A.T.S.S.'s
College of Business Studies and Computer Applications
Chinchwad, Pune 19
(Affiliated to SavitribaiPhule Pune University, Recognized by Govt. of Maharashtra , Accredited by NAAC)
Academic Year 2019 – 20
Program: BSc (Computer Science)
Department of Computer Science & Applications

Program: BBA (Computer Application)

Program Outcomes (PO)

PO1: Apply knowledge of computing fundamentals, mathematics and domain knowledge Appropriate for the conceptualization of computing models. (Computational Knowledge).

PO2: Identify, analyze, formulate, Design and develop the real world requirements by critical Thinking for complex problems in IT enabled services. (Critical Thinking & problem Solving approach)

PO3: Recognize the need and adopt appropriate tools and techniques for modern computing Practices. (Usage of modern tools)

PO4: Make use of ethical practices and cyber regulations in the computing field for Managing software projects in diverse environments. (Ethics & Management)

PO5: Understand the societal, environmental and moral values and its impact with respect to Computing, communication, literary and professional practice.(social responsibility)

PO6: Communicate effectively with society at large, such as, being able to comprehend and Writeeffective reports, design documentation and make effective presentations.(communication & team work)

P07: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change (Life long learning)

PEO – Program Educational Objectives:

1. To produce skill oriented human resource.
2. To import practical skills among students.
3. To make industry ready resource.
4. To bring the spirit of entrepreneurship.

F. Y. BBA(CA)

Semester I

COURSE: BUSINESS COMMUNICATION SKILLS (CA-101)

Course Objectives:
1 To understand what is the role of communication in personal and business world
2. To understand system and communication and their utility
3. To develop proficiency in how to write business letters and other communications.

At the end of the course following outcome is expected:

	COURSE UNIT DESCRIPTION	OUTCOME
CO1	Concept of Communication	Apply communication theories. Show an understanding of opportunities in the field of communication.
CO2	Methods and types of Communication	Demonstrate critical and innovative thinking. Display competence in oral, written, and visual communication
CO3	Business Correspondence	Use current technology related to the communication field. Demonstrate positive group communication exchanges

Course: Principles of Management(CA-102)

Course Objectives :
1.To understand basic concept regarding organization business administration
2.To examine how various management principles.
3.To develop managerial skills among the students.

At the end of the course following outcome is expected :

	Course unit Description	Outcome
CO1	Nature of management	To learn basic aspects of management thinking Develop ability of managerial thinking & cultivate business acumen
CO2	Evolution of management thought	To understand different approaches of management scientist to management thought & philosophy To help to understand various approaches of management thinking
CO3	Major managerial functions	To understand different functions of management & their roles. Develop ability to organise various programs & events.
CO4	Recent trends in management	To understand the themes in modern management & changes in the business

		To learn about new systems of management.

Course: C Language(CA- 103)

Course Objectives:

- To understand algorithmic thinking and apply it to creating C programs.
- To write user defined function for effective programming.
- To understand and manipulate arrays.
- To understand the concepts of passing arrays to functions and pointers.
- To write C program for simple real time applications using structures and files.

Ability to handle possible errors during program execution:

	Course unit Description	Outcome
CO1	Introduction	To Explore algorithmic and flowchart approaches to problem solving.
CO2	Managing I/O Operations	To Familiar with Fundamentals
CO3	Decision Making and looping	Developing Conditional and Iterative statement
CO4	Programs through conditional and looping statements	Practice on Program to develop logical thinking.
CO5	Arrays and Strings	Ability to work with Advance concept-arrays, Strings
CO6	Functions	Understanding a concept of functional: Modular concept.
CO7	Introduction to pointer	Ability to work with Pointerin c.
CO8	Structures	To learn User define datatype: structure, union

Course:DBMS (DATABASE MANAGEMENT SYSTEMS (CA-104)

Course Objectives:

1) This course provides an introduction to the relational model. We will cover basic relational database design, conceptual data modeling practices, some relational database management system , operation and fundamental Structured Query Language (SQL)

2. Enables students to understand relational database concepts and Normalization concepts in database system.

3. Enables student to write SQL Simple Queries and Nested Queries that use DDL and DML command.

	Course unit Description	Outcome

CO1	File Structure and Organization	1) To understand the file structure and its organization.
CO2	Database Management System	1) Students get the knowledge of Relational Database concepts which is the basic requirements of every organization.
CO3	Relational Model	1)Give a description of the Database Management structure.
CO4	SQL (Structured Query Language)	1) Students are able to Compare relational model with the Structured Query Language (SQL)
CO5	Relational Database Design	1) Students are able to Normalize the complex data into simple tables.

Course: Statistics (CA-105)

Course Objectives:

1. To understand role and importance of statistics in various business situations
2. To develop skills related with basic statistical technique
3. Develop right understanding regarding regression, correlation and data interpretation

	Course unit Description	Outcome
CO1	Concept of statistics.	• Explains the history, definition and scope of Statistics . • Differentiates population and sample.
CO2	Measures of central tendency and dispersion	• Recognizes central tendency and various measures of central tendency • Explains and evaluates various measures of central tendency.
CO3	Measures of Dispersion :	• Recognizes the importance of measuring dispersion. • Explains and evaluates the measures of dispersion-Range, Quartile deviation, Mean deviation, Standard deviation.
CO4	Correlation and Regression	• Concept of correlation, positive & negative correlation, Karl Pearson's Coefficient of correlation • Meaning of regression, two regression equations, Regression coefficients and properties.

Course: Principles of Programming and Algorithm (107) :

Course Objectives:

1 .To use modular programming approach in diversified problem domains.
2. To use programming logic for solving real world problems.
3. To decide effectiveness of computer based solutions.

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	Course unit Description	Outcome
CO1	Unit 1: Algorithms	• Will understand importance of algorithm, program development cycle, how programs are been developed sequentially with help of algorithm.
CO2	Unit 2: Flowchart	• Student will be able to show .detail designing of algorithm and flow of programs with the help of flowchart
CO3	Unit 3: Function	• Student will be able to understand the use of function, library function and recursion with its syntax
CO4	Unit 4: Array	• To understand definition, characteristics and types of array .

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Semester II

Course: Organizational Behavior & HumanResource Management (OB & HRM) (CA -201)

Course Objectives:

On successful completion of this course, the student/learner will be able to

	Unit 1	Course outcome
CO1	Introduction to OB	Students should be able to understand the basic concept of OB and to will also acquaint about major trends in OB
CO2	Introduction to HRM	After completion of this unit students should be able to get basic knowledge of HRM practices carried out in today's scenario.
CO3	Procurement	After completion of this unit students would know the process of recruitment and selection of employees in an organization.
CO4	Training & Development	With this unit students know the training and development methods and evaluation of employees skills in organization.

Course: Financial Accounting (CA-202)

Course Objectives:

i) Todeveloprightunderstandingregardingroleandimportanceofmonetaryandfinancialtransactionsin business

ii) Tocultivaterightapproachtowardsclassificationsofdifferenttransactionsandtheirimplications

iii) To developproficiencypreparationofbasicfinancialastohowtowritebasisaccountingstatement-TradingandP&L.

At the end of the course following outcome is expected:

	Course Unit Description	Outcome
CO1	Financial Accounting- definition and Scope, objectives, Accounting concepts, principles and conventions	• understand role and importance of accounting in Business and how accounting concept can be implemented in business • Computation ability in business ability to distinguished between various accounting concepts and practices
CO2	Voucher system; Accounting Process, Journals, Ledger, Cash Book , subsidiary books ,Trial Balance preparation of Final Accounts of Sole Proprietorship(Trading and Profit & LossAccount and Balance Sheet	• To understand how to record different financial transactions and their financial implications • Ability to write different accounting tractions and prepare basic financial tractions
CO3	Meaning, importance and preparation of Bank Reconciliation Statement	• To understand the kind of accounting relationship between customer and bank. • Ability to write necessary set of entries in books of accounts and in cash book and compare them with bank statement to understand their implications andeffect.
CO4	Computerized Accounting- Role of computers and Financial application, Accounting Software packages	• Ability to understand growing importance of software and to know how to use software and to write books of accounts Ability to use software like tally for writing of accounts

Course: Business Mathematics (CA-203)

Course Objectives:

- To develop appropriate understanding as how to use mathematic like computation interest, profit, percentage etc.
- To develop appropriate model for estimation of profit. Applying ratio to interpreted and evaluate financial data collection of 5 years reports of varies companies for analysis. .

- To cultivate right understanding regaining numerical aptitude.

Course Outcomes:

Course Outcomes(CO)/Learning Outcomes On successful completion of this course, the student/learner will be able to

	Course unit Description	Course Outcome
CO1	Ratio, Proportional and Percentage	To apply the various concepts in business situation.
CO2	Profit and loss	To examine concept of discounts in different business solutions.
CO3	Interest and AnnuityShares and Mutual Fund	To work with simple and compound interest, annuities, invoice preparation, trade discounts, taxes, and depreciation problems in various.
CO4	Matrix and Determinant	To perform the matrix operations
CO5	Linear programming Problem	To develop linear programming (LP) models.
CO6	Transportation Problem	To understand the mathematical tools that are needed to solve optimization problems using mathematical software to solve the proposed models.

Course: RELATIONAL DATABASE (CA-204)

Course Objectives:

1) This course provides an introduction to the relational model. We will cover basic relational database design, conceptual data modeling practices, some relational database management system, operation and fundamental Structured Query Language (SQL)
2. Enables students to understand relational database concepts and Normalization concepts in database system.
3. Enables student to write SQL Simple Queries and Nested Queries that use DDL and DML command.

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Introduction To RDBMS	• Understanding of various RDBMS products • Use of relational database • To get knowledge of Front End and Backend • Helps student to learn different types of data models

CO2	Overview of PLSQL	• To understand variousdata types , operators functions and control statements • Students get the knowledge of Relational Database concepts which is the basic requirements of every organization.
CO3	Transaction Management	• Understanding use of transaction and effect on database • Application of properties • Understanding of various states.
CO4	Concurrency Control & RecoverySystem	• To understand concept of concurrency control and recovery system. • To understand various concepts of it based on real life examples.

Course: Web Technology(HTML- JS-CSS) (CA-205)
Course Objectives:

i) To know & understand concepts of internet programming.
ii) To understand how to develop web based applications using JavaScript.

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	1. Introduction	Learn client and server, HTTP, FTP, IP protocols, WWW, Response and Request mechanism.
CO2	Web Design	Details how to design a website its look and feel, its planning etc.
CO3	HTML	All html tags and how to create webpage using html.
CO4	Style Sheets	CSS in detail with its implementation for creating website.
CO5	JavaScript	Understand how to develop web based applications.

S. Y.
BBA(CA)
Semester III

Course: Digital Marketing (CA-301)

Course Objectives:

1) The aim of this syllabus is to give knowledge about using digital marketing in and as business.
2) To make SWOT analysis, SEO optimization and use of various digital marketing tools.

At the end of the course following outcome is expected

	Course unit Description	Outcome
CO1	**Unit :1 E-Commerce**	1) Helps the students to get to Know about Ecommerce Concept 2) Understanding what is Internet Marketing
CO2	**Unit :2 Introduction to New Age Media (Digital) Marketing**	1) Students get the knowledge of What are Digital Marketing concepts which is the basic requirements of every organization when it targets a new Group. 2)Students Get an Knowledge for Doing Project and understanding the flow of System and to attract the audience.
CO3	**Unit :3 Creating Initial Digital Marketing Plan**	1) Students get the knowledge of Various Keys supports of SWOT analysis: Strengths, Weaknesses, Opportunities, and 2) Threatsand how to write various quires using Relational algebra concepts.
CO4	**Unit :4 Marketing using Web Sites**	1) Give the detail description on Optimization of Web sites and why it is necessary 2) Explained how MS Expression Web works and what are various uses
CO5	**Unit :5 Search Engine Optimization**	Students are able to understand the concept of SEO Optimization and what are essential factors involved in it and how to write the SEO along with its importance in Digital world.
CO6	**Unit :6 Customer Relationship Management**	1) Students are able to understand the concept of Introduction to CRM 2) Give details description of what is CRM platform and how it is helpful in Digital Marketing. 3) Explained various stages of CRM models And CRM strategy regarding it.
CO7	**Unit :7 Social Media Marketing**	1) Understanding Social Media Marketing Social Networking. 2) Understanding the concepts of Web analytics – levels 3) Understanding the different Modes of Social Media Marketing and how actually it works
CO8	**Unit : 8 Digital Marketing Budgeting**	Understanding the Resource planning And in terms of Cost estimating, Cost budgeting, Cost control

Course: Data Structure(CA-302)

Objectives:

1. To understand the concepts of ADTs
2. To learn linear data structures – lists, stacks, and queues
3. To understand sorting, searching and hashing algorithms
4. To apply Tree and Graph structures

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Unit 1: Basic Concept and Introduction to Data Structure	1) To understand need and types of data structure. Ability to analyze algorithms and algorithm correctness.
CO2	Unit 2: Linear Data Structure	1)To understand and implement different searching and sorting techniques
CO3	Unit 3: Linked List	1) To learn linear data structure linked list and solution for specific problems.
CO4	Unit 4:Stack	1) To learn linear data structure stack and solution for specific problems.
CO5	Unit 5:Queue	1) To learn linear data structure queue and solution for specific problems.
CO6	Unit 6:Trees	1) To learn Non-linear data structure trees and solution for specific problems.
CO7	Unit 7:Graph	1) To learn Non-linear data structure graph and solution for specific problems.

Course: Software Engineering (CA-303)

Course Objectives:

1. To Understand System Concepts.
2. To Understand Software Engineering Concepts.
3. To Understand the application of Software Engineering concepts and design in software Development

At the end of the course following outcome is expected:

	Course unit Description	**Outcome**
CO1	Unit 1: Introduction to System Concepts	• Basic knowledge and understanding of the analysis and design of complex systems.
CO2	Unit 2: Introduction to Software Engineering	• Understand the need of software , types of Software and the main use of Software Engineering.
CO3	Unit 3: System Development Life Cycle (SDLC)	• Gain ability to design, develop,evaluate,test and maintain large-scale software systems and understood process models used in software

		Engineering.
C04	Unit 4 :Requirements Engineering	• Understandrequirements Engineering Tasks and Requirements of Engineering Process
CO5	Unit 5:Analysis and Design Tool	• Understood Designing and implement data flow analysis, Decision tress, Structure chart and diagram and data dictionary.
CO6	Unit 6:Software Testing	• Understood the Software Testing Process and different types of testing.
CO7	Unit7:Software Maintenance	• Ability to do maintenance of software and understood different types of maintenance , Reverse Engineering and Restructuring and forward Engineering

Course: PHP (CA-304)
Course Objectives:

1. Understand how server-side programming works on the web.
2. Using PHP built-in functions and creating custom functions
3. Understanding POST and GET in form submission.
4. How to receive and process form submission data.
5. Read and process data in a MySQL database.

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Unit 1 :PHP Basics	1) Give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies. 2)Giving introduction about Clients- Servers and Communication & Web server and Web browser 3) Introduction to develop dynamic web pages by using server side scripting language PHP.
CO2	Unit 2: Control Structures and Loops	1) Understood Control Structures and Loops
CO3	Unit 3 :Functions, Objects and Errors	1) Learn different functions & string built in functions and class concept in php.
CO4	Unit 4: Working with Forms	1)Understood POST and GET in form submission
CO5	Unit 5: More with Forms	Learn to retrieve values from form, validation of form and Email handling programming.

CO6	Unit 6: Storing and Protecting Data	Learn to receive and process form submission data using cookies and Session.
CO7	Unit 7 :Database Overview	Learn to Read and process data in a MySQL database and explain differentadvanced database techniques.

Course: Big Data (CA - 305)

Course Objectives

1. To enable learners to develop expert knowledge and analytical skills in current anddeveloping areas of analysis statistics, and machine learning
2. To enable the learner to identify, develop and apply detailed analytical, creative, problem solving skills. 3. Provide the learner with a comprehensive platform for an career development, innovation and further study.

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Unit 1: INTRODUCTION TO BIG DATA	1) To enable students to know about Big data and difference between big data and traditional data. 2) To know about application area of big data.
CO2	Unit 2: INTRODUCTION TO DATA SCIENCE	1) Understood data science and skill set required by data scientist. 2) Understood data analytics details and statistical model.
CO3	Unit 3:INTRODUCTION TO MACHINE LEARNING	1) Understood basics of machine learning. 2) Understood various algorithms.
CO4	Unit 4:DATA ANALYTICS WITH R/ WEKA MACHINE LEARNING	1) Understood Data analytics tools. 2) Demonstration of WEKA tool.

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Semester IV

Course: Networking (CA-401)

Course Objectives:

1. To prepare students with basic networking concepts: data communication, protocol and standards, various topologies and applications of network.
2. To know about computer network.
3. To understand different topologies used in networking
4. To learn different types of network.
5. To understanding the use of connecting device used in network.
6. Learn how computer network hardware and software operate

7. Investigate the fundamental issues driving network design
8. Learn about dominant network technologies.

At the end of the course following outcome is expected :

	Course unit Description	Outcome
CO1	Introduction to Computer Network	1) Students can get job as a Network Administrator in any organization. 2) This subject has wide scope in every MNC's as Networking is required everywhere.
CO2	Network Models	1)Able to explain various terminologies and concepts related to Network Models 2)Identify the different types of network topologies and protocols
CO3	Transmission Media	2) Understand the concept of reliable and unreliable transfer protocol of data and how TCP and UDP implement these concepts, to understand the client/server model and socket API with their implications, skills to implement a network protocol based on socket programming.
CO4	Wired and Wireless LANs	Understand connecting LAN's, backbone networks, and virtual LAN's. Students should understand operations of Able to compare and contrast the data transmission modes: serial and parallel as well as synchronous, asynchronous, and isochronous with relevant examples. bridges and the spanning tree algorithm.
CO5	Network Devices	Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
CO6	Network Security	Can effectively discuss that bandwidth utilization is goal-oriented and involves trade-offs by showing that multiplexing (TDM, FDM, WDM) efficiently use bandwidth while spread spectrum inefficiently use bandwidth to ensure privacy and anti-jamming.

Course: Object Oriented Concept Through Cpp (CA-402)

Course Objectives:

1. To acquire an understanding of basic object-oriented concepts and the issues involved ineffective class design.
2. To understand the concept of data abstraction and encapsulation.
3. To Enables student to write C++ programs that use: object-oriented concepts such asinformation hiding, constructors, destructors and inheritance.

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Introduction to C++	• Students will understand the features of C++supporting object-oriented programming, concept and application of OOP
CO2	Beginning with C++	• Understanding the basic concepts,Implementation and build models in C++. • Understanding the implementation of user define function.
CO3	Classes and Objects	• Understanding concept of classes and objects. • Understand to build/ produce object-oriented software using C++ through classes and object.
CO4	Constructor and Destructor	• To know about constructor and destructor. • Understand to develop application using constructor.
CO5	Inheritance	• Understand how to apply inheritance to implement programs in C++. • To know different types of inheritance.
CO6	Polymorphism.	• Understand how to apply polymorphism to implement programs in C++. • To know different types of polymorphism.
CO7	Managing console, I/O operations	• Understand advanced features of C++ specifically stream I/O and templates.
CO8	Working with Files	• Understand how to handle files. • To know how to perform various operations on file.
CO9	Template	• Understand advanced features of C++ template. • To know how to create template.

Course: **Operating System(CA-403)**

Course Objectives:

1. Issues related to memory management and various related algorithms.
2. To understand design issues related to File management and various related algorithms
3. To know the services provided by Operating System
4. To know the scheduling concept
5. To understand design

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	**Introduction to Operating System**	• Explain the fundamental components of a computer operating system.
CO2	**System Structure**	• Study structure of operating system.
CO3	**Process Management**	• Define, restate, discuss, and explain the policies for scheduling. • Define states of process management.
CO4	**CPU Scheduling**	• Understand various queues in process execution. • How CPU get allocated for process execution using various algorithms like fcfs, SJF, Priority, round robin.
CO5	**Process Synchronization**	• Understand the process management policies and scheduling of processes by CPU. • Understand the critical section problem along with semaphore.
CO6	**Deadlock**	• To Define, restate, discuss, and explain the concept of deadlocks in real life. • To Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system
CO7	**Memory Management**	• Calculate efficiency of different memory management.
CO8	**File System**	• To define, restate, discuss, and explain the policies for file systems.
CO9	**I/O System**	• To define, restate, discuss, and explain the policies for I/O systems.

Course: **Advance PHP (CA-404)**

Course Objectives:

1. To know & understand concepts of internet programming.
2. Understand how server-side programming works on the web.
3. Understanding How to use PHP Framework (Joomla / Druple)

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Introduction to Object Oriented Programming in PHP	• Understand OOP concept of visibility, inheritance and interface
CO2	Web Techniques	• Study about processing form.
CO3	XML	• Understand concept of XML. • Define document object model and XML extension.
CO4	Ajax with PHP	• Learn Ajax basic script • Learn how to connect with database using Ajax and PHP
CO5	Introduction to Web Services	• To understand core building block of web services.
CO6	PHP Framework (Joomla / Druple	• To define, restate, discuss, and explain the concept of deadlocks in real life. • To Understand PHP framework and MVC architecture.

Class:TYBBA(CA)
Semester:V

Course: Cyber Security CA-501
Course Objectives:

- To introduce the object oriented programming concepts.
- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls

	Course Unit Description	**Outcome**
CO1	Introduction to Cyber Crime and Cyber Security	Have a good understanding of Cyber Security and the Tools.
CO2	Cyber offenses and Cyberstalking	Identify the different types of Cyber Crimes.
CO3	Tools and Methods Used in Cybercrime	Have a good understanding of Cyber laws
CO4	Cybercrimes and Cyber security: The Legal Perspectives	Have a good understanding of Cyber laws
CO5	Cyber Forensics	To develop Cyber forensics awareness.
CO6	Cybersecurity: Organizational Implications	Identify attacks, security policies and credit card frauds in mobile and Wireless Computing Era
CO7	Cybercrime: Illustrations, Examples and Mini-Cases	Identify attacks, security policies and credit card frauds in mobile and Wireless Computing Era

Course: Object Oriented Software Engineering: CA-502
Course Objectives

1. To understand the fundamentals of object modeling
2. To understand and differentiate Unified Process from other approaches.
3. To design with static UML diagrams.
4. To design with the UML dynamic and implementation diagrams.
5. To improve the software design with design patterns.

6. To test the software against its requirements specification.

	Course Unit Description	**Outcome**
CO1	Introduction and basics of Software Modelling	To design with the UML dynamic and implementation diagrams.
CO2	SRS Documentation	To understand and differentiate Unified Process from other approaches.
CO3	Introduction to UML	Students will be able to give Design Specifications for Project.
CO4	Object Oriented Concepts and Principles	To design with static UML diagrams.
CO5	Structural Modeling	Students will acquire Knowledge in Basic Modeling.
CO6	Basic Behavioural Modeling	To design with the UML dynamic and implementation diagrams.
CO7	Architectural Modelling	To improve the software design with design patterns
CO8	Object Oriented Analysis	To improve the software design with design patterns
CO9	Object Oriented Design	To test the software against its requirements specification.

Course Name: Core Java CA-503

Course Objectives:

- To introduce the object oriented programming concepts.
- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls.

	Course Unit Description	**Outcome**

CO1	Java Fundamentals	Understanding the basic fundamentals and important terminologies of java.
CO2	Classes, Objects and Methods	Understanding how to create classes and objects
CO3	Inheritance, Package and Collection	Understanding newnew functionalities like Interface, Packages etc. and Get detailed knowledge of collection, map, Iterator etc.
CO4	File and Exception Handling	Understand exception and file handling in detailed
CO5, CO6	Applet, AWT, Event and Swing Programming	Understanding how to create small internet applications using applet and know how to create GUI in java using AWT and Swing

Course: Python 504
Course Objectives:

1. To learn and understand Python programming basics and paradigm.
2. To learn and understand python looping, control statements and string manipulations.
3. Students should be made familiar with the concepts of GUI controls and designing GUI applications.
4. To learn and know the concepts of file handling, exception handling

	Course Unit Description	**Outcome**
CO1	Introduction to Python	Understand Python programming basics and paradigm.
CO2	Modules and Packages	Understand python looping, control statements and string manipulations.
CO3	Classes ,Objects and Inheritance	understand Python programming basics and paradigm
CO4	Exception Handling	concepts of file handling, exception handling.
CO5	GUI Programming	GUI application and how to handle exceptions and files.
CO6	Python Libraries	Students should be made familiar with the concepts of GUI controls and designing GUI applications.

Course Code: 506
Course: Computer Laboratory Based on 503 and 504(2 credits each)

	Outcome
CO1	Use the concepts of Python or MongoDB to develop applications.
CO2	Apply the concepts of core JAVA Programming for problem solving
CO3	Demonstrate his theoretical knowledge practically in computer laboratory.

SEM V I

TYBBA(CA)

Course: Recent Trends in IT (CA-601)

Course Objectives
1. To introduce upcoming trends in Information technology.
2. To study Eco friendly software development concepts.
3. To provide a strong foundation of fundamental concepts in Artificial Intelligence.
4. To evaluate the performance of various data mining task.
5. To understand Data analytics using Spark Programming.

	Course Unit Description	**Outcome**
CO1	Introduction to recent trends	To introduce upcoming trends in Information technology.
CO2	Artificial Intelligence	To discuss the basic concepts AI
CO3	AI Search Techniques	To provide a strong foundation of fundamental concepts in Artificial Intelligence.
CO4	Data Warehousing	To apply basic, intermediate and advanced techniques to mine the data
CO5	Data Mining	To evaluate the performance of various data mining task
CO6	Spark	To provide an overview of the concept of Spark programming.

Course: Software Testing(CA-602)

Course Objectives:

1. To provide learner with knowledge in Software Testing techniques.
2. To understand how testing methods can be used as an effective tool in providing quality assurance for software.
3. To provide skills to design test case plan for testing software

	Course Unit Description	**Outcome**
CO1	Introduction	To provide learner with knowledge in Software Testing techniques.
CO2	Approaches to Testing –Testing Methods	Students will be introduced to testing tools.
CO3	Software Testing Strategies &Software metrics	To understand how testing methods can be used as an effective tool in providing quality assurance for software.
CO4	Software metrics	To provide skills to design test case plan for testing software
CO5	Testing for Specialized Environments	Students will acquire Knowledge of Basic SQA.
CO6	Testing Tools& Software Quality Assurance (Introduction)	Students will be able to design basic Test Cases.

Course: Advanced Java(CA-603)

Course Objectives

1. To know the concept of Java Programming.
2. To understand how to use programming in day to day applications.

	Course Unit Description	**Outcome**
CO1	JDBC	Students will know the concepts of JDBC Programming
CO2	Multithreading	Students will know the concepts of Multithreading and Socket Programming.
CO3	Networking	Students will know the concepts of Spring and Hibernate
CO4	Servlet and JSP	Students will develop the project by using JSP and JDBC
CO5	Spring & Hibernate	Students will develop applications in Spring and hibernate.

Course: Android Programming (CA-604)

Course Objective:

1. To understand the Android Operating System and develop applications using Google's Android open source platform.

2. To understand the issues relating to Wireless applications

	Course Unit Description	**Outcome**
CO1	Introduction to android programming	Demonstrate their understanding of the fundamentals of Android operating systems
CO2	Activity, intent and layout	Demonstrate their skills of using Android software development tools
CO3	Basic UI design	Student will be able to write simple GUI applications, use built-in widgets and components, work with the database to store data locally, and much more
CO4	Adapter and menu	To understand the issues relating to Wireless applications.
CO5	Threads and notification	Student will able to understand use of threads and notifications
CO6	Content provider	Student will able to understand working of content provider
CO7	Location based services and google map	Students will understand issues relating to Wireless applications.

Course: Computer Laboratory based on 603 and 604(2 credits each)

	Outcome
CO1	Apply the knowledge of Android Programming for app development
CO2	Use the concepts of JDBC for Database connectivity
CO3	Apply the concepts of Adv JAVA for distributed applications and problem solving
CO4	Demonstrate theoretical knowledge practically in computer laboratory.

TYBBA(CA)

SEMISTER VI

Course: Advanced Web Technology (601)
Course Objectives:
1. To know & understand concepts of internet programming.
2. To understand the concepts of XML and AJAX.

At the end of the course following outcome is expected:

	Course unit Description	Outcome
CO1	Introduction to Object Oriented Programming in PHP	Explain class, object, inheritance & interface concepts in php.
CO2	Web Techniques	1) Giving introduction about Clients- Servers and Communication & Web server and Web browser 2) Introduction to develop dynamic web pages by using server side scripting language PHP. 3) Explain cookie and session handling.
CO3	Databases	**1)** Introducing PHP and MYSQL database connectivity **2)**Explain differentadvanced database techniques
CO4	XML	Learn styling, formatting and various XML parsers
		used for websites.
CO5	Web services	Explain concept of Web service.
CO6	Ajax	Design of dynamic and interactive web sites 2) Use of advanced web techniques to build effective web pages. 3)Students learn various recent web technologies viz. PHP, XML, AJAX etc used for client side and server side scripting

Course : Advanced Java old pattern

Course Objectives :
1 To know the concepts of java programming.
2. To understand how to use programming in day to day application.
3. To develop programming logic.

At the end of the course following outcome is expected :

	Course unit Description	Outcome
CO1	JDBC	To understand database connectivity with MS access and SQL server.
CO2	Networking	To understand client server technology.
CO3	JSP	To understand creation of dynamic web pages.
CO4	Servlet	To understand creation of dynamic web pages through server.
CO5	Multithreading	To understand concepts of thread and develop application using multithreading.
CO6	Java Beans	To introduce Java beans and Beans Development Kit.
CO7	RMI	To introduce RMI, Stubs and Skeleton

Course : Recent Trends in IT
Course Objectives :
1. To introduce upcoming trends in Information technology.
2. To study Eco friendly software development.

At the end of the course following outcome is expected

	Course unit Description	Outcome
CO1	Software Process And Project Metrics, Analysis Concepts AndPrinciples	To study Eco friendly software development.
CO2	Distributed Databases	Main objective is to understand the principles

		and foundations of distributed databases.
CO3	Data Warehouse	To learn architecture of Data Warehouse
CO4	Network Security	To understand data security and its importance
CO5	Computing and Informatics	To learn concept of cloud computing.

Course: Sofware Testing (604)

Course Objectives:-

1. To know the concept of software testing.
2. To understand how to test bugs in software.
3. To develop programming logic.

At the end of the course following outcome is expected

	Course unit Description	Outcome
CO1	Software Testing	Fundamentals of testing
CO2	Approaches to Testing - I	Types of testing in details
CO3	Testing for Specialized Environments	Able to test on GUI's and all real time systems
CO4	Software Testing Strategies &Software metrics	Types of testing in details
CO5	Specialized Testing & Testing	ble to do testing with Tools.