"Education for knowledge, science and culture" - Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR

B. Sc. Part – II (Computer science Entire)

CBCS Syllabus with effect from June, 2022

Semester: III

**Course Title: Linear Algebra & Numerical Methods (GEC-1300 C)**

After completion of this course students will be able :

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|---|---|
| **CO1** | To learn about matrices and solutions of system of linear equations |
| **CO2** | To learn different concepts related to vector spaces and linear transformations |
| **CO3** | To use appropriate numerical methods for solving algebraic and transcendental equations |
| **CO4** | To study different interpolation methods for given tabulated data, use numerical methods for solving integration and ordinary differential equations |

**Course Title: Instrumentation and Computer Organization**

**GEC-1301 C**

After completion of this course students will be able:

| | |
|---|---|
| **CO1** | To describe the working principle, selection criteria and applications of various Transducers used in instrumentation systems. |
| **CO2** | To gain knowledge about different type of signal conditioning circuits, data convertersand Understand construction, working principle of different types of digital instruments. |
| **CO3** | To explain the function of each element of a memory hierarchy and Learn about various data transfer techniques in digital computer and the I/O interfaces. |
| **CO4** | To understand the basics of hardwired and micro-programmed control of the CPU, pipelined architectures and architecture of 8086 microprocessor. |

**Course Title: Introduction to RDBMS using MySQL and Object Oriented Programming Using C++**

**CC-CS-1304C**

After completion of this course students will be able:

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|---|---|
| **CO1** | To draw DFD, ERD, create relational database using normalization and to understand MySQL basics, classify DDL, DML, DCL commands and data constraints, implement SQL operators and functions, build C++ program structure, memory management operators, this pointer and reference variable. |
| **CO2** | To implement programs in C++ using control structures, inline function,default argument, function overloading and explain Object Oriented Programming Concepts. , explain class, access modifiers and define member functions of a class, static data members and member function, develop the programs using array of object. |
| **CO3** | To explain friend function and friend class, define a constructor, destructor and explain features of constructor, destructor and types of constructor, explain rules for operator overloading and implement programs using unary and binary operator overloading |
| **CO4** | To explain inheritance and define Base class and derived class and implement programs using types of inheritance, define polymorphism and explain types of polymorphism and implement programs using virtual function and explain concept of pure virtual function and abstract class. |

## Semester – IV

## Course Title: Computational Geometry & Operation Research

## GEC 1300D

After learning the course the students should be able :

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|---|---|
| **CO1** | To study different types of two and three dimensional transformations |
| **CO2** | To learn different generation techniques of curves |
| **CO3** | To formulate and apply suitable methods to solve linear programming problems |
| **CO4** | To use different methods for solving transportation and assignment problems, study different techniques for solving games |

## Course Title: Programming, Interfacing and Raspberry Pi

## GEC-1301 D

After completion of this course students will be able:

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|---|---|
| **CO1** | To understand the architecture of 8051 microcontroller and knowledge about assembly Language programs of 8051. |
| **CO2** | To build systems using microcontroller for real time applications. |
| **CO3** | To understand the working of Raspberry Pi, its features and how various components can be used with Pi. |
| **CO4** | To understand Raspbian OS, Python programming and apply creative thinking skills in the design of practical solutions to specific case studies and projects. |

## Course Title: Introduction to Data Structure Using C++ and Cyber Security Essentials

## CC-CS-1304D

After completion of this course students will be able:

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|---|---|
| **CO1** | To define Data Type, Data structure,Data object and explain Abstract Data Type, Linear and nonlinear data structures, explain Algorithm efficiency, array, types of array and sparse matrices |
| **CO2** | To define Stack and demonstrate operations and static implementation of stack, explain applications of stack, define queue and demonstrate operations and static implementation of queue and explain types of queues, explain Linked list and types of linked list |
| **CO3** | To implement Stack and Queue using Linked list, define Tree and explain tree terminologies and tree traversal, implement programs using searching and sorting techniques, explain working ofcomputer network and importance of cyber security |
| **CO4** | To understand different security threats and information security management explain access controls methods and wireless network security, understand cyber security laws and importance of security audit. |

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| B.Sc.-II SEM-III | Course name - Skill Enhancement course-I Introduction to SQLite |
|---|---|
| CO1: | Understand the basics of SQLite , able to create, open, drop database files. |
| CO2: | Able to create tables, add and edit data using different constraints, operators, understand data selection and retrieval using clauses etc. |
| CO3: | Able to process data using different SQLite functions. |
| CO4: | Able to retrieve data using joins and have overview of Index, Trigger and views. |
| **B.Sc.-II SEM-IV** | **Course name - Skill Enhancement course-II Python Programming** |
| CO1 | To learn how to install Python, start the Python shell and to define the structure and components of a Python program. |
| CO2 | To learn to perform basic calculations, print text on the screen and perform simple control flow operations using if statements and for loops |
| CO3 | To learn how to use lists, tuples, and dictionaries in Python programs. |
| CO4 | To learn how to reuse code with functions |

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