

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Data Structures Using OOPS
Course Code:	13-CAM212-2C
Pre-requisite Course:	Basic Knowledge of C language. Condition, Loop, functions

Course Objective (CO):

This course is intended to make the students:

- Students aware of Object-Oriented Programming (OOP) concepts.
- Acquire knowledge of various types of data structures, operations and algorithms. And Sorting and searching operations.
- Analyze the performance of Stack, Queue, Lists, Trees, and Hashing, Searching and Sorting techniques.
- Implement all the applications of Data structures in a high-level language
- Design and apply appropriate data structures for solving computing problems.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	4	4	25	25	25	25	100

Course Contents:

Subject Contents			
Sr. No.	Topics	Total Hours	Weight (%)
1.	Basic Concepts of Objects Oriented Programming: Introduction, Object-Oriented Paradigm, Basic Concept of OOP, Procedural Programming Vs. Object Oriented Programming. Introduction to C++: History of C++, Structure of C++Program, Output Operator (<<), Input Operator (>>), Basic Data types, Symbolic Constants, Reference Variable, Scope Resolution Operator, Manipulators. Functions in C++: Inline Function, Default Argument Function, Function Overloading.	9	15
2.	Classes and Objects: Specifying a Class, Creating Objects, Accessing Class Members, Defining Member Functions, Nesting of Member Function, Private Member Function, Friend Function. Static Members: Static Data Member, Static Member Function.	9	20
3.	Constructors and Destructors: Introduction, Types of Constructor (Default Constructor, Parameterized Constructor), Multiple Constructors, Destructors. Inheritance/Extending Classes: Introduction, Defining Derived Classes. Types of Inheritance: Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance.	9	25

4.	Introduction to Data Structure: Introduction to Data Structure. Types of Data structure: Primitive and Non- Primitive Data Structure, Linear and Non-Linear Data Structure. Linear Data Structures: Introduction to Arrays. Stack: Introduction, Application of Stack. Queues: Introduction, Simple Queue, Circular Queue, priority Queue. Linked List: Singly Linked List, Double Linked List.	12	25
5.	Sorting: Introduction, Selection, Bubble, Insertion, Shell, Quick sort Searching: Introduction, Sequential Search and Binary Search.	9	15

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- To understand the concept of Managing Data in organization.
- To create programs to solve a problem of various operations on Queues, Stacks, Linked Lists, Sorting, Searching. To learn the basic searching and sorting algorithms.
- Understand how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Learn the benefits of dynamic and static data structures implementations
- Demonstrate different methods for traversing trees.

List Text Book:

1. Object Oriented Programming With C++, By E Balagurusamy, Tata McGraw-Hill.
2. "An Introduction to Data Structure", Nirav Prakashan 1st Edition 2013
3. Object Oriented Programming and C++, By Raja ram, New Age International Publishers.
4. "Classic Data Structures ", by DEBASIS SAMANTHA 2nd EDITION, PHI publications , 2009
5. "Data Structures and Algorithms", by NARASIMHA KARUMANCHI , CAREERMONK Publications , 2017

List of Reference Book:

1. Teach Yourself C++, By Herbert Schildt, Tata McGraw-Hill.
2. Let Us C++, By Yashavant Kanetkar, BPB Publications.
3. Data structures by Lipschutz, McGraw Hill Education
4. Fundamentals of Data Structures in C by Sahni Horowitz, University Press
5. Data Structures And Algorithms by Alfred V Aho and John E Hopcroft and Jeffrey D Ullman, Pearson Education

E-Resource / Web Links:

- <http://www.studytonight.com/cpp/introduction-to-cpp.php>
- <https://www.w3schools.in/data-structures/intro>
- <https://www.javatpoint.com/data-structure-tutorial>
- <https://www.geeksforgeeks.org/data-structures/>
- https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- <https://www.studytonight.com/data-structures/>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Practical List

1. Write an Object Oriented (O.O.) Program in C++ that displays “Hello Friends!” message on the screen.
2. Write a Program of reference variable.
3. Write a Program for scope resolution operator.
4. Write a Program to implement the use of manipulator operators.
5. Write a Program of inline function.
6. Write a Program to implement the concept of default argument function.
7. Write a Program for function overloading.
8. Write a Program for nesting of member functions.
9. Write a Program for a friend function.
10. Write a Program to implement the default constructor.
11. Write a Program to implement the parameterized constructor.
12. Write a Program to implement destructor.
13. Write a Program to implement single inheritance.
14. Write a Program for multilevel inheritance.
15. Program for implementation of stack using arrays.
16. Program for implementation queue using array.
17. Program for implementation of circular queue.
18. Program for implementation linear linked list (creation, insertion, deletion, display).
19. Program for implementation of doubly linked list.
20. Program for bubble sort
21. Program for selection sort.
22. Program for insertion sort.
23. Program for quick sort.
24. Program for linear (sequential) searching.
25. Program for binary searching.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	L	M		H	H	M		L	L				L		L	
CLO2			L	M		H	M	M		L	L			M	M	
CLO3	L	M		L	H	M		L	L				L			
CLO4	M				L	H		H	H	M		L	L	H		
CLO5	L	M		H	H	M		L	L				L			
CLO6		L	M		L	H	M		L	L				M		

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Operating System
Course Code:	13-CAM213-2C
Pre-requisite Course:	Understanding the Unix/Linux operating system

Course Objective (CO):

This course is intended to make the students:

- The goal of the course to teach basic functions of an operating system.
- Explain the concept of a process and its components.
- The goal of the course is to teach the students a variety of features that will aid them in using and understanding the Unix/Linux operating system.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	4	4	25	25	25	25	100

Course Contents:

Sr. No.	Topics	Total Hours	Weight age (%)
1.	Operating System Overview: Introduction to Operating System, Functions of Operating System, Types of Operating system, User interface (CUI, GUI), Operating System Services, Multi-Tasking, Multi Programming, Multiprocessing. Additional Concept: Buffering, caching And Spooling.	10	20
2.	Process Management: Process, Process States, and Process Control Block (PCB), Scheduling: Types of Schedulers. Measuring Performance of Computer System: Throughput, Turnaround time, Response time, Waiting Time, CPU burst. Scheduling Algorithms –FCFS, SJF, Priority & Round Robin (RR) Scheduling. Mutual exclusion.	10	20
3.	Deadlocks: Definition of Deadlock, Introduction of Deadlock, Methods to handling Deadlock, Deadlock Prevention, Characterization of deadlock, Dealing with Deadlock.	09	20
4.	Memory Management: Static Memory Allocation, Dynamic Memory Allocation, Segmentation, Virtual Memory – Paging, Demand Paging , Page Replacement, Fragmentation & Defragmentation, Cache memory.	09	20
5.	Files: File Naming, File Structure, File Types, File Access Methods, File Attributes, File Operation, Safety and protection of File systems. Directories: Definition of Directory, Directory Structure.	09	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO 1: To understand the fundamental role of an operating system in managing computer resources.
- CLO 2: Students are able to manage CLI, CUI and GUI based Linux/Unix operating System.
- CLO 3: To understand the concepts of Segmentation and virtual memory.
- CLO 4: Design and understand basic file naming conventions, structures, and various types of files.
- CLO 5: Students are able to understand basic concept of networking.
- CLO 6: To learn various UNIX/LINUX commands and write shell Script programming.

List Text Book:

6. Silberschatz & Galvin: Operating System Concept, Wiley, Fifth Edition.
7. Andrew s. Tanenbaum and Albert s. Woodhull, Operating System, Second Edition.
8. Abraham silberschatz, Peter bear galvin, Greg Gagne: Operating system Principles: Seventh Edition.

List of Reference Book:

1. Silberschatz & Galvin: Operating System Concept, Wiley, Sixth Edition.
2. Milan Malenkov's: Operating Systems, Tata McGraw – Hill, Second Edition.
3. William Stallings: Operating Systems, PHI, Fourth Edition.

E-Resource / Web Links:

- <https://www.tjhsst.edu/~dhyatt/superap/unixcmd.html>
- https://www3.ntu.edu.sg/home/ehchua/programming/howto/Unix_Basics.html

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Practical List

1. Install a fresh operating system on a virtual machine or a physical computer.
2. Use command-line tools to navigate, create, and delete files and directories.
3. Use task manager utilities to view and terminate running processes.
4. Compress and decompress files using '**tar, gzip, bzip2**'.
5. Change file and directory permissions using commands or graphical interfaces.
6. Install, update, and remove software packages with package managers like **apt, yum, or zypper**.
7. Create simple shell scripts with variables, conditional statements, and loops.
8. Compare files or directories using '**diff**'.
9. Perform a backup of files and directories and then restoring them.
10. View, Terminate and start processes with **ps, top, kill, &**.
11. Check, Troubleshoot, Configure Network with Commands like **ifconfig, ip, ping, trace route, netstat**.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes(POs)												Program Specific Out comes(PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CLO1	M		L		L	H						M	H		M
CLO2			M			M	H			L			M		
CLO3									M						L
CLO4		H		M							L			M	L
CLO5	M					L	M		L						
CLO6	L	M				M						M	H		M

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Database Management System
Course Code:	13-CAM214-2C
Pre-requisite Course:	-

Course Objective (CO):

This course is intended to make the students:

- This course is intended to up skill students with fundamental concepts of Data Base Management System,
- Data Models and Different Data Base tools.
- This course is to make the student familiar with different database operations also students able to analyze the different between traditional file system and DBMS.

Teaching and Examination Scheme:

Teaching Scheme Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	2	4	50	25	-	25	100

Course Contents:

Sr. No.	Topics	Total Hour	Weightage (%)
1.	Database Concepts: Database and DBMS, Comparison between traditional file V/s DBMS, Characteristics of data in database, Components of database system environment, Functions of DBMS, Advantages and disadvantages of the DBMS	9	20
2.	Database Concepts, Database Design and Architecture: DBMS users, Database administrator, Role of DBA, Data administrator v/s Database administrator Database Design and Architecture: Essentials of Database Design, Three levels Architecture of Database- external, conceptual and internal, mapping.	9	20
3.	Data Models concepts: Hierarchical, Network and Relational, Operators, relations, Domains and attributes, keys, traditional set operations, special relational operations The E/R model: Entity, E-R Diagram, Attributes, Relationship, Types of Relationship, Developmentstages of E-R Diagram, Examples of E-R Diagram	9	20
4.	Normalization: Introduction, Types of Normal form, 1 st Normal Form, 2 nd Normal Form, 3 rd Normal Form, and BCNF. De-normalization.	9	20
5.	MS-Access, Objects: Introduction of MS-Access, Data type: Text, Number, Auto number, Currency, Boolean, Date/Time, Memo Objects: Table, Query, Forms, Reports, Macro. Controls use in form and report	9	20

Course Learning Outcomes (CLO):

At the end of this course the student would be able:

- CLO.1 To understand event driven programming concept.
- CLO.2 To understand and implement client side designing.
- CLO.3 To understand and implement types of tools for Graphic User Interface (GUI)
- CLO.4 To understand the major tools, tools types with its properties, method and events.
- CLO.5 To understand and implement Desktop Application Development environments software.
- CLO.6 To understand with concept of Project development as Client level.

List Text Book:

9. An Introduction to Database Systems C. J. Date (7th edition) Low Price Edition
10. Database management System A C Shah & A R Patel, MacMillan Publication
11. Database system concepts Henry F. Korth (3rd edition) TMH Publications
12. Microsoft Access Fundamentals

List of Reference Book:

6. An Introduction to Database Systems - C. J. Date - Pearson/Addison Wesley publisher
7. Database System Concepts – Abraham Silberschatz, Henry F.Korth, S.Sudarsha – McGraw-HillPublication
8. An Introduction to Database System –By Bipin C.Desai, Asian students Edition-Galgotia Publication
9. Microsoft Access Fundamentals – Rudy LeCorp-RGL publication

E-Resource / Web Links:

- <http://inpics.net/tutorials/access2007/basics.html>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Design a simple database using Ms Access.
2. Create table like Student, Employee using design view and wizard.
3. Query a database using different methods.
4. Create a form using design view and wizard.
5. Generate a report using design view and wizard.
6. Create Macros to Automating Tasks.

Practical List

1. Create student table using design view in Primary key with set some field Properties like validation rules, validation text, default values, input mask and caption.
2. Create Customer table using design view in Primary key with Making Append query and Delete query.
3. Create Employee table using design view in Primary key with create form and create report.
4. Create Customer table using design view in Primary key with Making Update query and make table query.
5. Create Relationship between two or more tables in each table one field is a Primary key, Between tables making cascade related Update and Delete operation.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	M	M		L	H		L		L					L		
CLO2	L		M		M	M		H						M		
CLO3	H	M	L				M	L							M	
CLO4	M			M	L	L			M					M		
CLO5	L		M		M		M		L				L	M		
CLO6	L	M	H		L	L	M	M	H				M	H		

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Project Management using Business Analytics
Course Code:	13-MDC215-2C
Pre-requisite Course:	Basic proficiency in statistics, mathematics, data management

Course Objective (CO):

This course is intended to make the students:

- The course aims to make the students familiar with to analyze large datasets using statistical methods.
- Understand and critically apply the concepts and methods of business analytics.
- The course also aims to make Identify, model and solve decision problems in different settings.
- To understand project management concepts, methodologies, and best practices. This includes learning about project initiation, planning, execution, monitoring, and closure.
- To develop practical project management skills to create project plans, define project scope, manage project risks, allocate resources, and track project progress.
- To familiarize with project management tools and software used in the industry.

Teaching and Examination Scheme:

Teaching Scheme Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	-	-	4	50	50	-	-	100

Course Contents:

Sr. No.	Topics	Total Hours	Weightage (%)
1.	Introduction to Business Analytics: Definition and scope of business analytics, Historical development, Evolution of analytics in business, Importance of business analytics in decision-making, Role of Business analytics, Overview of key concepts and techniques.	9	20
2.	Statistical Foundations for Business Analytics: Overview of statistics in business analytics, Importance of statistical thinking in decision-making, Descriptive statistics, mean, median, mode, variance, standard deviation, hypothesis testing, confidence intervals.	9	20
3.	Project Management and Documentation: Meaning, Importance, Characteristics of Documentation, Types of Documentation, Purpose and Challenges of Documentation, Project Planning.	9	20
4.	The Art of Project Leadership : Steps for writing Project Plan, Various components of Project Documentation (Title Page, Acknowledgement, Certificate, Abstract, Index, Objective, Citation, Bibliography, Appendices).	9	20
5.	Mastering Project Dynamics: Project Category (in-house / Internship / External): Project structure (Individual / Group), Project Index formation.	9	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO 1 : Define business analytics and articulate its significance in decision-making across various industries.
- CLO 2: Describe the historical development and evolution of analytics in the business context.
- CLO 3: Evaluate the significance of analytics in decision-making processes.
- CLO 4: To make clear about various types and structure of IT Project.
- CLO 5: Evaluate the ethical implications of data analytics.

List Text Book:

- 13."Business Analytics: A Practitioner's Guide" by Rahul Saxena.
- 14."Statistics" by Robert S. Witte and John S. Witte.
- 15."Business Analytics: A Practitioner's Guide" by Raul Katz and Barbara Haley Wixom.
- 16."Statistics for Business and Economics" by Paul Newbold, William L. Carlson, and Betty Thorne.
- 17."Ethics in Information Technology" by George Reynolds.
- 18."An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani.
- 19.The Practical Guide to the Project Management By : John Rakos , Publish by Wiley.

List of Reference Book:

- 10.Business Analytics: The Science of Data-Driven Decision Making" by James R. Evans.
- 11."Business Analytics for Managers" by Gert Laursen and Jesper Thorlund.
- 12."Statistical Methods for Business and Economics" by Paul A. G. Hoel, Robert E. Anderson, and Dennis W. Wackerly.
- 13.Project Management Handbook, Publish by Novartis Foundation.

E-Resource / Web Links:

- <https://www.coursera.org/specializations/business-analytics>
- <https://www.khanacademy.org/math/statistics-probability>
- <https://stattrek.com/hypothesis-test/hypothesis-testing>
- <https://study.com/academy/lesson/what-is-it-project-management-definition-tools- examples.html>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CLO1	L		M	M	L		M	M			M		L		
CLO2	L	M		H	M	M	M		M				L		
CLO3			L	M	M	M	L	M			L	L		M	
CLO4		M	M	L		H	M	L	M				M	M	
CLO5	L		M	L	M	H	M		M		L	L	M	M	

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Personality Development
Course Code:	13-AEC107-2C
Pre-requisite Course:	-

Course Objective (CO):

- To learn professional environment for IT company
- To understand soft and hard skill
- To understand details of soft skill for companies

Teaching and Examination Scheme:

Teaching Scheme Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	-	2	25	25	-	-	50

Course Contents:

Sr. No.	Topics	Total Hours	Weightage (%)
1.	Element of Professional Skill : Introduction of Soft skill and hard skill , comparison of soft and hard skill , element of soft and hard skills	4	25
2.	Soft Skills : Communication skill , Team work skill , Time management , Creativity Work ethics , Interpersonal skill , Leadership skill , Stress management , Analytical skill	6	25
3.	Hard Skills: Information Technology skill ,Basic computer skill , Customer service skill, Presentation skill , Project management skill , Design and Layout skill	6	25
4.	Case Study: Mock Interview, Event Planning, Industrial visit Planning and Management.	5	25

Course Learning Outcomes (CLO):

At the end of this course, the student would be able to

- CLO 1. Understand the concept of IT company professional
- CLO 2. Understand the soft and hard skill require for students.
- CLO 3. Understand to MNC level and entrepreneur culture as IT students

List Text Book:

20.Invaluable by Maya Grossman AIP Press, Springer

List of Reference Book:

14.Do the Work by Steven Press field

15. Getting things done by David Allen Print by Paperback

E-Resource / Web Links:

- <https://growthtactics.net>
- <https://quora.com>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO1	PSO2	PSO3
CLO1	L			M		H		L	H				L		H
CLO2		L	M			H			H		L			M	H
CLO3	L		M		L	H			M				M		H

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Financial Accounting using Tally
Course Code:	13-SEC108-2C
Pre-requisite Course:	Concepts of Financial Accounting Tally

Course Objective (CO):

This course is intended to make the students:

- designed to impart knowledge regarding concepts of Financial Accounting Tally
- An accounting package which is used for learning to maintain accounts.
- To focus on useful for Computer students to get knowledge in different companies in Accounts departments.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
-	-	4	2	-	-	25	25	50

Course Contents:

Sr. No.	Topics	Total Hours	Weightage (%)
1.	Fundamentals of Accounting: Introduction, Accounting Terms, Accounting Assumptions, Concepts and Principles, Mode of Accounting, Double Entry System of Accounting, Types of Accounts, Golden Rules of Accounting, Source Documents for Accounting.	5	10
2.	Fundamental of Tally : Downloading and Installation of Tally, Introduction to Tally Company Features & Configuration: Company Creation, Getting Started with Tally, Shut a Company, Select a Company, Alter Company Details, Getting functions with Tally.	5	10
3.	Chart of Accounts Creating Inventory Masters: Chart of Accounts, Ledger Creation, Group Creation, Deletion of Ledgers and Group, Creating Inventory Masters, Creation of Stock Group, Creation of Units of Measure, Creation of Stock Item, Creation of Godown, Stock Category.	6	10
4.	Introduction of Vouchers entry in Tally: Types of Vouchers, Chart of Vouchers, Accounting Vouchers, Inventory Vouchers, Invoicing.	5	10
5.	Generating Reports in Tally: Financial Statements, Trading Account, Profit & Loss Account, Balance Sheet, Accounts Books and Reports, Outstanding Statement.	5	10

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO 1: Understand and apply basic principles of accounting
- CLO 2: Understand double-entry system of accounts
- CLO 3: Understand the basic features associated with Tally
- CLO 4: Identify the key components of Tally
- CLO 5: Process and record the business transactions and manage the accounts information
- CLO 6: Creating and generating Reports in Tally.

List Text Book:

21. Mastering in Tally Prime (Author: Rakesh Sagwan).

List of Reference Book:

16. Tally Essential level 1, 2 and 3.

E-Resource / Web Links:

- <https://www.javatpoint.com/tally>
- <https://www.udemy.com/course/tally-erp-9-step-by-step-guide-to-accounting-with-tally/>
- <https://www.tutorialspoint.com/tally-erp-9-a-complete-course-for-beginners-to-advanced/index.asp>
- <https://tallysolutions.com/learning-hub/#gref>
- <https://www.tutorialkart.com/tally/tally-tutorial/#gsc.tab=0>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Perform a program to Creation of company, Select a Company name, Alter Company name, and Shut a Company.
2. Perform a program to Chart of Accounts.
3. Perform a program to create different Ledgers, Alter Ledgers, Deletion of Ledgers.
4. Perform a program to Creating Inventory Masters.
5. Perform a program to Creation of Stock Group, Creation of Units of Measure, Creation of Stock Item, Creation of Go down, Stock Category
6. Perform a program to create single and multiple groups.
7. Perform a program to create account, Purchase and sales vouchers.
8. Perform a program to create inventory vouchers.
9. Perform a program to generate invoice or Bill.
10. Generating Reports of Financial Statements, Trading Account, Profit & Loss Account, Balance Sheet, Accounts Books and Reports, Outstanding Statement

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CLO1				H	H		M						L		
CLO2	H			H	H		M			M	M		M	L	M
CLO3				M	H								M		
CLO4	H				H								M		
CLO5				H	H	H	M	M	M		H		M	M	H
CLO6				H	H	H	M	M	M		H		M	M	H

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Vedic Mathematics
Course Code:	13-IKS109-2C
Pre-requisite Course:	Basic understanding of elementary arithmetic and algebra concepts

Course Objective (CO):

This course is intended to make the students:

- To promote Indian Mathematics.
- Develop mental math skills through Vedic techniques, empowering students to perform calculations mentally and rapidly without relying on external aids.
- Improve clarity on mathematical concepts.
- Develop analytical thinking through Vedic Mathematics.
- Cultivate the ability to apply Vedic Mathematics principles to solve diverse mathematical problems.
- Extend Vedic principles to algebraic expressions and equations.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	-	2	25	25	-	-	50

Course Contents:

Sr. No.	Topics	Total Hours	Weightage (%)
1.	Introduction to Vedic Mathematics: Introduction to Vedic Mathematics, Applications of Vedic Mathematics, theory of numbers, Algebraic Operations, mathematical computation, Basic of calculus, coordinate system theory.	5	10
2.	Vedic Sutras and Principles: Explanation of fundamental Vedic sutras (aphorisms) and their applications, Application of sutras to arithmetic operations: addition, subtraction, multiplication, and division, Principles of Vedic mathematics, 16 sutras, high speed multiplications, faster division, Math meditation- doing math calculation without pen & paper, Divisibility, calendars.	6	10
3.	Algebraic Applications: Algebra, linear, simultaneous, quadratic & miscellaneous equations, Accelerated addition, instant subtractions, Squares, cubes, square roots, cube roots, digital roots.	6	10
4.	Theorem and proof: Pythagoras theorem, Statement and proof of the theorem in both geometric and algebraic forms, Understanding the relationship between the sides of a right-angled triangle, Understanding the concept of recurring decimals, Determinants, triples, Relationship between recurring decimals and infinite series, Limitations and rounding errors in calculations with recurring decimals.	3	10
5.	Geometry and Trigonometry in Vedic Mathematics : Vedic techniques for geometric constructions and proofs, Trigonometric concepts in Vedic Mathematics, Applications of Vedic methods to solve problems in geometry and trigonometry, Coordinate geometry, Calculus.	3	10

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO 1: Develop an understanding of the applications of Vedic Mathematics in various fields.
- CLO 2: Master efficient mathematical computation techniques using Vedic principles.
- CLO 3: Comprehend the principles of Vedic Mathematics and its 16 sutras.
- CLO 4: Understand and prove the Pythagorean Theorem in both geometric and algebraic forms.
- CLO 5: Apply Vedic methods to solve problems in geometry and trigonometry.

List Text Book:

1. "Vedic Mathematics" by Swami Bharati Krishna Tirtha and V. S. Agrawala.
2. "Vedic Mathematics for Schools (Book 1)" by J.T. Glover.
3. "Speed Mathematics Simplified" by Edward Stoddard.
4. "The Magic of Mathematics: Discovering the Spell of Mathematics" by M. P. Kularia.
5. "Discover Vedic Mathematics: A Practical System to Sharpen Your Mind, Speed Up Your Mathematical Calculations, and Become a Genius" by Kenneth Williams.

List of Reference Book:

1. "The Pythagorean Proposition" by Elisha Scott Loomis.
2. "Geometry and Trigonometry for Calculus" by Peter H. Selby.
3. Vedic Mathematics: My Four Books Compilation" by Vedic Math Guru.
4. "Coordinate Geometry" by S.L. Loney.
5. "The Cosmic Calculator Course - Vedic Mathematics: A Five-Step Method to Improve Your Speed, Memory, and Intelligence" by Kenneth Williams.

-Resource / Web Links:

- <https://www.vedicmaths.org/resources/books/free>
- <https://www.quora.com/What-are-the-best-sources-to-learn-vedic-mathematics-online-books-videos-etc>
- <https://www.vedicmaths.org/resources/books/e-books>
- https://en.wikipedia.org/wiki/Vedic_Mathematics

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO1 2	PSO 1	PSO 2	PSO 3
CLO1	L		M	M	L		M	M			M		L		
CLO2	L	M		H	M	M	M		M				L		
CLO3			L	M	M	M	L	M			L	L		M	
CLO4		M	M	L		H	M	L	M				M	M	
CLO5	L		M	L	M	H	M		M		L	L	M	M	

H: High, M: Medium, L: Low