Teerthanker Mahaveer University
College of Computing Sciences & IT

BCA (Bachelor of Computer Applications)
Mobile Applications & Web Technologies (in collaboration with i-Nurture)

Programme Outcome

PO-1	:	Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO-2	:	Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
PO-3	:	Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO-4	:	Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO-5	:	Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO-6	:	Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO-7	:	Self-directed and Life-long Learning: Acquire the ability to engage in independent and lifelong learning in the broadest context socio-techn

Programme Specific Outcome

PSO-1	:	Understanding the facts of basic computer technical knowledge to move for further domain specific courses
PSO-2	:	Applying the facts and rules for problem-solving skills and the knowledge of computer application to solve real world problems related with the Mobile applications and web technologies.
PSO-3	:	Analyzing the various Mobile/Web application reports and break down the information into components parts for complete analysis.
PSO-4	:	Analyzing the facts of non-technical skills necessary to enable their successful transition into corporate roles

Course Outcomes

IMW107	CO-1	Understanding the common features of human language.
	CO-2	Understanding the use of grammar to form the sentence.
	CO-3	Understanding the use of functional grammar to form the sentence.
	CO-4	Understanding the transformation of sentences.

	CO-5	Applying thoughts in efficient manner.
IMW102	**CO-1**	Understanding the concepts of matrix, set theory, function, some elementary functions with their graphs (Exponential, logarithmic, modulus), solving system of linear equations in two or three variables using inverse of a matrix.
	CO-2	Understanding the concept of derivative and its meaning, Integral as Antiderivative process, Indefinite Integrals, Rules of Integration, Integration by substitution, limits, continuity of a function.
	CO-3	Understanding properties of definite Integral, Cartesian Co-ordinate system ,Circle, equation of tangent, Straight line, Conic Sections:(Parabola & Ellipse),
	CO-4	Understanding the Maxima and Minima of Simple Functions, areas of simple closed curves.
	CO-5	Understanding the concepts of coordinate geometry.
IMW103	**CO-1**	Understanding basic concepts of Computer components.
	CO-2	Understanding the concept of memory hierarchy and the use of various input output device
	CO-3	Understanding the various computer languages, operating system functions and the application of number systems.
	CO-4	Understanding the concept of Microsoft Office and the overview of MS WORD, MS EXCEL and MS POWER POINT.
	CO-5	Understanding the basic concepts of Computer Networking and the applications of WWW, multimedia and the usage of electronic mail.
IMW104	**CO-1**	Understanding the use of basic concepts involved in Computer Programming.
	CO-2	Understanding the conceptual knowledge to design, implement, test, debug and document programs in C.
	CO-3	Understanding the concept of functions and functions with parameters passing option.
	CO-4	Understanding the use of programming through the use of pointers and arrays.
	CO-5	Applying algorithm using program involved in advance topics in like file handling functions and the concept of Standard C library
IMW108	**CO-1**	Understanding the basic concepts and functions of operating systems.
	CO-2	Understanding about process concept and its states.
	CO-3	Understanding the fragmentation and paging concepts in storage
	CO-4	Understanding the deadlock detection and prevention methods in operating
	CO-5	Understanding different access method used in Information management.
TMU101	**CO-1**	Understanding environmental problems arising due to constructional and developmental activities.
	CO-2	Understanding the natural resources and suitable methods for conservation of resources forsustainable development.
	CO-3	Understanding the importance of ecosystem and biodiversity and conserving it for maintaining ecological balance.

	CO-4	Understanding the types and adverse effects of various environmental pollutants and their abatement devices.	
	CO-5	Understanding Greenhouse effect, various Environmental laws, movements, different disasters and their management.	
IMW151	**CO-1**	Applying basic concepts involved in Computer Programming.	
	CO-2	Applying programming skills to design, implement, test, debug and document programs in C.	
	CO-3	Applying the use of functions and functions with parameters passing option.	
	CO-4	Applying the pointers and array in programming.	
	CO-5	Applying the algorithm using program involved in advance topics in C like file handling functions and the concept of Standard C library.	
TMUGA101	**CO-1**	Solving complex problems using Criss cross method, base method and square techniques.	
	CO-2	Applying the arithmetical concepts of Average, Mixture and Allegation.	
	CO-3	Evaluating the different possibilities of various reasoning based problems in series, Blood relation, Ranking and Direction.	
	CO-4	Operationalizing the inter-related concept of Percentage in Profit Loss and Discount, Si/CI and Mixture/Allegation	
IMW206	**CO-1**	Understanding the principle of effective communication	
	CO-2	Understanding and Write various kinds of applications .	
	CO-3	Understanding importance of e mail and memo	
	CO-4	Understanding various types of official reports.	
	CO-5	Understanding components of resume	
IMW204	**CO-1**	Understanding the need and various types of Data Structures	
	CO-2	Understanding the conceptual knowledge of various searching and sorting techniques.	
	CO-3	Understanding the conceptual knowledge of various searching and sorting techniques.	
	CO-4	Applying the use of various types of sorting methods on data.	
	CO-5	Applying various algorithms of tree and graph data structures.	
IMW209	**CO-1**	Understanding the use of basic concepts involved in Database management system.	
	CO-2	Understanding the concepts of ER models, keys and modelling in DBMS	
	CO-3	Applying SQL queries and DDL/DML commands in DBMS.	
	CO-4	Analyzing the use of normalization, deadlock handling, serializable and recovery techniques in Database transactions.	
	CO-5	Analyzing the concurrency control techniques involved in DBMS like validation based protocol and granularity.	
IMW255	**CO-1**	Understanding the Java Programming environment	
	CO-2	Applying objects in Object Oriented Programming	
	CO-3	Applying various mathematical operations in Java.	
	CO-4	Applying the concept of packages in Java.	
	CO-5	Applying the database connections in Java using JDBC.	
IMW256	**CO-1**	Applying the DDL and DML commands to manage Database.	
	CO-2	Applying the use of cursors, PL/SQL queries and exception handling in DBMS.	

	CO-3	Applying the JOIN, UNION and GROUPBY techniques in DBMS operations.	
	CO-4	Applying the concept of conditional retrieval and query sorting in DBMS	
	CO-5	Analyzing the use of SELCT, WHERE and ORDER BY clauses in DBMS	
TMUGA-201	**CO-1**	Applying the arithmetical concepts in Ratio Proportion Variation.	
	CO-2	Employing the techniques of Percentage; Ratios and Average in inter related concepts of Time and Work, Time Speed and Distance.	
	CO-3	Identifying different possibilities of reasoning based problems of Syllogisms and Venn diagram.	
	CO-4	Examining the optimized approach to solve logs and Surds.	
IMW307	**CO-1**	Understanding the importance of value education in life and method of self-exploration.	
	CO-2	Understanding „Natural Acceptance" and Experiential Validation- as the mechanism for self-exploration.	
	CO-3	Applying right understanding about relationship and physical facilities.	
	CO-4	Analyzing harmony in myself, harmony in the family and society, harmony in the nature and existence.	
	CO-5	Evaluating human conduct on ethical basis.	
IMW305	**CO-1**	Understanding various accepted methodologies to design software	
	CO-2	Understanding various Analysis, Design Concepts and Principles	
	CO-3	Understanding the Taxonomy Of Software Testing	
	CO-4	Understanding the basics of Software Project Management	
	CO-5	Understanding various Function Point Models, COCOMO Model, Delphi Method, Scheduling	
IMW309	**CO-1**	Understanding the concepts of internet and internet protocols such as FTP, SMTP, TCP/IP etc. and the architecture of Web System.	
	CO-2	Understanding about HTML and different attributes of HTML. Designing simple HTML page	
	CO-3	Understanding XML concepts , the differentiation between HTML and XML and the different attributes of XML	
	CO-4	Understanding PHP and its basic syntax, variables, Loops, Arrays and Strings.	
	CO-5	Understanding about HTTP requests, Files and Cookies.	
IMW310	**CO-1**	Understanding the use of data types and conditional statements.	
	CO-2	Understanding the use of dictionaries.	
	CO-3	Designing a code and then test small python programs that meet the requirements.	
	CO-4	Understanding the concept of object-oriented programming as used in Python: classes, subclasses, properties, inheritance, and overriding.	
	CO-5	Understanding various concept of microservices.	
IMW306	**CO-1**	Understanding the basic concepts and importance of information security.	
	CO-2	Understanding the role and concept of user identity and access management.	
	CO-3	Understanding the system and server security concepts.	
	CO-4	Analyzing threats to information security, analyse their impact and propose suitable countermeasures.	

	CO-5	Analyzing various aspects of securing systems, servers, Internet, user identity and management.	
IMW312	**CO-1**	Understanding knowledge of grammar to address competitive exams.	
	CO-2	Understanding the Use advance English language by using variety of words i.e. idioms and phrase in variety of sentences in functional context.	
	CO-3	Understanding the proper usage of English grammar	
	CO-4	Understanding the strategies of comprehension	
	CO-5	Applying professional writing methodologies.	
IMW353	**CO-1**	Applying web designing rules .	
	CO-2	Applying HTML and different attributes of HTML for Designing simple HTML page.	
	CO-3	Applying CSS and different attributes of CSS Designing simple CSS page	
	CO-4	Creating a dynamic website using HTML.	
	CO-5	Creating a dynamic website using HTML with CSS	
IMW354	**CO-1**	Understanding the use of data types and conditional statements.	
	CO-2	Understanding the use of dictionaries.	
	CO-3	Applying a code and then test small python programs that meet the requirements.	
	CO-4	Applying object-oriented programming as used in Python: classes, subclasses, properties, inheritance, and overriding.	
	CO-5	Applying various concept of microservices.	
TMUGS-301	**CO-1**	Utilizing effective verbal and non-verbal communication techniques in formal and informal settings	
	CO-2	Understanding and analyzing self and devising a strategy for self growth and development.	
	CO-3	Adapting a positive mindset conducive for growth through optimism and constructive thinking	
	CO-4	Utilizing time in the most effective manner and avoiding procrastination.	
	CO-5	Making appropriate and responsible decisions through various	
TMUGA-302	**CO-1**	Applying the concepts of modern mathematics Divisibility rule, Remainder Theorem, HCF /LCM in Number System.	
	CO-2	Relating the rules of permutation and combination, Fundamental Principle of Counting to find the probability	
	CO-3	Applying calculative and arithmetical concepts of ratio, Average and Percentage to analyze and interpret data.	
	CO-4	Correlating the various arithmetic concepts to check sufficiency of data	
IMW401	**CO-1**	Understanding the value of Relational Databases	
	CO-2	Understanding the features of NoSQL	
	CO-3	Understanding various data models of NoSQL.	
	CO-4	Understanding the concept of read and update consistency	
	CO-5	Understanding the concept of Big Data and Hadoop.	
IMW406	**CO-1**	Understanding Android programming including design, development and testing skills	
	CO-2	Understanding the Android platform, Programming paradigms and Application Components	
	CO-3	Understanding the user interface design principles and testing of the user	

		interface
	CO-4	Applying the Background processing
	CO-5	Analyzing the Data Access and Storage
IMW403	CO-1	Understanding basic Server web architecture
	CO-2	Understanding the working of web protocols like Python, Ruby Rails as well as IP and web address
	CO-3	Understanding the CGI and GUI Programming.
	CO-4	Understanding the use of advance rails application
	CO-5	Applying the code using various languages .
IMW408	CO-1	Understanding the role of Entrepreneurs
	CO-2	Understanding the importance of Entrepreneurship in Economic Growth
	CO-3	Understanding Thematic Apperception Test.
	CO-4	Understanding Small Enterprises
	CO-5	Understanding various Sources of Finance
IMW409	CO-1	Understanding the usage of English grammar in day to day context.
	CO-2	Acquiring adequate knowledge of grammar and vocabulary to address competitive exams
	CO-3	Applying their listening to understand the basic content.
	CO-4	Understanding how to write and comprehensive skills in English.
	CO-5	Analyzing activities in situational context (like Impromptu).
IMW402	CO-1	Understanding the foundation in web technologies
	CO-2	Understanding popular web scripting languages
	CO-3	Understanding the JavaScript data types, variables, operators, expressions, statements, functions
	CO-4	Applying code for designing web pages using HTML.
	CO-5	Applying various concepts of AJAX and JSON
IMW405	CO-1	Understanding the fundamentals of Human Factors and Principles of Design
	CO-2	Understanding User Centred Design
	CO-3	Understanding the Wireframes and Wire Framing tools
	CO-4	Understand Material Design principles
	CO-5	Understanding quantitative and qualitative methods.
IMW452	CO-1	Creating Hello World Android Application
	CO-2	Creating an Android project from a basic app template.
	CO-3	Creating virtual devices and run their application on both emulator and device.
	CO-4	Creating interactive user interfaces in the Layout Editor, in XML and programmatically.
	CO-5	Implementing Text View, Edit Text, Button, Scroll View, Recycker View, Image View, Linear Layout, popup menus, toasts
IMW451	CO-1	Applying a python program to find the resolution of an image
	CO-2	Creating a simple rail application
	CO-3	Creating controllers and views – ruby on rails
	CO-4	Creating applications using rails scaffolding
	CO-5	Creating a python program to find the hash of file
TMUGS-401	CO-1	Communicating effectively in a variety of public and interpersonal settings.

	CO-2	Applying concepts of change management for growth and development by understanding inertia of change and mastering the Laws of Change.
	CO-3	Analysing scenarios, synthesizing alternatives and thinking critically to negotiate, resolve conflicts and develop cordial interpersonal relationships.
	CO-4	Functioning in a team and enabling other people to act while encouraging growth and creating mutual respect and trust.
	CO-5	Handling difficult situations with grace, style, and professionalism.
IMW508	CO-1	Understanding Mobile web applications
	CO-2	Understanding SPA mobile web applications using AngularJS
	CO-3	Understanding the Hybrid Apps using Phonegap
	CO-4	Applying code to design UI Hybrid App suing ionic
	CO-5	Analysing cordova environment.
IMW505	CO-1	Understanding the UI (User Interface) for Android Platform.
	CO-2	Understanding how to design web application for effective communication and Data Exchange.
	CO-3	Understanding network related application and their working in context of Android environment.
	CO-4	Understanding the features of Android platform.
	CO-5	Understanding how to commercialize Android application
IMW503	CO-1	Understanding the concept of web analytics, why web analytics
	CO-2	Understanding an account creation in Google Analytics
	CO-3	Understanding the concept of R &Rstudio
	CO-4	Applying Google Analytics with R programming.
	CO-5	Analyzing CRO services.
IMW502	CO-1	Understanding PHP Development Environment and code syntax.
	CO-2	Understanding different web related features.
	CO-3	Understanding advance concept OOPS, Database Handling and Ajax programming.
	CO-4	Applying Perl code including Control Statements, Arrays, Strings and I/O.
	CO-5	Applying advance programming concepts like Socket programming and CGI
IMW509	CO-1	Understanding enterprise software architecture on the web.
	CO-2	Understanding enterprise applications using the Java programming language
	CO-3	Understanding various advanced Java technologies used to build web applications for the enterprise and construct enterprise applications using advanced Java technologies
	CO-4	Applying the use of advanced Java libraries and frameworks in building a medium-size web application for the enterprise
	CO-5	Analyzing Enterprise mobility.
IMW552	CO-1	Creating a Notification using the Notification Builder.
	CO-2	Creating an HTTP connection to server & get the connection status
	CO-3	Creating a multithreaded application.
	CO-4	Creating a view with different moving shapes
	CO-5	Designing animated picture application.
IMW554	CO-1	Gaining industrial experience of developing

	CO-2	Understanding software or web based applications to solve real time problems of customers.
	CO-3	Understanding the program relevance in the industry.
	CO-4	Applying program skills in real projects.
	CO-5	Applying various problem solving methods .
IMW553	CO-1	Applying practical knowledge within the chosen area of technology for project development
	CO-2	Identifying , analyse, formulate and handle programming projects with a comprehensive and systematic approach
	CO-3	Contributing as an individual or in a team in development of technical projects
	CO-4	Developing effective communication skills for presentation of project related activities
	CO-5	Identifying programming projects with a comprehensive and systematic approach
IMW554	CO-1	Creating dynamic web application for Product management using Javascript
	CO-2	Creating SPA web application for the lab exercise 1 using AngularJS
	CO-3	Creating AngularJS App for capturing location with image and store locally in the phone using PhoneGap
	CO-4	Creating AngularJS App for moving object(ball) using Accelerometer and PhoneGap
	CO-5	Creating Ionic App for Playing Audio and Video based on file type(Music Player)
IMW603	CO-1	Understanding iOS, iOS Versions, iOS Layers
	CO-2	UnderstandingSwift, data types
	CO-3	Understanding the concepts of Cocoa Touch, MVC model, Advantages of MVC model
	CO-4	Understanding the concepts of image View and Page Controls
	CO-5	Understanding the SQL Lite concepts.
IMW601	CO-1	Understanding fundamental skills to maintain web server services required to host a website.
	CO-2	Applying markup languages for processing, identifying, and presenting of information in web pages.
	CO-3	Applying scripting languages and web services to transfer data and add interactive components to web pages.
	CO-4	Analyzing web media objects using editing software.
	CO-5	Analyzing formal concepts of layout and organization to design websites that effectively communicate using visual elements
IMW602	CO-1	Understanding test mobile applications to address specified business problems using high-level languages, technologies and appropriate methodologies.
	CO-2	Understanding mobile application for publishing for a given framework(s)following legal and ethical guidelines demonstrating an understanding of the publishing process.
	CO-3	Analyzing mobile application issues to determine the best solution.
	CO-4	Analyzing mobile testing procedure that is properly documented and tests

		the current prototype outside of the development environment.
	CO-5	Analyzing various android testing tools .
IMW607	CO-1	Understanding the fundamental design paradigms and technologies to mobile computing applications
	CO-2	Understanding consumer and enterprise mobile applications using representative mobile devices and platforms using modern development methodologies.
	CO-3	Understanding effective mobile interfaces using human computer interaction principles.
	CO-4	Understanding the role of mobile applications in software intensive systems.
	CO-5	Understanding the usability of representative mobile devices such as smart phones and tablets.
IMW605	CO-1	Understanding how to use HTML5 to create website and also its scope and Limitations
	CO-2	Understanding how to use CSS to improve the look of a website.
	CO-3	Understanding the use different HTML5 features.
	CO-4	Understanding how to handle Multimedia using HTML5 and API provided.
	CO-5	Understanding the use of Canvas for graphics in HTML5.
IMW652	CO-1	Creating a program to print student details using class & objects
	CO-2	Creating a program to instantiate Circle object using protocols
	CO-3	Creatinga program to add a method for existing class using categories
	CO-4	Creating a program to display digital clock using threads
	CO-5	Creating a program to collect n names and print them using arrays
IMW651	CO-1	Applying practical knowledge within the chosen area of technology for project development
	CO-2	Identifying , analyse, formulate and handle programming projects with a comprehensive and systematic approach
	CO-3	Contributing as an individual or in a team in development of technical projects
	CO-4	Developing effective communication skills for presentation of project related activities
	CO-5	Identifying programming projects with a comprehensive and systematic approach