുന്നു? - കേരളസഞ്ചാരം, മാധവിക്കുട്ടി.</li> <li>2. നിലാവ് കോരിക്കുടിച്ച് കള്ളിമുൾച്ചെടികൾ - മരുഭൂമിയുടെ ആത്മകഥ, വി. മുസഫിർ മുഹമ്മദ്.</li> <li>3. വഴിയമ്പലത്തിലും പുൽക്കുടിലിലും - ഹിമവാന്റെ മുകൾത്തട്ടിൽ, രാജൻ കാക്കനാടൻ.</li> <li>4. ചുണ്ടക്കാരുടെ സ്വർഗ്ഗം - രണ്ടുയാത്രകൾ, സക്കറിയ.</li> <li>5. ചീവീടുകൾ ചിലയ്ക്കാൻ മറക്കുമ്പോൾ - നദി തിന്നുന്ന ദ്വീപ് - കെ. എ. ബീന.</li> </ol>
ബ്ലോക്ക് 4	സ്വത്വ-അനുഭവ സാഹിത്യം
	<p>.ഓർമ്മ, സംഭാഷണങ്ങൾ, വ്യക്തികളുമായുള്ള സംഭാഷണത്തെ ആസ്പദമാക്കി എഴുതപ്പെട്ട അനുഭവസാഹിത്യങ്ങൾ, സ്വത്വത്തോടു ബന്ധപ്പെട്ട ആഖ്യാനങ്ങൾ,</p>

	<p>ജീവിതരേഖകൾ എന്നിവ. വിശദപഠനത്തിന്</p> <ol style="list-style-type: none"> <li>1. എന്നെ പഠനമെന്ന വിളിക്കരുത് - എതിര്, എം. കുഞ്ഞാമൻ</li> <li>2. ആദ്യത്തെ 10 പുറം - ജാന, ഭാസ്കരൻ</li> <li>3. ദരിദ്രന്റെ ക്രിസ്തുസ് - പച്ചവിരൽ, ദയാഭായി</li> <li>4. വരുമോ വസന്തം - ഒരു മലയാളി ഹിജഡയുടെ ആത്മകഥ, ജെറീന</li> <li>5. ശേഷി എന്ന അധികാരഘടനയും ഭിന്നശേഷിയും: ഭിന്നശേഷി ചിന്തകൾക്കൊരാമുഖം- ഡോ. യാക്കോബ് തോമസ്</li> </ol>
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റഫറൻസ്
<ul style="list-style-type: none"> <li>• ഡോ. വി. സി. ഹാരിസ്, ആത്മകഥ ജീവിതം സമൂഹം നിരൂപണം - റെയിൻബോ ബുക്സ്, കോഴിക്കോട്.</li> <li>• ഡോ. കെ. എം. ജോർജ്ജ്, ജീവചരിത്രസാഹിത്യം - ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട് തിരുവനന്തപുരം.</li> <li>• നടുവട്ടം ഗോപാലകൃഷ്ണൻ, ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ - ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം.</li> <li>• ഇ. പി. രാജഗോപാലൻ, കഥയും ആത്മകഥയും - ചിന്ത, തിരുവനന്തപുരം.</li> <li>• പ്രൊഫ. വി. രമേഷ് ചന്ദ്രൻ, സഞ്ചാരസാഹിത്യം മലയാളത്തിൽ -</li> <li>• ഡോ. സൗമ്യ ദാസൻ, ആത്മകഥ: ആഖ്യാനത്തിലെ പെണ്ണുകൾ - മൈത്രി ബുക്സ്, തിരുവനന്തപുരം.</li> <li>• ജി. ഉഷാകുമാരി (എഡിറ്റർ), ഉൾക്കണ്ണാടികൾ - കൈരളി ബുക്സ്, കണ്ണൂർ.</li> <li>• ചെറുകാട്, ജീവിതപ്പാത - കറന്റ് ബുക്സ്, തൃശ്ശൂർ.</li> <li>• ബാലചന്ദ്രൻ ചുള്ളിക്കാട്, ചിദംബരസ്മരണ - ഡി. സി ബുക്സ്, കോട്ടയം.</li> <li>• കെ.കെ. കൊച്ചു, ദലിതൻ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• എം.ജി.എസ്. നാരായണൻ, ജാലകങ്ങൾ: ഒരു ചരിത്രാന്വേഷിയുടെ വഴികൾ കാഴ്ചകൾ - കറന്റ് ബുക്സ്, തൃശ്ശൂർ.</li> <li>• ഭാഗ്യലക്ഷ്മി, സ്വരഭേദങ്ങൾ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• എം.കെ.സാന, നാരായണഗുരു - എൻ. ബി.എസ്. കോട്ടയം.</li> <li>• റോസി തോമസ്, ഇവന്റെ പ്രിയ സി.ജെ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• വി. ബാബുസേനനൻ, ബെർട്രാൻറ് റസ്സൽ -</li> <li>• ഡോ. ജോർജ്ജ് വർഗ്ഗീസ്, സ്റ്റീഫൻ ഹോക്കിങ് - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• ജ്യോതിഭായി പരിയാടത്ത്, മയിലമ്മ ഒരു ജീവിതം - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• മാധവിക്കുട്ടി, കേരള സഞ്ചാരം - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• വി.മുസഫീർ അഹമ്മദ്, മരുഭൂമിയുടെ ആത്മകഥ - കറന്റ് ബുക്സ് തൃശ്ശൂർ.</li> <li>• രാജൻ കാക്കനാടൻ, ഹിമവാന്റെ മുകൾത്തട്ടിൽ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• സക്കറിയ, രണ്ടു യാത്രകൾ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• കെ. എ. ബീന, നദി തിന്നുന്ന ദ്വീപ് - കറന്റ് ബുക്സ് കോട്ടയം.</li> <li>• എം. കുഞ്ഞാമൻ, എതിര് - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• ഭാസ്കരൻ, ജാന, ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• ദയാഭായി, പച്ചവിരൽ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> <li>• ജെറീന, ഒരു മലയാളി ഹിജഡയുടെ ആത്മകഥ - ഡി.സി ബുക്സ്, കോട്ടയം.</li> </ul>







**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**

<b>पाठ्यक्रम उद्देश्य (Course objectives):</b>
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।

<b>पाठ्यक्रम परिणाम (course outcome):</b>	
<b>Co. 1 :</b>	प्राचीन और मध्यकाल की कविता के विभिन्न रूपों का विश्लेषण करता है।
<b>Co. 2 :</b>	समाज और साहित्य के बीच संबंध तथा हिन्दी साहित्य 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।
<b>Co. 3</b>	सामाजिक सांस्कृतिक चेतना, को आत्मसात करता है और तुलसीदास, कबीरदास, बिहारी जैसे कवियों से परिचय प्राप्त करता है।
<b>Co 4</b>	आधुनिक काल की विशेषताओं को समझता है और आधुनिक काल के कवियों के बारे में परिचय प्राप्त करता है।
<b>Co 5</b>	आधुनिक काल की विभिन्न काव्य शैलियों से परिचित होता है। हाइकु कविताओं के बारे में ज्ञान प्राप्त करता है।
<b>Co 6</b>	अनुवाद के बारे में ज्ञान प्राप्त करता है और उसका प्रयोग करने में दक्षता प्राप्त करता है।

<b>पाठ्यक्रम रूपरेखा (COURSE Outline):</b>	
<b>ब्लॉक : 1</b>	प्राचीन और मध्यकालीन रचनाएँ।
<b>ब्लॉक : 2</b>	छात्रवाद की कविताएँ।
<b>ब्लॉक : 3</b>	प्रगतिवादी कविता। जैसे कवियों से परिचय प्राप्त करता है।
<b>ब्लॉक : 4</b>	समकालीन कविता।
<b>ब्लॉक : 5</b>	हाइकु कविताएँ।
<b>ब्लॉक : 6</b>	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	अंग्रेजी से हिन्दी में और हिन्दी से अंग्रेजी 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 उपाध्याय
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)

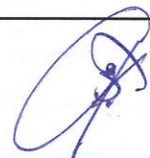
**B21SN02LC: महाकाव्यं गद्यकाव्यं च (Mahakavyam Gadyakavyam cha)**

**Number of Credits:6**

<b>लक्ष्यम् (Objectives)</b>
भारतीयकाव्यशास्त्रे परिचयप्रदानम्।

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

<b>पत्ररूपरेखा - (Course Outline)</b>	
<b>खण्डः 1</b>	महाकाव्यपरिचयः।
	1. 1. लौकिकसाहित्यमधिकृत्य सामान्यपरिचयः। 1. 2. महाकाव्यानि, पञ्चमहाकाव्यानि च। 1. 3. महाकाव्यलक्षणम्। 1. 4. कुमारसंभस्य महाकाव्यलक्षणानुसारं अवलोकनम्।
<b>खण्डः 2</b>	गद्यपरिचयः
	2. 1. पार्वत्याः तपश्चर्यादयमः – 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.
<b>खण्डः 3</b>	3. 1. गद्यकाव्यानां सामान्यपरिचयः। 3. 2. इतरसाहित्यरूपेषु इतिहासपुराणानां स्वाधीनम्। 3. 3. महाभारतम्, महाभारतस्य रचनाकालः, सामान्यपरिचयश्च। 3. 4. संस्कृतसाहित्ये लक्ष्मणसूरिणो योगदानम्।
<b>खण्डः 4</b>	भारतसङ्ग्रहः – आदिपर्वणः समग्रमध्ययनम् ।
	4. 1. खण्डिकाः 1 – 11. 4. 2. खण्डिकाः 12 – 15. 4. 3. खण्डिकाः 16 – 27. 4. 4. खण्डिकाः 28 – 31.





**आवश्यकग्रन्थाः -**

- कुमारसम्भवम् - Kumarasambhava of Kalidasa (with the commentary of Mallinatha), Vasudev Laxmansastri Pansikar(Ed.), Mumbai, 1908
- संस्कृतसाहित्येतिहासः – आचार्यलोकमण्डाहालः। चौखम्बा कृष्णदास अकादमी, वाराणसी।
- भारतसङ्ग्रहः- Bharatasangraha, M Lakshmanasuri, The Kuppuswami Sastri Research Institute, Madras, 1966.

**सहायकग्रन्थाः -**

- A Companion to Sanskrit Literature, Banerjee S.C, Motilal Banarsidas Publishers, Delhi, 1989
- A History of Sanskrit Literature, Macdonell A .A, Motilal Banarsidas Publishers, Delhi, 1990.
- A History of Sanskrit Literature, A.B. Keith, Motilal Banarsidas Publishers, Delhi, 1993
- Glimpses of Sanskrit literature, A.N.D Haksar, ICCR& New age International limited publishers.
- History of Classical Sanskrit Literature, M. Krishnamachariar, Motilal Banarsidas Publishers, Delhi, 1990
- Indian Kavya Literature, A.K Warder. Motilal Banarasidass, Delhi, 1972.
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- Samskritasahityacaritram (Malayalam), KunjunniRaja & M.S Menon (Ed.), Kerala Sahitya Academy, Trissur, 1991
- A Short History of Sanskrit Literature, T K RamachandraAiyar, RS Vadhyar& Sons, Palakkad
- Kumara Sambhava (Edition with Malayalam commentary), Kuttikrishna

**Additional References (E-resources)**

- [www.kalidasacademy.com](http://www.kalidasacademy.com)
- [www.poetrynook.com](http://www.poetrynook.com)
- [www.resanskrit.com](http://www.resanskrit.com)
- [www.ancient.cu](http://www.ancient.cu)
- [www.worldcat.org](http://www.worldcat.org)



## 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
<b>BLOCK 1: Conversations in Arabic</b>	
Unit 1:	Introduction
Unit 2:	In the House
Unit 3:	In the Hotel
Unit 4:	In the Railway Station
Unit 5:	In the Market
<b>BLOCK 2: Reading on classical texts in Arabic</b>	
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)
<b>BLOCK 3: Reading on Modern Essays in Arabic</b>	
Unit 1	"الأرملة وابنها" من كتاب دمنعة وابتسامة لجبران خليل جبران
Unit 2	"ما أضعف الإنسان" من كتاب مقالات في كلمات، المجموعة الثانية، لعل الطنطاوي
<b>BLOCK 4: Appreciating Short Story</b>	
Unit 1	قصة "نصف العلم" من مجموعة القصص "العالم ليس لنا" لغسان كنفاني
<b>BLOCK 5: Appreciating Poetry</b>	
Unit 1	قصيدة "دعوة إلى التنقل والترحال" للإمام الشافعي
Unit 2	قصيدة "أمام البيت الحرام" لأحمد سالم باعطب
Unit 3	قصيدة "المنشوق" لأحمد مطر





Unit 4	قصيدة "وداعا أيها الدفتر" لنزار قباني
<b>BLOCK 6: Tutorial</b>	
Practice sheets based on Blocks 1-5	

#### References:

1. Qur'aanul Kareem
2. Imam Annavavi, Al Arba'unaannvavi
3. Muhammed Bin Isma'il Al Bukhaari, Sahihu l-Bukhaari
4. Jubran Khalil Jubran, Dam'athun wa-btisaamatun
5. Ali At-thanthaawi, Maqaalatun fi Kalimaatin, Second Collection, Daarul-Manaar, Jidha, Ed:1, 2000
6. Gassan Kanafani, Aalamun Laysa Lanaa (Collection of short stories), Ramal Publications, Qubrus.
7. Muhammed Ibrahim Salim, Diwanu l-Imaami s-safi'i, Maktabatu Binu Sinaa. Cairo
8. Ahmad Matar, Al Majmu'atu S-si'riyya, Daarul-Hurriyya, Beirut, 2011
9. Personal Site of Nizar Qabbani - <https://nizarq.com/ar/poem131.html>



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 എന്നീ സാഹിത്യരൂപങ്ങളെ പരിചയപ്പെടുക
5. ആധുനിക സാഹിത്യരൂപങ്ങളുടെ ആരംഭ ചരിത്രത്തെ മനസ്സിലാക്കുക

**Course Outcome**

1. ആധുനിക സാഹിത്യ പ്രസ്ഥാനങ്ങളുടെ ലഘുചരിത്രത്തെക്കുറിച്ച് അറിവ് നേടുന്നു.
2. മലയാളത്തിലെ സാഹിത്യ പ്രസ്ഥാനങ്ങളെക്കുറിച്ച് ധാരണ ലഭിക്കുന്നു
3. ആധുനിക മലയാളകവിതയുടെ സവിശേഷതകൾ മനസ്സിലാക്കുന്നു.
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, ഉറുബ് - എം.ടി.വാസുദേവൻ നായർ
യൂണിറ്റ് 3	എസ്. കെ പൊറ്റക്കാട്, ഉറുബ്, എം. ടി വാസുദേവൻ നായർ, കാക്കനാടൻ, എം.മുകുന്ദൻ, ഒ. വി വിജയൻ, ആനന്ദ് സാനാ ജോസഫ്,
യൂണിറ്റ് 4	ചെറുകുടമ - ചെറുകുടമയുടെ പശ്ചാത്തലം - ആദ്യകാല കഥകൾ, കാരൂർ, ലളിതാംബിക അന്തർജനം, ബഷീർ, തകഴി, കേശവദേവ്, പൊൻകുന്നം വർക്കി, ഉറുബ്, ടി.പത്മനാഭൻ, എം. ടി വാസുദേവൻ നായർ, മാധവിക്കുട്ടി, കാക്കനാടൻ, സേതു, സാനാ ജോസഫ്, സക്കറിയ

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







## **GENERIC ELECTIVES - I**

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

### **B21EG01GE: APPRECIATING LITERATURE**

**Number of credits: 2**

<b>Objectives</b>	
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

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

<b>COURSE OUTLINE</b>	
<b>BLOCK 1</b>	<b>THEORIES OF ADAPTATION</b>
<b>BLOCK 2</b>	<b>MOVIES OF ADAPTATION</b>
<b>BLOCK 1: Theories of Adaptation</b>	
	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
<b>UNIT 1</b>	Julie Sanders: “What is Adaptation” (Pages 17 – 25) in Sanders. Adaptation and Appropriation
<b>UNIT 2</b>	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”)
<b>UNIT 3</b>	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)



<b>BLOCK 2: Movies of Adaptation</b>	
<b>UNIT 1</b>	Steven Spielberg (Dir.) <i>The Color Purple</i>
<b>UNIT 2</b>	Satyajit Ray (Dir.) <i>Pather Panchali</i>

References
<ul style="list-style-type: none"> <li>• Arnheim, Rudolf. "Who Is the Author of a Film?" [1934]. <i>Film Essays and Criticism</i>. Trans.</li> <li>• Brenda Benthien. Madison, WI: The U of Wisconsin P, 1997. 62-69</li> <li>• Barthes, Roland. "The Third Meaning." [1970]. <i>Image, Music, Text</i>. Trans. Stephen Heath. New York: Hill and Wang, 1977. 44-68.</li> <li>• Bazin, André. "Adaptation, or the Cinema as Digest." [1948]. <i>Film Adaptation</i>. Ed. James Naremore. New Brunswick, NJ: Rutgers UP, 2000. 19-27.</li> <li>• Boozer, Jack (Ed.). <i>Authorship in Film Adaptation</i>. Austin, TX: University of Texas Press, 2008.</li> <li>• Cartmell, Deborah Ed. <i>A Companion to Literature, Film and Adaptation</i>. New Jersey: Wiley Blackwell, 2012.</li> <li>• Chatman, Seymour. "What Novels Can Do That Films Can't (and Vice Versa)." [1980].</li> <li>• <i>Critical Inquiry</i> 7.1 (1980): 121-140.</li> <li>• Elliott, Kamilla. "Literary Cinema and the Form/Content Debate." <i>Rethinking the Novel/Film Debate</i>. Cambridge: Cambridge UP, 2003. 133-18</li> <li>• Hutcheon, Linda. <i>A Theory of Adaptation</i>. New York, Routledge: 2006.</li> <li>• Leitch, Thomas. "Twelve Fallacies in Contemporary Adaptation Theory." <i>Criticism</i> 45.2 (2003): 149-171</li> <li>• McFarlane, Brian. "Backgrounds, Issues, and a New Agenda." [1994]. <i>Novel to Film: An Introduction to the Theory of Adaptation</i>. Oxford: Clarendon Press, 1996. 3-30.</li> <li>• Ray, Robert B. "Film and Literature." <i>How a Film Theory Got Lost and Other Mysteries in Cultural Studies</i>. Bloomington, IN: Indiana UP, 2001. 120-131.</li> <li>• Sanders, Julie M. <i>Adaptation and Appropriation</i>. London: Routledge. 2005</li> <li>• Stam, Robert and Alessandra Raengo (Eds). <i>Literature and Film. A Guide to the Theory and Practice of Film Adaptation</i>. Oxford, Blackwell, 2005.</li> </ul>

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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
<b>ब्लोक 1 मानक हिन्दी का उच्चारण और बातचीत</b>	
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
<b>ब्लोक 2 : रचनात्मक कार्य (पल्लवन) एवं भाषण कला</b>	
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 दौड़ 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. पुलिङ्ग - नपुंसकलिङ्गशब्दाः- बाल, हरि, गुरु, पितृ, राजन् (पुलिङ्गे)।**

**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)**

(Feminine - latha, mathi, nadee, stree, maatr and bhas.)



	<p>Pronouns - tat, etat and kim – in three genders. And asmad and yushmad sabdas.)</p> <p><b>1.3. तिङन्तपरिचयः (Conjugations) -</b> <b>भूधातुः (परस्मैपदी) दशलकारेषु।</b> (The root bhu – parasmaipadi - in all the ten lakaras)</p> <p><b>1. 4. वदि (वन्द्) धातुः (आत्मनेपदी) - दशलकारेषु। एधधातुः लिटि केवलम् -</b> <b>अनुप्रयोगलिटः अवगमनाय)</b> (The root vand in all the ten lakaras and the root Edha in lit only, to familiarize with the Anuprayoga Lit.)</p>
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खण्डः 2 - काव्यपरिचयः - रघुवंशमहाकाव्यम् (महाकविः कालिदासः) प्रथमसर्गः 1 – 54 श्लोकाः। त् निर्दिष्टश्लोकाः। 30 घण्टाः 35 अङ्काः। (Poetry - Raghuvamsa mahakavya of Kalidasa, 1st canto, slokas 1 to 54.)

	<p><b>2. 1. सूर्यवंशस्य महिमा, तस्मिन् वंशे दिलीपस्य जन्म च - 1 – 12 श्लोकाः।</b> (Dignity of Suryavamsa and birth of King Dileepa in that race – slokas 1 to 12)</p> <p><b>2. 2. दिलीपस्य गुणवर्णना- श्लोकाः 13 – 30</b> (The qualities of Dileepa – verses 13 to 30)</p> <p><b>2. 3. दिलीपस्य आश्रमयात्रा - श्लोकाः 31 – 47.</b> (Dileepa's journey to the hermitage of his Guru – slokas 31 to 47)</p> <p><b>2.4. वसिष्ठाश्रमवर्णना - श्लोकाः 48 – 54)</b> (Discription of the hermitage of Vasishtha – slokas 48 – 54)</p>
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**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.

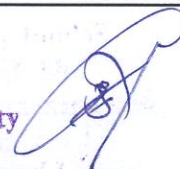
**2. धातुरूपमञ्जरी - विद्यासागर के. एल्. वी. शास्त्री**

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.**



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## **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**

<b>Block 01</b>	Introduction to Arabic Language & Basic structures of Arabic Language
<b>Block 02</b>	Use of Arabic in different occasions
<b>Block 03</b>	: Tutorial

#### **BLOCK 1: Introduction to Arabic Language & Basic structures of**

	<b>Arabic Language Units:</b> <ol style="list-style-type: none"><li>1. Arabic Language, characteristics of Arabic Language</li><li>2. Modern Standard Arabic and Colloquial Arabic</li><li>3. Arabic Alphabets, basic structure of sentences in Arabic,</li><li>4. Question words, prepositions, name of days and months, date and time, cardinal and ordinal numbers, colors, parts of body and common phrases.</li></ol>
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## **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:**

1. M. Ashiurakis, (2003), Spoken Arabic self taught, Islamic Book Service
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12. Mohiyeedin, Veeran, (2005), Arabic Speaking Course, Calicut: Al Huda Books
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# 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 enable 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:**

<b>Block 1</b>	Towards Modernity
<b>Block 2</b>	Socio-Religious Reform Movements
<b>BLOCK 1: TOWARDS MODERNITY</b>	
<b>Unit 1</b>	Prelude to Social Reform
<b>Unit 2</b>	Colonial Administration- Modernity
<b>Unit 3</b>	Missionary intervention LMS-CMS-BEM- Channar agitation
<b>Unit 4</b>	Print and Early Newspapers
<b>Unit 5</b>	Western Education - Early Educational efforts
<b>Unit 6</b>	Malayalam Literature and New Social Consciousness
<b>BLOCK 2: SOCIO-RELIGIOUS REFORM MOVEMENTS</b>	
<b>Unit 1</b>	Vaikunda Swamy and Samatva Samajam
<b>Unit 2</b>	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 Tungal, Vakkam Moulavi and Aikya Sangam
Unit 6	Chattambi Swamikal, Mannath Padmanabhan and NSS
Unit 7	Women question in the Social-reform Movements in Kerala

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## GENERIC ELECTIVES - II

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

### **B21CM01GE: BANKING**

Number of credits: 2

Objectives
<ol style="list-style-type: none"><li>1. To familiarize the learners with banking and different types of banks.</li><li>2. To enable the learners to acquire knowledge about the Indian banking system and development banks.</li><li>3. To familiarise the learners with e-banking and e-banking services.</li><li>4. To provide learners with knowledge on core banking, e-banking security and electronic signature.</li></ol>

Course Outcomes:
After completing the Course, the learners shall be able to: <ol style="list-style-type: none"><li>1. Avail the various schemes and programmes by the developments banks in India</li><li>2. Use the e-banking service that the banks provide.</li></ol>

Course Outline	
Block 1	Banking Theory
Block 2	E-banking
<b>BLOCK 1: BANKING THEORY</b>	
UNIT-1	<b>Introduction to Banking</b> Evolution of banks- Meaning- Definition of Banks and Banking- Features of banks-Importance of banks- Relationship between Banker and Customer
UNIT-2	<b>Types of Banks and Banking</b> 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	<b>Indian Banking System</b> 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	<b>Development Banks</b> Introduction to Development Banks-IDBI-IFCI-ICICI-EXIM-SIDBI-NABARD-IRBI-DFIs-SIDCO



<b>UNIT-5</b>	<b>Central Banks</b> 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
<b>BLOCK 2 E-BANKING</b>	
<b>UNIT-1</b>	<b>Introduction to E-Banking</b> 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
<b>UNIT-2</b>	<b>E-Banking Services</b> Introduction-Meaning-ATM-Credit Card-Debit Card-Smart Card-CDM-POS-Telebanking-E-Cheque- E-cheque and truncated cheque-ECS- CIBIL Score- CORE Banking
<b>UNIT-3</b>	<b>CORE Banking</b> EFT-RTGS-NEFT-IFSC-E-Purse-Virtual Banking- SWIFT-UPI-Mobile Banking- Internet banking
<b>UNIT-4</b>	<b>E-Banking Security</b> Introduction-Need of Security-Security Concepts-Security Attacks-Cyber Crimes
<b>UNIT-5</b>	<b>Electronic signature</b> 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

<b>References</b>
<ul style="list-style-type: none"> <li>• Sundaram K.P.M and Varshney P.N. Banking Theory Law and Practice, Sultan Chand &amp; Sons, New Delhi.</li> <li>• Maheswari S.N . Banking Theory Law and Practice, Kalyani Publishers New Delhi.</li> <li>• Sekhar K.C. Banking Theory Law and Practice, Vikas Publishing House, New Delhi.</li> <li>• Gordon E. and Natarajan K. Banking Theory Law and Practice, Himalaya Publishing House, Mumbai.</li> <li>• Lall Nigam B.M. Banking Law and Practice, Konark Publishers Pvt. Ltd., New Delhi.</li> <li>• Radhaswami M. Practical Banking, Sultan Chand &amp; Sons, New Delhi.</li> <li>• Dekock . Central Banking, Crosby Lockwood Staples,</li> </ul>

### **GENERIC ELECTIVES - II**

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

#### **B21SO01GE: INTRODUCTION TO SOCIOLOGY**

**Number of credits: 2**



<b>Objectives:</b>
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

<b>Course Outcomes:</b>
<ol style="list-style-type: none"> <li>1. Comprehends the origin and scope of Sociology</li> <li>2. Familiarize the basic concepts in Sociology</li> <li>3. Analyses the significance of social institutions and social groups in society.</li> </ol>

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

<b>References</b>
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13. Johnson Harry M, (1995) Sociology: A systematic Introduction, Allied Publishers.



## 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

<b>Objectives:</b>
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.

<b>Course Outcomes:</b>
<ol style="list-style-type: none"><li>1. To introduce basic economic concepts to the students</li><li>2. To familiarize students with micro and macro approaches to economics</li><li>3. To expose students to contemporary economic ideas</li></ol>

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



<b>UNIT-2</b>	<b>Macro Economic Concepts</b> <b>Macroeconomic variables</b> – Stock and Flow Variables - Exogenous and Endogenous Variables- General Equilibrium and Edgeworth Box- Macro models-Macroeconomic Goals and Instruments- Inflation- Unemployment-Poverty
<b>UNIT- 3</b>	<b>Contemporary Economics</b> 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.
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- Paul.A. Samuelson and William Nordhaus, *Economics*, McGraw Hill, 19<sup>th</sup> 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
<b>Block 1: Vedanta as Background of Guru's Philosophy</b>	
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
<b>Block 2: Guru and Social Reformation</b>	
UNIT-1	Liberation through education
UNIT-2	Abolition of social evils
UNIT- 3	<b>Guru on gender equality and women empowerment</b>
UNIT - 4	Guru's vision of unity through social organizations

#### References:

##### ENGLISH

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2. Hirianna, M. (1994) *Outlines of Indian Philosophy*, Delhi: Motial
3. Narayana Prasad, Muni, *Narayana Guru, Complete Works*, National Book Trust, New Delhi, 2006
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##### MALAYALAM

1. *Sree Narayana Guru, Sampoorana Kritikal*, Sree Narayana Dharma Sangham Trust, Sivagiri Mutt, 2018
2. Asan, N. Kumaran, *Brahma Sree Narayana Guru*, Lalu Books, Kottayam, 2002.
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### **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**

<b>Block 1</b>	<b>Concepts of Entrepreneur</b>
<b>Block 2</b>	<b>Startups</b>

**Block 1: Concepts of Entrepreneur:**



<b>UNIT-1</b>	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, <b>Entrepreneurship</b> – Meaning – Definition - Entrepreneurial Development Programmes (EDP) - Objectives of EDP - Phases of EDP
<b>Block 2: Startups</b>	
<b>UNIT-1</b>	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.

References
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