B.Voc(SoftwareDevelopment)

PO1: Improve their computer literacy, their basic understanding of operative systems and a working. Knowledge of software commonly used in academic and professional environments.

PO2: Do Academic and Professional Presentations - Designing and delivering an effective presentation and developing the various IT skills to the electronic databases.

PO3: Use the Systems Analysis Design paradigm to critically analyze a problem. Solve the problems (programming networking database and Web design) in the Information Technology environment. Function effectively on teams to accomplish a common goal and demonstrate professional behaviour.

PO4: Develop IT-oriented security issues and protocols. Design and implement a web page.

PSO1: Understand analyse and develop computer programs in the areas related to web design, mobile application design.

PSO2: Apply standard software engineering process and strategies in software project development using open source programming environment to deliver a quality product for business success.

PSO3: Acquaintance with latest trends in software development and thereby innovate new ideas in the area of software development.

PSO4: Conceptual grounding in computer usage as well as its practical business applications.

PSO5: To demonstrate advanced skills in the effective analysis design and realization of business system utilizing contemporary information technology.

COURSE OUTCOMES

COURSE NAME: Fundamentals of Information Technology

CLASS - B.Voc(SD)   SEMESTER – I

Objectives of Course:
- Making the students understand and learn the basics of computer how to operate it.
- To make familiar with the part and function of computer , its types , how to use computer in ourday to day life

- To know Its characteristics, its usage , Limitations and benefits etc.

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Course Outcomes
After studying this course, students should be able to:

- understand the fundamental hardware components that make up a computer's hardware and the role of each of these components
- understand the difference between an operating system and an application program, and what each is used for in a computer
- describe some examples of computers and state the effect that the use of computer technology has had on some common products
- Use systems development, word-processing, spreadsheet, and presentation software to solve basic information systems problems.
- Analyze compression techniques and file formats to determine effective ways of securing, managing, and transferring data.

COURSE NAME: Web Technology

CLASS - B.Voc(SD)   SEMESTER – I

Objectives of the Course:

- Understand the principles of web environment
- Become familiar with principles that relate to web design and learn how to implement these theories into practice.
- Develop skills in designing static and dynamic web pages .
- Learn the language of the web: HTML and CSS.
- Publish your website to the web

Course Outcome

After successful completion of the course students will be able to

- Use knowledge of HTML and CSS code and an HTML editor to create websites
- Use critical thinking skills to design and create websites.
- Create online forms
- Publish website to the web

COURSE NAME: Programming using C Language

CLASS - B.Voc(SD)   SEMESTER – I

Objectives:

- The primary goal is to develop the programming skills in C.
- To get good knowledge of procedural language approach so that students can make software in the later stage of their course.
- This will help the students to frame the real world modeling of data and its associated functions
- This course also aims to an understanding of various concepts of C with the help of which one can create its own data types that can be used globally in different program files.

Outcomes:

a) Knowledge and Understanding: On successful completion of this subject the students have the programming ability in C Language.
b) Intellectual Cognitive/ Analytical Skills: Enhancing Logical Thinking and Reasoning Skills through Collaborative Learning in C Programming.
c) Practical Skills: Students would be capable of developing various applications to solve deluge of real world problems. They can also learn to make system software as well as application software. These existing languages could become base for developing new languages which can inherent its features. On the backend of various embedded systems, these languages are deployed.
d) Transferable Skills: In many multinational companies they can work effectively in a group or team to achieve goals and can show initiative and leadership abilities.

Sem II

COURSE NAME: I Internet Applications
CLASS - B.Voc(SD)   SEMESTER – II
Objectives:

- The primary goal is to prepare students for full knowelege of internet its application and working of Internet
- To get good knowledge of internet protocol,working of all protocols
- Also you can learn how to design web pages in HTML practically.

Program Learning Outcomes:

(Knowledge and Understanding, Intellectual Skills, practical Skills, Transferable skills).

A. <u>Knowledge and Understanding</u>):

Students will
- know how to define internet, www, various protocols
- understand the working of internet
- are able to create email id and use it for sending online mails and attachments
- Students will understand and be able to describe the differences between internet and intranet.

B. <u>Intellectual(Cognitive/ Analytical) Skills</u>:

Students will be able to
- identify which medium and topology should be used for networking
- They will be able to judge which connection should they use for getting an internet at home or work.
- Browsing at high sped using keywords

C. <u>Practical Skills</u>

Students will learn to:
- Able to create HTML based web pages
- Dynamicity to web page using javascript.
- Create email ids
- Surf net using shortcuts.

D. <u>Transferable Skills</u> :

Students will be able to
- Create projects and earn money by selling them

COURSE NAME: Data Structure
CLASS - B.Voc(SD)   SEMESTER – II

Objective of the course:
1. To impart the basic concepts of data structures and algorithms
2. To teach efficient storage mechanisms of data for an easy access.
3. To design and implementation of various basic and advanced data structures.
4. To introduce various techniques for representation of the data in the real world.
5. To improve the logical ability
<u>Learning Outcomes:</u>

A. <u>Knowledge and Understanding:</u>

1. Define basic static and dynamic data structures and relevant standard algorithms for them: stack, queue, dynamically linked lists, trees, graphs, heap, priority queue, hash tables, sorting algorithms.
2. Demonstrate advantages and disadvantages of specific algorithms and data structures,
3. Select basic data structures and algorithms for autonomous realization of simple programs or program parts
4. Determine and demonstrate bugs in program, recognize needed basic operations with data structures
5. Formulate new solutions for programming problems or improve existing code using learned algorithms and data structures,
6. Evaluate algorithms and data structures in terms of time and memory complexity of basic operations.

B. **Intellectual Skills:**
1. Ability to define the computer science problems.
2. Ability to drive different solution alternatives for the computer science problems.
3. Ability to analyze the solution alternatives and choose the optimum one

C. **Practical Skills:**
Design, build and develop programs of varying levels of complexity.

D. **Transferable Skills:**
Knowledge of the concepts and material presented in this course will provide the students with the capability to:
1. Use data structures effectively to solve practical problems.
2. Write and present effective computer programs that employ efficient algorithms.
3. Work in stressful environment and within constraints.
4. Search for information and adopt life-long self-learning.

COURSE NAME: Object Oriented Programming
CLASS - B.Voc(SD)   SEMESTER – II

Objectives of the Course:

- To take review or tour of Programming in C and make aware of limitation of C, thereby need of the origin of C++.
- To impart knowledge in such a way that students should be able to use of concept of Object Oriented Programming Approach in their programming skills.
- To imbibe with the knowledge of implementation of various features of C++ i.e. concept of Object, Object communication, Encapsulation, Data hiding, overloading, inheritance, polymorphism etc.
- To raise programming level of students in C++ to be able to apply in the real life.

Program Learning Outcomes:
(Knowledge and Understanding, Intellectual Skills, practical Skills, Transferable skills).
Learning Outcomes:
A. Knowledge and Understanding:
Students will be

- Able to know how to do programming in C++ environment.
- Able to understand and implement the concepts of object oriented approach using C++.
- Able to acquire in depth knowledge and develop software in C++

B. Intellectual(Cognitive/ Analytical) Skills:

Students will be able to

- identify different class attributes, member functions, base class and derived class and their relationships among them
- learn how to reuse the code using polymorphism

C. Practical Skills

Students will be able to learn:

- to solve a real life existing problems using the features of C++
- to develop software/ big and complex programs for a complex problems
- implement advance features of object oriented approach in other various language(s).

D. Transferable Skills :

Students will be able to

- use C++ more effectively,
- learn to think more analogously, creatively as well as comparatively
- Develop better software development skills in other language too.

Sem III

COURSE NAME: Database System
CLASS - B.Voc(SD)   SEMESTER – III

Objectives of the Course:

Objective of the course:

It aims at acquainting students better with the basics of DBMS, different Architectural Models for DBMS, Normalization of data, Concurrency control problems and its management, Protection, Security and recovery aspects of databases along with practical knowledges of databases using SQL and PL/SQL. Career prospectus after completion of course of study are as Data manager, Data administrator, Database analyst, Database designer and allied jobs. Further Knowledge of database management systems software and strong programming skills are essential for achieving heights in this field.

- The key goal is to prepare students for a professional career in the field of data administration and database design.
- To get acquaint students with good knowledge of DBMS. During the course, students will learn about database design and database handling activities.
- To get acquaint students with basics of database security and administration.

Course Outcomes:

- Knowledge & Understanding : Databases and their design & development
- Intellectual Cognitive/ analytical skills: Normalization of Databases.
- Practical Skills :Using SQL and PL/SQL.
- Transferable skills: Usage of DBMS design and administration.

COURSE NAME: Java Programming
CLASS - B.Voc(SD)   SEMESTER – III

Objectives of the Course:

Students will get familiar with

- Object-oriented programming: data abstraction, encapsulation, classes, objects, templates, operator overloading, function overloading, inheritance, polymorphism, exception handling, and streams.
- The principles of inheritance, interface and packages and demonstrate though problem analysis assignments how they relate to the design of methods, abstract classes and interfaces and packages.
- To understand importance of Multi-threading & different exception handling mechanisms.

Program Learning Outcomes:

(Knowledge and Understanding, Intellectual Skills, practical Skills, Transferable skills).

B. Knowledge and Understanding):

Students will

- Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
- Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem

B. Intellectual(Cognitive/ Analytical) Skills:

Students will be able to

- Evaluate how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
- understand and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.

C. Practical Skills

Students will be able to

- Design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions.
- Understand the importance of Classes & objects and will be able to implement it along with constructors, Arrays and Vectors.
- Develop computer-based systems.

COURSE NAME: Software Engineering Methodology

CLASS - B.Voc(SD)   SEMESTER – III

Objectives of the Course:
- This course introduces the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of software engineering.
- It seeks to complement this with a detailed knowledge of techniques for the analysis and design of complex software intensive systems. It aims to set these techniques in an appropriate engineering and management context.
- It provides a brief account of associated professional and legal issues

Program Learning Outcomes:

(Knowledge and Understanding, Intellectual Skills, practical Skills, Transferable skills).
Learning Outcomes:
After completing the course attendees will able to:
- Understanding the issues affecting the organisation , planning, control of software-based systems development.
- Complete the analysis and design of software intensive systems.
- Read and understand the professional and technical literature on software engineering.

Sem IV

COURSE NAME: Open Source Software
CLASS - B.Voc(SD)   SEMESTER – IV

Objectives:

- To Understand concepts, strategies, and methodologies related to open source software development.
- Be familiar with open source software products and development tools currently available on the market. f
- Be able to utilize open source software for developing a variety of software applications, particularly Web applications.

Course Outcome

- After the completion of the course, students will be able to
- Understand the open source software and its types
- Use the open source development methodologies for designing and implementing open source products
- Differentiate the open source software licenses and their usage
- Utilize the various open source products available in the market.

Course Name: Paper-II Information Security
Class: B.Voc (Software Development)   **Semester: 4th**
Objective of the Course:

- To understand the fundamentals of Cryptography.
- To acquire knowledge on standard algorithms used to provide confidentiality, integrity and authenticity.
- To understand the various concepts like database security, network security, OS security.
- To understand the concepts of risk analysis, risk assessment.
- To acquire the knowledge of legal and ethical issues that is involved in Information Security.

Course Outcomes:

a) Knowledge and Understanding: Students will

- Develop an understanding of information assurance as practiced in computer operating Systems, distributed systems, networks and representative applications.
- Gain familiarity with prevalent network and distributed system attacks, defenses against them.
- Develop a basic understanding of risk Management and risk control Strategies.
- Gain knowledge of cyber crimes.
- Understand the concepts of Intellectual Property Rights.

b) Intellectual Cognitive/Analytical Skills: Students will be able to

- Apply symmetric, asymmetric encryptions to message exchanges.
- Design mechanisms for authentication and identify the possible threats to each mechanism to protect against these threats.
- Use email security for the security of web services.
- Assess vulnerabilities and attacks, defense mechanisms against network attacks.

c) Practical Skills: Students will learn to:

- Understand the various security Technologies, how it has evolved with some detection and prevention techniques used today.

d) Transferable Skills: Students will be able to

- Manage Information security and can apply various measures to protect sensitive information of an organization.

Course Name: Operating System
Class: B.Voc (Software Development)   **Semester: 4th**

Objective of the Course:

- To introduce students with basic concepts of Operating System, its functions and services.
- To familiarize the students with various views and management policies adopted by O.S. as pertaining with processes , Deadlock , memory , File and I/O operations.
- To brief the students about functionality of various OS like Unix , Linux and Windows XP as pertaining to resource management.

Outcomes:

After studying this course, students should be able to:

- Appreciate the role of operating system as System software.
- Compare the various algorithms and comment about performance of various algorithms used for management of memory, CPU scheduling, File handling and I/O operations.
- Apply various concept related with Deadlock to solve problems related with Resources allocation, after checking system in Safe state or not.
- To appreciate role of Process synchronization towards increasing throughput of system.
- Able to describe process management and concepts of threading, multitasking.
- Able to differentiation of various scheduling algorithms and identify the reasons of Deadlock and their remedial measures in an operating system.

Sem V
Course Name: Software Project Management and Business Solution
Class: B.Voc (Software Development)   **Semester: 5th**

Objective of the Course:

- The successful development and implementation of all project's procedures. A project, regardless of its size, generally involves five distinctive phases of equal importance: Initiation, Planning and Design, Construction and Execution, Monitoring and Control, Completion. The smooth and uninterrupted development and execution of all the above phases ensures the success of a project.

- Productive guidance, efficient communication and apt supervision of the project's team. Always keep in mind that the success or failure of a project is highly dependent on teamwork, thus, the key to success is always in collaboration.
- The achievement of the project's main goal within the given constraints. The most important constraints are, Scope in that the main goal of the project is completed within the estimated Time, while being of the expected Quality and within the estimated Budget. Staying within the agreed limitations always feeds back into the measurement of a project's performance and success.
- Optimization of the allocated necessary inputs and their application to meeting the project's pre-defined objectives

Outcomes:

- After studying this course, you should be able to:
- Develop plans with relevant people to achieve the project's goals
- Break work down into tasks and determine handover procedures
- Identify links and dependencies, and schedule to achieve deliverables
- estimate and cost the human and physical resources required, and make plans to obtain the necessary resources
- Allocate roles with clear lines of responsibility and accountability.

Course Name: Software Re-engineering
Class: B.Voc (Software Development)   **Semester: 5th**

Objective of the Course:

- To understand concepts and philosophy of Business Process Reengineering.
- To learn various BPR and alternate methodologies – TQM, Work Study, ISO standards practiced in the industry.
- To understand and analyze the role of Information Technology and change management in the implementation of BPR.
- To expose practically BPR implementation and best practices through research papers and case discussions.

Outcomes:

On completion of this course, the students will be able to

- Understanding various BPR methodologies and their applications.
- . Understanding the critical success factors for implementing BPR

- . Appreciate various alternative techniques of BPR – TQM, Work Study, Benchmarking and their applications.
- . Basic understanding of ISO standard 9001:2015, IACBE and their applications in education and industry.
- . Analyze and integrate issues and challenges of applying tools/techniques of Information Technology for BPR and learn to apply them in the industry.

Course Name: Software Testing and Quality Assurance

Class: B.Voc (Software Development)   **Semester:** 5th

Objective of the Course:

To make students understand

- The basic software debugging methods.
- White box testing methods and techniques.
- Black Box testing methods and techniques.
- Designing test plans.
- Different testing tools (familiar with open source tools)
- Quality Assurance Methods

Course Outcomes:

a) Knowledge and Understanding: Students will
- Design test planning.
- Manage the test process

b) Intellectual Cognitive/Analytical Skills: Students will be able to
- Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.
- Implement various test processes for quality improvement.
- To handle types of errors and fault models

c) Practical Skills: Students will learn to:
- Use practical knowledge in a variety of ways to test software and an understanding of some of the tradeoffs between testing techniques.
- Generate various test documents.
- Identify and apply appropriate automated testing tool.

d) Transferable Skills: Students will be able to
- Apply the software testing techniques in commercial environment.
- Perform various types of software testing like E-commerce websites, Real time software testing, Multiplatform testing, Security Testing, Client server testing.

Sem 6

- Project Dissertation (Industrial Training and Project in Software/IT industry)