

Khandesh College Education Society's
Institute of Management & Research, Jalgaon
INTEGRATED MCA Master Of Computer Application (IDMCA)
 2017-2018

Program Outcomes

After completion of IMCA program the students will be able to:

PO1	Develop software solutions to problems across a broad range of application domains through analysis and design.
PO2	Contribute to research in their chosen field and function and communicate effectively, to perform both individually and in a multi-disciplinary team
PO3	Continue the process of life-long learning through professional activities; adapt themselves with ease to new technologies, while exhibiting ethical and professional standards and will be able to work collaboratively as a member or leader in multidisciplinary teams
PO4	Apply knowledge of computing fundamentals, computing specialization and domain knowledge for the abstraction and conceptualization of computing models from defined problems and requirements
PO5	Understand and analyze a given real-world problem and propose feasible computing solutions
PO6	Analyze customer requirements, create high level design, implement and document robust and reliable software systems
PO7	Transform complex business scenarios and contemporary issues into problems, investigate, understand and propose integrated solutions using emerging technologies
PO8	Use the techniques, skills and modern hardware and software tools necessary for innovative software solutions
PO9	Possess leadership and managerial skills with best professional ethical practices and social concern and will be able to communicate technical information effectively, both orally and in writing.

First Year IMCA - (Sem 1 & 2)

Semester- 1

CA 1.1 Mathematical Foundations

Course outcomes:

After undergoing the course, Students will be able to:

CO1	In this course, students should develop mathematical thinking and problem-solving skills associated with writing proofs.
CO2	Students should also be exposed to a wide variety of mathematical concepts that are used in the Computer Science discipline, which may include concepts drawn from the areas of Set Theory, Matrices, Coordinate System, Permutation & Combination.

CA 1.2 Computer & Internet Fundamentals

Course outcomes:

After undergoing the course, Students will be able to:

CO1	Objective of this course is to understand the basic concepts of Computer & Internet
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CA 1.3	Computer Organization & Architecture
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Identify the elements of modern instructions sets, hardware components and their impact on processor design.
CO2	Solve arithmetic operations of binary number system and the elements of modern instructions sets, hardware components and their impact on processor design.
CO3	Perform computer arithmetic operations and control unit operations.
CO4	Conceptualize elements of a memory hierarchy, I/O organization and pipelining.
	Measure the performance of CPU, memory and I/O operations.

CA 1.4	Programming using C
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	This is the first programming language subject student will learn. This subject will teach them programming logic, use of programming instructions, syntax and program structure.
CO2	This subject will also create foundation for student to learn other complex programming languages like C++, Java and other languages.

CA 1.5	Essentials of Web Designing
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To have basic knowledge of HTML, Structuring documents for web, cascading style sheet.

CA 1.6	Lab on C
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	This lab will give hands on practice to student about programming language C and will inculcate programming habit in them.

CA 1.7	Lab on Web Designing
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To perform practical based on HTML and style sheet.

Semester –2

CA 2.1	Discrete Mathematics
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	In this course, students should develop mathematical thinking and problem-solving skills associated with writing proofs.
CO2	Students should also be exposed to a wide variety of mathematical concepts that are used in the Computer Science discipline, which may include concepts drawn from the areas of Mathematical Logic, Graph Theory, Algebraic Structures, Relations & Trees.

CA 2.2 System Programming

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Understand the introductory concepts of system software.
CO2	Understand the design and implementation of Assemblers with implementation examples.
CO3	Design and implement the linkers and loaders, macro processors and respective implementation examples.
CO4	Understands about basics of compilers.

CA 2.3 Object Oriented Analysis & Design

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	This course teaches students the basic principles of object orientation and OO analysis and design
CO2	We will use the Unified Process and the Unified Modelling Language (UML) as tools to create various models which aid the process of software development.

CA 2.4 Programming using C++

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Apply C++ features to program design and implementation.
CO2	Use C++ to demonstrate practical experience in developing object-oriented solutions.
CO3	Analyze a problem description and build object-oriented software using good coding practices and techniques.
CO4	Implement an achievable practical application and analyze issues related to object-oriented techniques in the C++ programming language.

CA 2.5 Data Structure – I

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To learn efficient data storage and operating mechanisms.
CO2	To learn and understand various linear data structures.
CO3	To learn various representation techniques of real world data.
CO4	To develop applications to implement data structure

CA 2.6 Lab on Programming using C++

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Conceptualize the class and member concepts as to implement them using different access modifiers.
CO2	Implement programs using mathematical operator overloading.
CO3	Implement different file handling operations and pointers manipulation programs.
	Implement templates and Exception handling concept

CA 2.7	Lab on Data Structure - I
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To develop efficient data storage and operating mechanisms and how to understand various linear data structures.
CO2	To develop various representation techniques of real world data.
CO3	To develop applications to implement data structure

Second Year IMCA - (Sem 3& 4)

Semester- 3

CA 3.1	Basics of Accounting
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Use accounting functions as an information development and communication system that supports economic decision making and provides value to entities and society.
CO2	Prepare the financial statements and related information and apply analytical tools in making both business and financial decisions.
CO3	Analyze the impact of accounting system on several business functions and managers' decision making.
	Analyze and use financial statements; prepare budgets and investment options; assess risks and the rewards involved in firm's financial decisions.

CA 3.2	Operating System – I
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	The core structure, functions and design principles of operating system will be introduced with this subject

CA 3.3	System Analysis and Design
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To understand the system concept, system development life cycle, case tools and introduction of planning, coding, testing, implementation and maintenance.

CA 3.4	Database Management System
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Demonstrate the fundamentals of data models and conceptualize and depict a database system and Make use of ER diagram in developing ER Model
CO2	Summarize the SQL and relational database design.
CO3	Illustrate transaction processing, concurrency control techniques and recovery
CO4	Inference the database design in the real world entities.

CA 3.5	Data Structure – II
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To learn hierarchical and nonlinear data storage and operating mechanisms.
CO2	To learn and understand various non-linear data structures.
CO3	To learn various representation techniques of real world data.
CO4	To develop applications to implement data structure.

CA 3.6	Lab on DBMS
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Through this lab work will enhance database handling, data manipulation and data processing skills through SQL & PL/SQL, which will help them in developing data centric computer applications.

CA 3.7	Lab on Data Structure - II (using C++)
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To develop sorting techniques and how to trace a graph and tree.

Semester 4

CA 40.	Computer Network
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	This paper is designed with the objective to understand students with different concepts of networking including data communication concepts, models and protocols.
CO2	Students should be able to learn the algorithmic approaches of development of various protocol designing.

CA 4.2	Operating System - II
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To understand the nature of software complexity in various application domains, disciplined way of software development and software lifecycle process models.

CA 4.3	Network Security
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To introduce the student with security attacks, security threats and hash algorithms.
CO2	To study and understand the cryptography and authentication.

CA 4.4 Java Programming	
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	On the basis of the understanding of object oriented programming concepts the student at this stage of fourth semester should acquire knowledge of developing simple stand alone applications in Core Java.
CO2	At the end of the semester student should learn to develop GUI based programming and event handling.

CA 4.5 Programming using C#.NET	
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To impart the knowledge of object oriented programming using C# among student

CA 4.6 Lab on Java Programming	
Course outcomes :	
After undergoing the course, Students will be able to:	
CO1	The student should learn to develop simple JAVA programs for various applications. Starting with simple applications at the end of the whole practical work the student should be able to design appropriate graphical user interface and simple window desktop applications.
CO2	Understanding of interfaces, packages and event handling concepts in JAVA must be learnt by the student.
CO3	Students need to understand error handling, exception handling at compile time and run time of JAVA program execution.

CA 4.7 Lab on Programming using C#.net	
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To practically train students in programming in C#.NET

Third Year IMCA - (Sem 5 & 6)

Semester –5

CA 5.1 Theoretical Computer Science	
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	A general understanding of Finite Automata.
CO2	An understanding of the Formal Language.
CO3	An understanding of Regular Expressions.
CO4	An understanding of Context free Languages. An understanding of Push Down Automata.

CA 5.2 Software Engineering I

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	A general understanding of software process models such as the waterfall and evolutionary models.
CO2	An understanding of the role of project management including planning, scheduling, risk management, etc.
CO3	An understanding of software requirements and the SRS document. An understanding of different software architectural styles and coding standards.
CO4	An understanding of software testing approaches such as unit testing and integration testing. An understanding of software evolution and related issues such as version management. An understanding on quality control and how to ensure good quality software.

CA 5.3 Computer Graphics

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To Identify and explain the core concepts of Computer Graphics.
CO2	To learn Graphic's input and output devices. Understand a typical graphics pipeline and graphics library.
CO3	To learn to apply basic graphical Transformations on graphical 2D and 3D objects, including Filling and Clipping.
CO4	To learn basics of Curve generation technique.
CO5	To learn graphics programming techniques to generate basic computer graphics objects.

CA 5.4 Advance Java

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	On the basis of the understanding of core JAVA the student at this stage of fifth semester should acquire knowledge of developing a full fledge application using appropriate GUI and event handling.
CO2	Students should be able to develop web based applications, desktop applications with appropriate understanding of using databases at backend.

CA 5.5 UI Design Technologies I

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	This course teaches students the basic Web User Interface design techniques. JavaScript will help to understand how to create user interface for web application

CA 5.6 Lab on Computer Graphics**Course outcomes:**

After undergoing the course, Students will be able to:

CO1 To implement algorithms**CA 5.7 Lab on UI Design Technologies I****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 This course enables students to understand web page site planning, management and maintenance.**CO2** The course explains the concepts of developing advanced HTML pages with the help of frames, scripting languages and evolving technologies**Semester –6****CA 6.1 Automata Theory and Computability****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 The goal of this course is to provide students with an understanding of basic concepts in the theory of computation.**CO2** Students will be able to construct finite state machines and the equivalent regular expressions, to construct pushdown automata and the equivalent context free grammars, to construct Turing machines.**CA 6.2 Software Engineering II****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 To understand the nature of software complexity in various application domains, disciplined way of software development and software lifecycle process models.**CO2** To introduce principles of agile software development, the SCRUM process and agile practices.**CO3** To know methods of capturing, specifying, visualizing and analyzing software requirements.
To understand concepts and principles of software design and architecture.**CO4** To understand user -centeredness approach and principles of designing effective user interfaces.
To present formal methods, automation and recent trends in software engineering.

CA 6.3 Data Warehousing & Mining**Course outcomes:**

After undergoing the course, Students will be able to:

CO1 To understand the importance of data warehousing for business analysis.**CO2** To understand the data mining classification and clustering algorithms.**CA 6.4 Linux Operating System****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 Linux is the open source operating system. Number of standard distributions and their versions are available on internet and other open sources.**CO2** Students of IMCS course should learn about how to install an operating system, use its different resources and understand the role of operating system like Linux in application development.**CO3** Students should be able to execute different system commands, scripting for report writing and various job handling.**CA 6.5 UI Design Technologies – II****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 This course teaches students the Advance Web User Interface design techniques JQuery and Angular JS will help to understand how to create user interface for web application with event handling.**CA 6.6 Lab on Linux OS****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 This course introduces various tools and techniques commonly used by Linux programmers, system administrators and end users to achieve their day to day work in Linux environment.**CO2** It is designed for computer students who have limited or no previous exposure to Linux.**CA 6.7 Minor Project****Course outcomes:**

After undergoing the course, Students will be able to:

CO1 The objective of the minor project is to gear up student for preparation of the industrial training

Four Year IMCA - (Sem 7 & 8)

Semester- 7

CA 7.1 Cloud Computing

Course outcomes:

After undergoing the course, Students will be able to:

CO1	The course covers technologies required to build classic (traditional), virtualized, and cloud data centre environments.
CO2	These technologies include compute, storage, networking, desktop and application virtualization. Additional areas of focus include backup/recovery, business continuity, security, and management.
CO3	Students will learn about the key considerations and steps involved in transitioning from the current state of their data centre to a cloud computing environment

CA 7.2 Artificial Intelligence

Course outcomes:

After undergoing the course, Students will be able to:

CO1	To understand the basic knowledge representation, problem solving, and learning methods of Artificial Intelligence Assess the applicability, strengths, and weaknesses of the basic knowledge representation, problem solving, and learning methods in solving particular engineering problems.
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CA 7.3 Advance Data Base Management System

Course outcomes:

After undergoing the course, Students will be able to:

CO1	To study the further database techniques, to gain an awareness of the basic issues: security, recovery in object relational database.
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CA 7.4 PHP & MySQL

Course outcomes:

After undergoing the course, Students will be able to:

CO1	This course will give the PHP programming skills needed to successfully build interactive, data-driven sites.
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CA 7.5 Design And Analysis of Algorithm

Course outcomes:

After undergoing the course, Students will be able to:

CO1	To learn to Analyze the asymptotic performance of algorithms.
CO2	To write and check correctness proofs for algorithms.
CO3	Demonstrate a familiarity with major algorithms and data structures.
CO4	Apply important algorithmic design paradigms and methods of analysis

CA 7.6 Lab on PHP & MySQL

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	This course enables students to understand the dynamic web development.
CO2	The course also explains the OOPS concepts in PHP. To work with form data, use cookies and sessions.

CA 7.7 Lab on Design And Analysis of Algorithm

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Identify the problem given and design the algorithm using various algorithm design techniques.
CO2	Implement various algorithms in a high level language. Analyze the performance of various algorithms. Compare the performance of different algorithms for same problem.

Semester- 8**CA 8.1 Machine Learning**

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To introduce students to the basic concepts and techniques of Machine Learning.
CO2	To become familiar with regression methods, classification methods, clustering methods.
CO3	To become familiar with research approaches using machine learning,

CA 8.2 Image Processing

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To understand and gain complete knowledge about the fundamentals of image processing, image transforms, Image enhancement techniques, Image restoration techniques and methods, Image compression and Segmentation used in image processing.

CA 8.3 Optimization Algorithms

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	model decision making problems using major modelling formalisms of operations research, including propositional logic, constraints, linear programs
CO2	evaluate the computational performance of search, satisfaction, optimization and learning algorithms.
CO3	apply search, satisfaction, optimization and learning algorithms to real world problems.

CA 8.4 Network Programming

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	The primary objective of this course is to learn basic & advance techniques of socket based client server programming.
CO2	Berkeley sockets based API based network programming using java language in the unix environment is taught in this course.

CA 8.5 ASP.NET

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To understand the web application using visual studio.
CO2	To learn ASP.NET MVC, AJAX, JQuery, ASP.NET with API.

CA 8.6 Lab on Network Programming

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	In this course, students should develop mathematical thinking and problem-solving skills associated with writing proofs.
CO2	Students should also be exposed to a wide variety of mathematical concepts that are used in the Computer Science discipline, which may include concepts drawn from the areas of Set Theory, Matrices, Coordinate System, Permutation & Combination.

CA 8.7 Lab on ASP.NET

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To develop the web application using visual studio.
Five Year IMCA - (Sem 9 & 10)	
Semester- 9	

CA 9.1 Natural Language Processing

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Natural Language Processing is the most vibrant research field with number of application areas where industry needs developers with prerequisite understanding of the underline theory, models and algorithms.
CO2	This paper is designed with the objective of introducing students with different issues, challenges of the Natural Language Processing. With the prerequisite knowledge of Theoretical Computer Science, Data Mining, Machine Learning and Artificial Intelligence the student at Semester 9 shall take interest in the NLP as research and development and shall be encouraged to develop small applications on any topic of their interest from this syllabus.

CA 9.2 Compiler Construction

Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	A general understanding of Compilation.
CO2	An understanding of the Designing of Lexical & Syntax Analyser.
CO3	An understanding of Intermediate Code Generation.
CO4	An understanding of Code Optimization.
CO5	An understanding of Symbol Table organization.

CA 9.3	VC++ Programming
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To introduce the concepts of visual programming.
CO2	To introduce GUI programming using Microsoft foundation classes.
CO3	To enable the students to develop programs and simple application using Visual C++.

CA 9.4	Mobile Computing Trends
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	Understanding of android development, learning of development of android application.

CA 9.5	Programming in Python
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To understand why Python is a useful scripting language for developers.
CO2	To learn how to design and program Python applications.
CO3	To learn how to write loops and decision statements, functions and pass arguments in Python.
CO4	To learn how to design object-oriented programs with Python classes, build and package Python modules for reusability.
CO5	To learn how to read and write files in Python. To learn how to use class inheritance in Python for reusability.
CO6	To learn how to use lists, tuples, and dictionaries in Python programs.

CA 9.6	Lab on VC++ Programming
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To perform application based on VC++.

CA 9.7	Lab on MCT & Python
Course outcomes:	
After undergoing the course, Students will be able to:	
CO1	To perform practical based on Python application and design oops concept and read and write files in Python

Semester –10	
CA-10.	Full time Industrial Training

The 6 Months industrial training enables students to get an exposure to industrial standards. Students are able to handle the online project developments in various platforms.