



Department of MCA
K. K. Wagh Institute of Engineering Education and Research
Hirabai Haridas Vidyanagari, Amrut Dham, Panchavati, Nashik-422003

Vision:

To Induct Computer Application Expertise into Graduates which is appropriate to Cope Up with Contemporary Technical Challenges

Mission:

M1: To give academically rich knowledge blended with practical orientation

M2: To develop skill of computer application professional

M3: To provide opportunity so that they can play pivotal role as ambassador of technical advancement in the country



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Program Education Objective (PEO)

PEO 1: The entire spectrum of stakeholders get complemented by virtue of this programme

PEO 2: The process of empowerment at various levels gets accomplished, which leads to substantial increased in computation activities

PEO 3: The appropriate base gets created for allowing ongoing activities from advanced computational fields to take shape

PEO 4: The student community at large gets head on start for new ideas to be conceptualized



Programme Outcomes

- 1) Computational Knowledge: An ability to apply the knowledge of computing fundamentals, mathematics and domain knowledge to the problem definition
- 2) Problem analysis: An ability to effectively identify and analyze computing problems
- 3) Design / Development of Solutions: To apply the principles of programming to design, develop and evaluate solutions to the real life problems
- 4) Conduct Investigation of complex Computing Problems: An ability to experience research culture to move ahead towards framing innovative solution
- 5) Modern Tool Usage: An ability to use the techniques, skills and modern tools to develop the computer application which helps to run organization smoothly
- 6) Professional Ethics: An ability to become successful computer application professionals in the field of Information Technology, Cyber Regulation and Management Practices
- 7) Life-long Learning: An ability to recognize the needs and confidence for self-education and ability for lifelong learning
- 8) Project management and Finance: Demonstrate ability to work as a member or leader in a team in designing, implementing and managing software systems in multidisciplinary environment
- 9) Communication Efficiency: An ability to exhibit the ways of communication and interfaces to identify, formulate and resolve IT related problem through verbal or written form
- 10) Societal and Environmental Concern: An ability to apply computing intellectual knowledge and practical experiences to meet desired needs, within realistic constraints, such as economic, environmental, social, political, ethical, health and safety
- 11) Individual and Team Work: An ability to work as an individual or as leader in a group to accomplish goals
- 12) Innovation and Entrepreneurship: An ability to identify opportunity and proceed with innovative ideas to become a successful entrepreneur



Course Outcomes

FYMCA[SEM-I]
310901: C and C++ Programming and 310907: C and C++ Laboratory
CO310901.1:Students will be able to recognize the fundamentals of C program
CO310901.2:Students will be able to identify the terminologies of C language
CO310901.3:Students will be able to implement the modular programming utility
CO310901.4:Students will be able to recognize object oriented features
CO310901.5:Students will be able to implement inheritance, function overloading and friend function
CO310901.6:Students will be able to construct file handling applications using command line argument and console base
310902 Computer Organization
CO310902.1:Students will be able to interpret number systems and logic operations on binary variable
CO310902.2:Students will be able to explain logical operation of digital components
CO310902.3:Students will be able to classify memory hierarchy and types of primary memory
CO310902.4:Students will be able to illustrate internal architecture and functions of processor
CO310902.5:Students will be able to distinguish 16-bit (8086) processor and Pentium processor architecture
CO310902.6:Students will be able to identify parallel processing considerations and clustering approach to organize multiple processors
310903 Principles of Programming Practices
CO310903.1:Students will be able to review software, hardware and computer languages
CO310903.2:Students will be able to use problem solving concepts



CO310903.3:Students will be able to apply the knowledge of programming structures

CO310903.4:Students will be able to design algorithm and represent it in pictographic format

CO310903.5:Students will be able to explain the algorithms for Time and space complexity

CO310903.6:Students will be able to represent and implement algorithm using Array

310904 Discrete Mathematics

CO310904.1:Students will be able to review notation to define fundamental mathematical concepts

CO310904.2:Students will be able to interpret sentential form into formal language of propositional calculus

CO310904.3:Students will be able to solve problems on permutations and combinations

CO310904.4:Students will be able to evaluate appropriate function and relation models to analyze practical examples

CO310904.5:Students will be able to illustrate use of graphs in problem solving

CO310904.6:Students will be able to implement the concept of trees and cut sets

310905 Probability & Statistics

CO310905.1:Students will be able to equip a working knowledge of probability that is identify an outcome as possible, impossible, certain, uncertain of an event

CO310905.2:Students will be able to explain the concept and uses of each type of discrete distributions

CO310905.3:Students will be able to identify structure and practical problems using continuous distributions

CO310905.4:Students will be able to familiar with fundamental concepts of Statistics

CO310905.5:Students will be able to understand the relationship between unknown population parameters using given hypothesis

CO310905.6:Students will be able to describe categories of statistical quality control



310906 Business Communications

CO310906.1: Students will be able to recognize principles of communication, forms of communication, need of communication for it professional, barriers of effective communication, techniques of effective communication

CO310906.2: Students will be able to summarize the self development and assessment, perceptions and attitudes, values and belief systems, personal goal setting, career planning, self-esteem, building of self confidence

CO310906.3: Students will be able to identify different oral presentation skills like use of presentation graphics, use of presentation aids, perfect interview, listening and observation skills, body language

CO310906.4: Students will be able to illustrate writing of technical reports like project proposals, brochures, newsletters, technical articles, technical manuals, business letters, memos, progress reports, minutes of meeting, event reporting

CO310906.5: Students will be able to use the ethics and etiquette like business ethics, etiquette in social as well as office settings, e-mail etiquette, telephone etiquette, engineering ethics

CO310906.6: Students will be able to interpret the different reports and some rules for it like choice of vocabulary, coherence and cohesion

310908 Open Source Tools Laboratory

CO310908.1:to install WINDOWS7/8/Linux derivative equivalent to Fedora18 or Android

CO310908.2:to use any open source office suit to produce documents, create presentations , design small accounting application and generate database for any real time application

CO310908.3:to demonstrate the uses of internet aids

FYMCA[SEM-II]

310909: Java Programming and 310915: Java Programming Laboratory

CO310909.1:Student will be able to illustrate the fundamental programming structures and command line tools in Java

CO310909.2:Student will be able to implement classes and interfaces

CO310909.3:Student will be able to recognize and demonstrate the importance of Inheritance,



polymorphism and package
CO310909.4:Student will be able to explain life cycle of a thread, exception handling and implement in applications
CO310909.5:Student will be able to use the concept of Applet and AWT and implement it
CO310909.6:Student will be able to write program using Swing concept
CO310909.7:Student will be able to demonstrate the use of JDBC and Networking
310910: Data Structures using C and 310916: Data Structure Laboratory
CO310910.1:Students will be able to construct abstract data type such as arrays and implement the applications of array
CO310910.2:Students will be able to implement various linear data structure such as linked list to solve a given problem
CO310910.3:Students will be able to write methods to solve problems for Stack and Queue
CO310910.4:Students will be able to recognize the representation techniques and traversals methods of tree and graph
CO310910.5:Students will be able to implement various kinds of searching and sorting techniques, and know when to choose which technique
CO310910.6:Students will be able to compare different implementations of file organization techniques and recognize the fundamentals of hashing
310911:Web Technologies and 310914: Web Technology Laboratory
CO310911.1:Students will be able to describe internet related technologies, systematic way of developing a website and design static website using HTML elements
CO310911.2:Students will be able to sketch html pages and apply CSS to it
CO310911.3:Students will be able to use of Dynamic HTML, understand the fundamentals of VB Script and use of VBScript for validations.
CO310911.4:Students will be able to implement dynamic and interactive web pages by embedding Java Script code in HTML
CO310911.5:Students will be able to recognize XML document structure and apply DTD, XML



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schema and XSL

CO310911.6: Students will be able to implement effective and customized websites using PHP

310912: System Analysis & Design

CO310912.1: Students will be able to describe the software process models.

CO310912.2: Student will be able to use the fact-finding techniques in software development.

CO310912.3: Students will be able to design the DFD, Decision tree, Decision table and process specification.

CO310912.4: Students will be able to recognize the use of modules and project development

CO310912.5: Students will be able to explain the concepts of testing, control, audit and security of Information Systems.

CO310912.6: Students will be able to summarize the software engineering environment.

310913: Management Theory & Practices

CO310913.1: Students will be able to interpret industry environment and traditions to evaluate industry potential

CO310913.2: Students will be able to explain the functionality of organization structure

CO310913.3: Students will be able to demonstrate the importance of interpersonal skills in the workplace

CO310913.4: Students will be able to identify appropriate TQM methodologies and conflict management

CO310913.5: Students will be able to summarize the types of management information systems and ethical, social, security issues of information systems

CO310913.6: Students will be able to distinguish the managerial decision-making strategies

SYMCA[SEM-I]

410901: Advanced Java and 410907: Advanced Java Laboratory

CO410901.1: Students will be able to demonstrate the Java Database Connectivity with different



drivers and providers like Oracle and develop the interactive applications in Java with database.

CO410901.2: Students will be able to demonstrate Servlet lifecycle, its types, session tracking and implement the server-side application using Servlet.

CO410901.3: Students will be able to demonstrate JSP architecture and lifecycle and design web-based GUI applications using JSP language.

CO410901.4: Students will be able to explain the advantages of Enterprise Java Beans; its lifecycle as well as types of Java beans and construct the application using Stateless and Stateful Session Beans.

CO410901.5: Students will be able to use Spring Framework, managing database transactions with Spring and design the web application using Spring framework.

CO410901.6: Students will be able to demonstrate the architecture and features of Hibernate; exhibit the working with Hibernate Query Language (HQL) and to explain the use of Hibernate Query Language.

410902: DBMS and 410906: HBase Laboratory

CO410902.1: Students will be able to elaborate the basics of DBMS

CO410902.2: Students will be able to explain data models in terms of both functionality and its benefits

CO410902.3: Students will be able to design a normalized database schema for a given problem-domain and enforce integrity constraint

CO410902.4: Students will be able to execute SQL queries

CO410902.5: Students will be able to construct PL/SQL block for a given database

CO410902.6: Students will be able to explain fundamental concepts of HBASE architecture and NoSQL database

410903: Operating Systems

CO410903.1: Student will be able to explain extensive knowledge of Operating system.

CO410903.2: Student will be able to classify process management concepts

CO410903.3: Student will be able to identify concurrency control and deadlock



CO410903.4:Student will be able to describe the Memory management

CO410903.5:Student will be able to discuss file management and disk scheduling methods

CO410903.6:Student will be able to use linux operating system

410904: OOAD and 410908: UML Lab-Umbrello

CO410904.1:Student will be able to identify the issues involved in implementing an object oriented design and apply unified modeling language to solve these issue

CO410904.2:Student will be able to analyze requirements and produce an initial design with use case

CO410904.3:Student will be able to summarize the essential modeling elements, relationships and dependencies to show static model of object oriented system

CO410904.4:Student will be able to recognize the dynamic nature of object oriented system through interaction and communication diagrams

CO410904.5:Student will be able to identify the current states and activities of the system

CO410904.6:Student will be able to sketch the Package, Deployment and component diagram to analyze structure and behavior of the system

CO410904.7:Student will be able to summarize design patterns of UML and construct the system using Umbrello tools

410905 Operations Research

CO410905.1:Student will be able to explain and perform examples on linear programming problem (LPP) and also different techniques to solve LPP

CO410905.2:Student will be able to apply techniques for transportation and assignment problem

CO410905.3:Student will be able to explain PERT/CPM methods of network analysis for planning, developing and implementing projects

CO410905.4:Student will be able to construct the Shortest Route using the minimal spanning tree algorithm and Minimum cost capacitated flow problem

CO410905.5:Student will be able to use concepts of decision making and how to use the tools for deterministic, probabilistic, or uncertain type of data to take the decision.



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CO410905.6:Student will be able to use concepts of random behavior of a system

SYMCA[SEM-II]

410909: Advanced Web Technology and 410914: WT Lab

CO410909.1:The student will be able to describe the knowledge and application of .net framework and technologies.

CO410909.2:The student will be able to recognize the functionality of c#.net with java, php, c++, and write programs in c# by using console application.

CO410909.3:The student will be able to demonstrate the importance of windows forms and windows presentation foundation.

CO410909.4:The student will be able to develop the applications using silverlight tool. develop the applications by using windows forms in c#.

CO410909.5:The student will be able to implement ASP.NET web services in web applications.

CO410909.6:The student will be able to illustrate LINQ and ADO.NET

410910 Banking and FAM

CO410910.1:Students will be able to explain the purpose of financial statements journal, ledger, profit & loss a/c ,balance sheet ,subsidiary books

CO410910.2:Students will be able to use the knowledge of financial and cost accounting tools like element of cost ,ratio analysis ,cost volume profit analysis and management of cash

CO410910.3:Students will be able to recognize the working capital of business through working capital statement

CO410910.4:Students will be able to describe the various types of regulatory authorities for banking in India

CO410910.5:Students will be able to classify types of transactions in public and private sector banks

CO410910.6:Students will be able to illustrate architectures of Information Technology used in Banking Sector

410911: Computer Network & Information Security and 410916: Network & Security Lab



CO410911.1:Student will be able to explain the basic terminologies such as data communication system , network devices , network topologies and network medias

CO410911.2:Student will be able to describe different network models, protocols and functions of data link layer.

CO410911.3:Student will be able to classify routing mechanisms and implement socket programming

CO410911.4:Student will be able to use the knowledge of application layer functions like e-mail, FTP and WWW with DNS services.

CO410911.5:Student will be able to recognize the use of cryptography and network security

CO410911.6:Student will be able to identify the importance of secure socket layer services

410912: IS-Audit

CO410912.1.1:Student will be able to describe the effectiveness of information systems and importance of IS Audit

CO410912. 1.2:Student will be able to identify various types of network concepts and basic IT environment terms

CO410912. 1.3:Student will be able to explain the process of software procurement and its development

CO410912. 1.4:Student will be able to discuss various types of access controls and methodologies for evidence collections, evaluation

CO410912. 1.5:Student will be able to recognize the need of IS strategies and Management

CO410912. 1.6:Student will be able to summarize COBIT 5 framework

410912: Elective-I(2. Cyber Laws)

CO410912.2.1:Student will be able to describe the basics and regulation cyber laws

CO410912.2.2:Student will be able to understand the regulation of cyber space and IT ACT

CO410912.2.3:Student will be able to recognize the concepts and issues related to cyber crimes and torts



CO410912.2.4:Student will be able to identify the features, scope and issues of E-commerce

CO410912.2.5:Student will be able to summarize management of IPRs in cyber laws

CO410912.2.6:Student will be able to analyze privacy and data protection in cyber laws

410913: Adv DBMS and 410915: Advance DBMS Lab

CO410913.1:Student will be able to describe query processing and solve complex SQL queries

CO410913.2:Student will be able to distinguish various database system architecture

CO410913.3:Student will be able to identify distributed design issues like fragmentation, replication and allocation

CO410913.4:Student will be able to use object oriented features to design database schema and implement queries

CO410913.5:Student will be able to use specialized techniques of oracle database for utilizing the features of xml and execute FLWOR expression

CO410913.6:Student will be able to recognize importance of NoSQL databases over relational databases

TYMCA[SEM-I]

510901:Recent Technologies in IT and 510906: RTIT Lab

CO510901.1:Student will be able to explain the client-server architecture

CO510901.2: Student will be able to use MySQL DBMS package.

CO510901.3:Student will be able to implement PHP programming in software development

CO510901.4:Student will be able to describe object oriented programming concepts using PHP

CO510901.5:Student will be able to demonstrate file handling concepts

CO510901.6:Student will be able to implement web applications using super global variables

510902: Software Testing and Quality Assurance and 510907: STQA Lab

CO510902.1:Student will be able to define Quality ,Quality factor, Software Quality metrics and Process and Product quality-CMM ,Six Sigma



CO510902.2:Student will be able to prepare Test Plan and Test Cases using Software Testing Fundamentals

CO510902.3:Student will be able to use White-Box testing methodologies and Black-Box testing methodologies

CO510902.4:Student will be able to summarize the different Software Testing Types

CO510902.5:Student will be able to explain Defect Management and Testing specialized Systems and Applications

CO510902.6:Student will be able to use Software Test Automation through Selenium open source tool

510903: Software Engineering

CO510903.1:Student will be able to explain software development process

CO510903.2:Student will be able to identify processes in IT project planning

CO510903.3:Student will be able to use project management strategy

CO510903.4:Student will be able to develop skills to construct software of high quality – software that is reliable and secure

CO510903.5:Student will be able to classify architectural design and patterns

CO510903.6:Student will be able to identify product metric to improve software development and maintenance

510904: Data warehousing, data mining and BI

CO510904.1:Student will be able to explain OLAP operations and Preprocessing techniques on Database

CO510904.2:Student will be able to recognize how data is mined according to patterns

CO510904.3:Student will be able to classify different Data Mining methods with its algorithms

CO510904.4:Student will be able to explain the fundamentals of Business Intelligence

CO510904.5:Student will be able to classify various Business Intelligence architectures



CO510904.6: Student will be able to describe BI reporting tools

510905: Elective - II 5(1. Animation & Gaming)

CO510905.2.1: Students will be able to know devices and algorithms in computer graphics

CO510905. 2.2: Students will be able to use different techniques for creating animation

CO510905. 2.3: Students will be able to know use of different animation drawing tools

CO510905. 2.4: Students will be able to understand basics of game development

CO510905. 2.5: Students will be able to differentiate between different types of games

CO510905. 2.6: Students will be able to understand process of game development using java

510905: Elective - II 5(2. Mobile Computing)

CO510905.1.1: Students will be able to state the terms and technologies used in Mobile Computing

CO510905.1.2: Students will be able to explain the Wireless networking concepts and the standards used in IEEE 802.11 for mobile computing.

CO510905.1.3: Students will be able to summarize what is Data Management in Mobile Computing as well as what are disconnected operations.

CO510905.1.4: Students will be able to describe different operating systems used for application development in mobile devices and to get introduced with Android operating system.

CO510905.1.5: Students will be able to use the architecture of Android OS, its features to develop simple applications.

CO510905.1.6: Students will be able to explain SQLite database.

510908: Mini Project #1

CO510908.1: Student will be able to explain domain knowledge related to real life problem

CO510908.2: Student will be able to explore tools & techniques used in the project

CO510908.3: Student will be able to construct an ability to work as an individual or leader in a group to accomplish a task



CO510908.4: Student will be able to apply professional way of documentation and report generation

TYMCA[SEM-II]

510901: Major Project

CO510909.1: Apply the fundamental and domain knowledge to a given problem.

CO510909.2: Use the techniques, skills and modern tools to develop project.

CO510909.3: Document and present his/her own work.

CO510909.4: Function effectively as an individual as well as in team.

CO510909.5: Develop the ability to communicate effectively.

CO510909.6: Develop an ability to identify, formulate and solve technical problems.

CO510909.7: Recognize the need and an ability to engage in life-long learning.

510910: Seminar on Domain of Major Project#2

CO510910 .1: Student will be able to Identify topic for technical presentation on his/her area of Major Project

CO510910 .2: Student will be able to explain domain knowledge related to technical topic

CO510910 .3: Student will be able to prepare a literature survey and analysis related to technical topic

CO510910 .4: Student will be able to adapt writing skills for preparing technical document

CO510910 .5: Student will be able to explore various presentation skills