ShriVaishnavVidhyapeethVishvavidhyalaya, Indore

ShriVaishnav Institute of Computer Applications

Name of Program: MCA+Ph.D.

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MCCA511	Elective	Data Analytics	60	20	20			4	1	0	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit;
Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):
- To familiarize the students with the need and scope of the subject.
- Provide an exposure giving a strong foundation to the data analytics practices.
- create a basis for the use of advanced investigative and computational methods to convert information to useful knowledge.
- To develop an understanding of how business analytics is actually performed
- covers foundational techniques and tools required for data science and big data analytics.

Course Outcomes (Cos): After the completion of the course the student will be able to
- Explain the information lifecycle from events in the real world to business actions,
- Recognize the types of events and characteristics that are often used in business analytics,
- Use the data is captured by source systems and stored using both traditional and emergent technologies,
- Gain a high-level familiarity with relational databases and learn how to use a simple but powerful language called SQL to extract analytical data sets of interest,
- Appreciate the spectrum of roles involved in the data lifecycle, and gain exposure to the various ways that organizations structure analytical functions,
- Summarize some of the key ideas around data quality, data governance, and data privacy
- function on multi-disciplinary teams
- understand the professional and ethical responsibility
- present you with a and is structured around the broad contours of the different types of data analytics, namely, descriptive, inferential, predictive, and prescriptive analytics.
- to produce the good decision makers who can use empirical approacheswide range of data analytic techniques to problem solving.

PRE- REQUISITES:

This course requires the familiarity with linear algebra, calculus, matrix operations, probability theory, statistics, programming, Database Management System

Syllabus

Unit I: Statistical Concepts: Population, Sample, Sampled data, Sample space, Random sample, Sampling distribution, Variable, Variation, Frequency, Random variable, Random variable, Uniform and Exponential random variable
 Measures of Central Tendency: Mean, Median, Range, Mode, Variance, Standard

Unit-II

Correlation and Regression: Linear Correlation, Correlation and Causality, Linear Regression, Linear Regression with Nonlinear Substitution,
Classification, Classification Criteria, Naive Bayes Classifier, Support Vector Machine

Unit-III Big Data: Introduction and basics, Evolution of Data Management, Definition, Importance, Architecture of Big Data Management System, Stages of Big Data Management, Data Analytics: Introduction, Drivers, pillars of Analytics: descriptive, predictive, and prescriptive. Core Components of analytical data architecture, Performance issues, Big Data Types, Structured Data, sources of big structured data and unstructured data, relational databases and big data, Integration of data types into a big data environment

Unit –IV column oriented database, Parallel vs. distributed processing, Shared nothing data architecture and Massive parallel processing, Elastic scalability, Data loading patterns, Data Analytics lifecycle: Discovery, Data Preparation, Model Planning, Model Building, Communicating results and findings, Methods: K means clustering, Association rules.

Unit-V Machine Learning, supervised and unsupervised learning, use of regression classification, Unsupervised Learning and Challenges for Big Data Analytics Clustering, Associative Rule Mining, Challenges for big data analytics
Data Science Tools- Cluster Architecture vs Traditional Architecture, The Introduction to R, Data Manipulation and Statistical Analysis with R, Basics, Simple manipulations, Numbers and vectors, Input/ Output, Arrays and Matrices, Loops and conditional execution, functions, Data Structures, Data transformations, Strings and dates, Graphics.

References:
1. Big Data For Dummies by Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman, Wiley, ISBN: 978-1- 118-50422-2, 2013
2. Data Analytics, Models and Algorithms for Intelligent Data Analysis by Runkler, Thomas A., Springer Vieweg , ISBN 978-3-8348-2589-6, 2013
3. Big Data Analytics with R and Hadoop, by VigneshPrajapati, Packt Publication, ISBN 978-1-78216-328-2, 201
4.Hastie, Trevor, et al. The elements of statistical learning.Vol. 2.No. 1. New York: springer, 2009.
5. Montgomery, Douglas C., and George C. Runger. Applied statistics and probability for engineers. John

Chairperson
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Wiley & Sons, 2010

6. "Data Science and Big Data Analytics Student Guide" distributed by EMC Education Services

Name of Program: MCA + Ph.D.

Subject Code	Category	Subject Name	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			End Sem. University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*	L	T	P	CREDITS
MCCA521	Elective	Soft Computing Techniques	60	20	20			4	1	0	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit;

Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):
- To familiarize with soft computing concepts.
- To introduce the ideas of Neural networks, fuzzy logic and use of heuristics based onhuman experience.
- To introduce the concepts of Genetic algorithm and its applications to soft computingusing some applications.

Course Outcomes (Cos): After the successful completion of this course students will be able to
- Identify and describe soft computing techniques and their roles in building intelligent machines
- Recognize the feasibility of applying a soft computing methodology for a particular problem
- Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
- Apply genetic algorithms to combinatorial optimization problems
- Apply neural networks to pattern classification and regression problems
- Effectively use existing software tools to solve real problems using a soft computing approach
- Evaluate and compare solutions by various soft computing approaches for a given problem

UNIT – I
Introduction to soft computing, types of soft computing techniques, applications of soft computing, hard computing,Introduction to Artificial Intelligence, types and characteristics of production systems, breadth first search, depth first search techniques,

UNIT – II
Introduction to Neural Networks, Artificial Neural Networks: Basic Models & Terminologies, Models of a Neuron, Topology, Multi-Layer Feed Forward Network (MLFFN), Radial Basis Function Network (RBFN), Recurring Neural Network (RNN), application of neural networks in image processing

UNIT-III

Introduction to Classical Sets and Fuzzy sets, Basic definition and terminology, set-theoretic operations, Fuzzy Sets, Operations on Fuzzy Sets, Fuzzy Relations, Membership Functions, Fuzzy Rules & Fuzzy Reasoning, Fuzzy Inference Systems, Fuzzy Expert Systems, Fuzzy Decision Making, introduction and Applications of neuro-fuzzy modeling

UNIT-IV

Genetic Algorithms: Introduction, Representation and Terminology, Traditional Algorithm vs. GeneticAlgorithm,Operators in Genetic Algorithms, data structures, fitness function, applications, SimpleGenetic Algorithms, steady state Genetic Algorithms

UNIT-V

Counter propagation network:introduction, structure, functioning and characteristics, Implementation of Adaptive Resonance Theory, Hopfield v/s Boltzman machine, Neuro-fuzzy hybrid systems,soft computing based hybrid fuzzy controllers,Introduction to Fuzzy Neural systems, Genetic Fuzzy systems and Genetic Neural systems

Reference Books:

1. S, Rajasekaran& G.A. VijayalakshmiPai, "Neural Networks, Fuzzy Logic & Genetic Algorithms, Synthesis &Applications", PHI Publication, 2012
2. J.S.R.Jang, C.T.Sun and E.Mizutani, "Neuro-Fuzzy and Soft Computing", Pearson Education2015
3. S.N. Sivanandan and S.N. Deepa, "Principles of Soft Computing", Wiley India, 2011
4. J.M. Zurada, "Introduction to artificial neural systems", Jaico Publishers, 1994
5. George J. Klir and Bo Yuan, "Fuzzy Sets and Fuzzy Logic-Theory and Applications", Prentice Hall, 1995
6. Mitchell Melanie, "An Introduction to Genetic Algorithm", Prentice Hall, 1998

Name of Prgram: MCA+Ph.D

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme								
			Theory			Practical					
			End Sem University Exam	Two Term Exam	Teacher Assessment	End Sem University Exam	Teacher Assessment	L	T	P	CREDITS
MCCA531	Elective	Theory of Computation	60	20	20			4	1	0	5

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
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Course Objective:
The goal of this course is to provide students with an understanding of basic concepts in the theory of computation.

Outcomes course students will:
- Be able to construct finite state machines and the equivalent regular expressions.
- Be able to prove the equivalence of languages described by finite state machines and regular expressions.
- Be able to construct pushdown automata and the equivalent context free grammars.
- Be able to prove the equivalence of languages described by pushdown automata and context free grammars.
- Be able to construct Turing machines and Post machines.
- Be able to prove the equivalence of languages described by Turing machines and Post machines
- Students will learn about a variety of issues in the mathematical development of computer science theory, particularly finite representations for languages and machines, as well as gain a more formal understanding of algorithms and procedures.

UNIT-I
Preliminaries : Set, Relations and functions, Graphs and trees, string, alphabets and languages. Principle of induction, predicates and propositional calculus.
Theory of Automation : Definition, description, DFA,NFA, Transition systems,2DFA, equivalence of DFA & NDFA, Regular expressions, regular grammar Mealy & Moore machines, minimization of finite automata, Two-way finite automata.

UNIT-II
Formal Languages : Definition & description, Pharse structured grammars & their classification, Chomskey classification of languages, closure properties of families of language, regular grammar, regular

set & their closure properties, finite automata, equivalence of FA and regular expression.

UNIT -III
Context-Free grammar: Properties unrestricted grammar & their equivalence, Introduction to CFG, Regular Grammars, Derivation trees and Ambiguity, Simplification of Context free grammars, Normal Forms.

PDA
Definition of PDA Determinism & Non determinism in PDA & related theorems, parsing and pushdown automata, CFG corresponding to a given PDA. Context Free Languages: The pumping lemma for CFL's, Closure properties of CFL's, Decision problems involving CFL's.

UNIT-IV
Turing Machine : Introduction, TM model , design, representation of TM, language accepted by TM, universal Turing machine, determine & non-determinism in TM, TM as acceptor/generator/algorithms, multi- dimensional, multitracks, multitape, Properties of recursive & recursively enumerable languages, Universal Turing machine

UNIT-V
Computability : Concepts, Introduction to complexity theory, Introduction to undecidaibility, recursively enumerable sets, primitive recursive functions, recursive set, partial recursive sets, concepts of linear bounded Automata, Tractable and Untractable Problems: P, NP, NP complete and NP hard problems, Hamiltonian path problem, traveling sales man problem, etc.

BOOKS
1. Hopcroft& Ullman "Introduction to Automata theory, languages & Computation" ,NaroshaPublishing house.
2. LewishPapadimutrau "Theory of Computation" , Prentice Hall of India, New Delhi.
3. Peter linz, "An Introduction to formal language and automata", Third edition, Narosa publication.
4. Marvin L. Minskay "Computation : Finite & Infinite Machines", PHI.
5. Mishra &ChanderShekhar "Theory of Computer Science (Automate, Language & Computations), PHI.

Name of Program : MCA + Ph.D.

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MCCA502	COMPULSORY	Internals of OS and Network Programming	60	20	20	30	20	4	1	4	7

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
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Course Education Objectives (CEOs):

In this course students should understand how the operating system effectivelymanages system resources. To enable the students to develop the necessary skills for developing robust & scalablenetwork applications and to build necessary basic knowledge for managing networks

Course Outcomes (COs):

After successful completion of this course the students will be able to:

- Understand the types of Operating systems and analyze the process scheduling Algorithms and Case study on processing Scheduling.
- Understand the resource sharing among the processes in the system.
- Understand how to manage the memory during the process execution (Memory Management) and File Management system.
- Learn the basics of socket programming using TCP Sockets.
- Learn basics of UDP sockets.
- To develop knowledge of threads for developing high performance scalableapplications.
- Learn about raw sockets.
- Understand simple network management protocols & practical issues.

Unit 1
Distributed Operating Systems
Introdon Primitives – Inherent Limitations - Lamport's Logical Clock; Vector Clock; Causal Ordering; Global State; Cuts; Termination Detection. Distributed Mutual Exclusion – Non-Token Based Algorithms – Lamport's Algorithm - Token-Based Algorithms – Suzuki-Kasami's Broadcast Algorithm – Distributed Deadlock Detection – Issues –Centralized Deadlock-Detection Algorithms - Distributed Deadlock-Detection Algorithms. Agreement Protocols – Classification - Solutions –Applications.

Unit 2
Failure Recovery and Fault Tolerance
Basic Concepts-Classification of Failures – Basic Approaches to Recovery; Recovery in Concurrent System; Synchronous and Asynchronous Checkpointing and Recovery; Check pointing in Distributed Database Systems; Fault Tolerance; Issues - Two-phase and Nonblocking Commit Protocols; Voting Protocols; Dynamic Voting Protocols;

Unit 3
Real Time and Mobile Operating System
Basic model of Real Time operating system, characteristics ,Application of Real time system, Real time task scheduling, Handing Resource sharing, Mobile operating System- Micro Kernel design ,Client server Resource Access-Processes and Threads, Memory Management –File system

Unit 4
Introduction to Network Programming: OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application.
Sockets: Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.

Unit 5
TCP Client Server : Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination,Crashing and Rebooting of server host shutdown of server host. I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option.
Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option**.**

List of Experiments:

1. Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whoisetc. Usage of elementary socket system calls (socket(), bind(), listen(), accept(),connect(),send(),recv(),sendto(),recvfrom()).
2. Implementation of Connection oriented concurrent service (TCP).

3. Implementation of Connectionless Iterative time service (UDP).
4. Implementation of Select system call.
5. Implementation of gesockopt(),setsockopt() system calls.
6. Implementation of getpeername() system call.
7. Implementation of remote command execution using socket system calls.
8. Implementation of Distance Vector Routing Algorithm.

9. Implementation of SMTP.
10. Implementation of FTP.
11. Implementation of HTTP.
12. Implementation of RSA algorithm.

TEXT BOOKS:
1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Principles", 7th edition, John Wiley & Sons Inc, 2006.

REFERENCES:
1. William Stallings, "Operating Systems – Operating System: Internals and Design Principles", 6th edition, Prentice Hall, 2005.
2. Andrew S Tanenbaum,"Modern Operating Systems", 3rd edition, Prentice Hall, 2007.

Name of Program : MCA + Ph.D.

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MCCA513	Elective	Multimedia and Web Technology	60	20	20			4	0	0	4

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs)
- To provides an introduction and application of the fundamentals of multimedia development.
- To covers the basics WWW, client side technologies like HTM including JavaScript, VB Script.

Course Outcomes (COs)
- Identify, describe, and apply the major skills and tools involved in the typical multimedia development process, including planning, scripting, storyboarding, production, and evaluation.
- Experience the application of multimedia theory, tools, and techniques to a project in technical communication.
- Use the JavaScript ,VB Script to develop the dynamic web pages.
- Develop the modern Web applications using the client and server side technologies and the web design fundamentals.

UNIT I:
Multimedia: Needs and areas of use, Development platforms for multimedia – DOS, Windows, Linux. Identifying Multimedia elements – Text, Images, Sound, Animation and Video.
Text – Concepts of plain & formatted text, RTF & HTML texts, Conversion to and from ofvarious text formats, Text compression principles, Source Encoder and Destination Decoder.
Images – Importance of graphics in multimedia, Vector and Raster graphics,image capturing methods – scanner, digital camera etc. various attributes of Images size, color, depth etc, Various Image file format – BMP, DIB, EPS, CIF, PEX, PIC, JPG, TGA, PNG and TIF format – their features and limitations.

 UNIT-II:
Sound: Sound and it Attributes, Mono V/s Stereo sound, Sound channels, Sound and its effect in multimedia, Analog V/s Digital sound, Basics of digital sound - Sampling, Frequency, Sound Depth,

Channels, Sound on PC, Sound standards on PC, Capturing and Editing sound on PC. Overview of various sound file formats on PC – WAV, MP3, MP4, Oggetc

Video: Basics of Video – Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, DirectX, Introduction to AV/DV and IEEE 1394 cards , Digitization of analog video to digital video, Interlacing and non-interlacing, Brief note on various video standards – NTSC, PAL, SECAM, HDTV, Introduction to video capturing Media & instrument – Videodisk, DVCAM, Camcorder, Introduction to digital video compression techniques and various file formats – AVI, MPEG, MOV Real Video.

UNIT–III :

Animation: Basics of animation, Principle and use of animation in multimedia, Effect of resolutions, pixel depth, Images size on quality and storage. Overview of 2-D and 3-D animation techniques and software. Animation on the Web – features and limitations, Software for animation

UNIT IV: Multimedia on the Web: Bandwidth relationship, broadband technologies, Text in the web – Dynamic and embedded font technology, Audio on the Web – Real Audio and MP3/MP4, Audio support in HTML, Graphics – HTML safe color palate, Interlaced V/s Non interlaced model, Graphics support in HTML, Video on the Web – Streaming video, Real Video, MPEG and SMIL.

UNITVScripting: Languages Java Script (JS) in Web Page, Advantage of Java Script, JS object model and hierarchy ,Handling event , Operators and syntax of JS, Function, Client side JS Vs Server side JS ,JS security Introduction to VB Script, Operator & Syntax of VB Script, Dialog Boxes, Control & Loop, Function in VBS.

Text Book:

1. Multimedia: Making It Work (4 th Edition) – by Tay Vaughan, Tata Mcgraw Hills.
2. Fundamentals of Multimedia – Ze-Nian Li and Mark S. Drew, Pearson Prentice Hall.
3. Xavier, C, " Web Technology and Design" , New Age International.
4. Ivan Bayross," HTML, DHTML, Java Script, Perl & CGI", BPB Publication.
5. Ramesh Bangia, "Internet and Web Design" , New Age International

Reference Book

1. The complete Reference By Thomos A. Powell ,TMH publication
2. Mastering VB Script" BPB Publication
3. Multimedia In Action – James E Shuman – Vikas Publishing House.
4. Andreas Holzinger, Firewall Media(Laxmi Publications Pvt. Ltd) New Delhi.

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Name of Program : MCA + Ph.D.

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MCCA523	Elective	Simulation and Modeling	60	20	20			4	0	0	4

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs)

- Introduce students to the simulation and modeling techniques
- Provide students with opportunities to develop basic simulation and modeling skills with respect to carrying out research projects using any simulation method on the computer.

Course Outcomes (COs)

Upon successful completion of this course, the student will be able to perform:
(Knowledge based)

- Problem formulation
- System definition
- Model translation
- Verification, validation
- Experimental design
- Analysis(Skills)
- use the simulation software to:
    - carry out simulation tasks;
    - use graphs to present their results;
- Write scripting languages to generate other reports.

UNIT - I

System & Models - concepts, environment, continuous & discrete system, modeling type of models, static & dynamic, physical and mathematical models.

UNIT - II

System simulation techniques, Monte Carlo method, simulation & analytical methods. Continuous model, analogue, digital, hybrid computer, System dynamics, growth and decay models, modified exponential and generalization of growth models.

Unit -III

Probability concepts in simulation, stochastic variables, discrete and continuous probability function, continuous uniform and computer generation of random numbers, uniform random number generator.

UNIT- IV

Discrete system simulation, discrete event representation of time generation of arrival patterns, simulation of telephone systems, delayed calls, discrete simulation languages.

UNIT-V

Continuous system simulation : Continuous system models, differential equation, analog computer analog methods, digital analog simulators, CSSLS, CSMPIII language.System Dynamics
: Historical background, exponential, Growth and decay models, modified exponentical growth models, logistic curves and generalization of growth models, system dynamics diagrams, dynamo language.

Text Book:
1. G.Gordan "System Simulation" , 2nd Ed, 2002 PHI.
2. T.A. Payer "Introduction to Simulation", McGraw Hill.
3. W.A. Spriet "Computer Oriented Modeling and Simulation".
4. NarsinghDeo "System Simulation with Digital Computers", PHI.
5. V. Rajaraman "Analog Simulation", PHI

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Name of Prgram: MCA+Ph.D

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MBAI104	Elective	Organizational Behavior	60	20	20			4	0	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives
1. The objective of the course is to familiarize the students with the concept and theories underlying individual and group behavior in organizational context.
2. To help in understanding the reciprocal relationship between the organizational characteristics and managerial behavior.

Course Outcomes
1. Describe human behavior and that of others in an organizational setting.
2. Examine important aspects of group/team processes and manage them.
3. Demonstrate ability to manage, lead and work with other people in the organization.

COURSE CONTENT
Unit I: Introduction to Organizational Behavior (OB)
1. Definition
2. Historical Development
3. Significance of OB
4. Fundamental principles of OB,OB Models

Unit II: Determinants of Individual Behavior
1. Personality - Concept, Determinants and Theories
2. Perception - Perceptual Process, Selectivity and Types, Attribute
3. Attitude - Formation, Components of attitudes
4. Learning - Concept, Theories and Managerial Implications

Unit III:Motivation and Leadership
1. Motivation: Meaning, Theories of motivation-Needs theory, Two factor theory
2. Theory X and Y, Application of motivational theories
3. Leadership: Meaning, Styles of leadership
4. Leadership theories, Trait theory, Behavioral theories, Managerial grid, Situational theories-Fiedler's model, Transactional and Transformation leadership, Hersey-Blanchard Model

Unit IV: Group Behavior
1. Formation of Groups, Building effective Teams
2. Conflict: Meaning, nature, types, process of conflict, conflict resolution
3. Power and Politics: Basis of power, Effectiveness of power tactics
4. Transactional Analysis
5. Change Management, Stress Management

Unit V: Organizational Culture and Structure
1. Importance
2. Managing culture
3. Work stress and its management
4. Organizational Change, Resistance to change
5. Dimension, Types and Design of Organizational structure

Text Book:

1. RobbinsStephen P., Timothy A Judge, SeemaSanghi(2011).Organizational Behavior. PearsonEducation India, Latest Edition.
2. Nelson and Cooper (2007).Positive Organizational Behavior. Sage Publication, Latest Edition.
3. DwivediR. S. (2001). Human Relations and Organizational Behavior: A Global Perspective. Macmillan, Latest Edition.
4. GreenbergJerald and BaronRobert A. (2008).Behavior in Organizations.Pearson Prentice Hall, Latest Edition.
5. Hitt, Millar, Colella (2006). Organizational Behavior: A Strategic Approach. John Wiley and Sons, Latest Edition.

Name of Program: MCA + Ph.D.

Subject Code	Category	Subject Name	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			End Sem. University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
MCCA504	Compulsory	Dot Net Technology	60	20	20	30	20	4	1	6	8

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit;
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*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):
- To provide object oriented development framework with .NET technology
- To provide consistent programming model and direct support for security, simplified development efforts and easy application deployment and maintenance
- To learn building multi-tier enterprise applications
- To teach both client and server side programming
- To understand .NET remoting, web services and web service security
- To understand software as a service

Course Outcomes (Cos): After the successful completion of this course students will be able to
- Understand the development and deployment cycles of enterprise applications.
- Utilize the .NET framework to build distributed enterprise applications.
- Develop ASP.NET Web Services, secure web services, and .NET remoting applications.
- Understand the protocols behind web services including: SOAP, DISCO, and UDDI.
- Understand the 3-tier software architecture (presentation/client tier, application tier, data tier) and develop multi-tier applications.
- Understand and experiment with the deployment of enterprise applications.
- Develop web applications using a combination of client-side (JavaScript, HTML, XML, WML) and server-side technologies (ASP.NET, ADO.NET).
- Develop network applications using state-of-the-art RPC technologies including: .NET remoting, and Web Services (SOAP).
- Develop cross-platform mobile applications using HTML5 and PhoneGap.

UNIT – I
Dot Net Framework:introduction, characteristics and applications, Dot Net Paradigm, introduction to web services, Components of Dot Net Framework, Common Language Runtime, Common Type System, Common Language Specification, Microsoft Intermediate Language, Just–in–time Compilation, Framework Base Classes, Differentiate Between Interface- and Inheritance-Based Polymorphism, Assemblies Common Language Implementation, Garbage Collection, End to DLL Hell - Managed Execution

UNIT – II
Introduction to VB.NET, features of ADO.NET, accessing data with ADO.NET,ADO.NET and classic ADO, windows forms model, creation of web controls and forms, events, menus, dialog boxes, tooltips, data binding, introducing data source controls, read and write data using SQL data source control

UNIT-III
C Sharp (C#): introduction and evolution, C# fundamentals,console applications, data types, decision making, loops, array and strings, constructor and destructors, object and classes, inheritance, polymorphism, function overloadingoperator overloading, inheritance, methods, delegates and events, attributes & reflection API, interfaces,

UNIT-IV
C#.NET: introductionandfeatures,creating .NET projects, namespacesobject oriented concepts, data types, exploring the base class library boxing , delegates, events , interfaces,managing console I/O operations, windows forms, input, output, and serialization, processes, application domains, contexts, threading, debugging and error handling exploring assemblies and namespaces, string manipulation ,files and I/O collections

UNIT-V
Introduction to ASP.NET, working with web and HTML controls, using rich server controls, login controls, overview of ASP.NET validation controls, using the simple validations, using the complex validators accessing data using ADO.NET, using the complex validators accessing data using ADO.NET, server controls, creating consistent looking web sites, control events and event handlers, validation controls, LINQ, ASP.NET – security, data caching, multi-threading, configuration, introduction to windows presentation foundation (WPF), window communication foundation and its application

List of Experiments:
1) Write a program to check whether empty query string is entered in Asp .net
2) Write a program to change color of Label text control programmatically in Asp .Net
3) Write a program to Enable-Disable Textbox and change width of TextBox programmatically in Asp .Net
4) Write a program to increase and decrease font size programmatically.
5) Write C# code to display the asterisk pattern as shown below:
   *****

*****
*****
*****
*****

6) Write C# code to prompt a user to input his/her name and country name and then the output will be shown as an example below:

>   Hello from ShriVaishnavVidyapeethVishwavidyalayaIndia!

7) Write C# code to do the following
   - Convert binary to decimal
   - Convert decimal to hexadecimal
   - Convert decimal to binary
   - Convert decimal to octal

8) Write C# code to convert infix notation to postfix notation.
9) Write a C# code to convert digits to words
10) Write a C# code to convert following currency conversion. Rupees to dollar, frank, euro.

11) Write a C# code to Perform Celsius to Fahrenheit Conversion and Fahrenheit to Celsius conversion.

12) Write ASP.Net program to Store Objects in Session State and Storing Session State in SQL Server.

Design based Problems (DP)/Open Ended Problem:

1) Design and develop a tool that inspects every web request.
2) Develop a powerful cross platform game.

Reference Books:

1. Christian Nagel, "Professional C# .Net", Wrox Publication, 2016
2. Matthew Macdonald, Robert Standefer, "ASP.NET Complete Reference",TMH, 2002
3. Vijay Mukhi, "C# The Basics", BPB Publications,2008
4. Pankaj Agarwal, "Principles Of Net Framework",Vayu Publication, 2011
5. Marino Posadas, "Mastering C# and .NET Framework", Packet Publishing Limited, 2016
6. Andrew Troelsen, Philip Japikse,"C# 6.0 and the .NET 4.6 Framework" , Kindle Edition, 2015
7. Chappell David,"Understanding .NET", Pearson Education, 2006
8. Dino Esposito, Andrea Saltarello, "Microsoft .NET: Architecting Applications for the Enterprise", Microsoft Press, 2015

Name of Prgram: MCA+Ph.D

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme								
			Theory			Practical		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teacher Assessment	End Sem University Exam	Teacher Assessment				
MCCA505	Compulsory	Artificial Intelligence and Applications	60	20	20	--	--	4	0		4

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

Objectives:
- Gain a historical perspective of AI and its foundations.
- Become familiar with basic principles of AI toward problem solving, inference, perception, knowledge representation, and learning.
- Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
- Experience AI development tools such as an 'AI language', expert system shell, and/or data mining tool.
- Experiment with a machine learning model for simulation and analysis.
- Explore the current scope, potential, limitations, and implications of intelligent systems.

Course outcomes:
Upon successful completion of this course, the student shall be able to:
- Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
- Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
- Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
- Demonstrate profciency developing applications in an 'AI language', expert system shell, or data mining tool.
- Demonstrate profciency in applying scientifc method to models of machine learning.
- Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.

UNIT-I
Overview of AI: The AI problems, what is an AI technique, Characteristics of AI applications.
LISP: Introduction to LISP programming: Syntax and numeric functions, Basic list manipulation functions, predicates and conditionals, input output and local variables, iteration and recursion.

UNIT-II
Problem Solving General problem solving, production systems, control strategies forward and backward chaining, exhaustive searches depth first breadth first search.
Hill climbing, branch and bound technique, best first search, constraint satisfaction problems.

UNIT-III
Knowledge Representations: First order predicate calculus, skolemization , resolution principle & unification, interface mechanisms,semantic networks, frame systems and value inheritance, scripts, conceptual dependency.

UNIT-IV
Natural Language processing Parsing techniques, context free grammar, case and logic grammars, semantic analysis. Game playing Minimax search procedure, alpha-beta cutoffs.

UNIT-V
Expert Systems Introduction to expert system and application of expert systems, various expert system shells, knowledge acquisition, case studies, MYCIN

BOOKS
1. Elaine Rich and Kevin Knight "Artifical Intelligence" - Tata McGraw Hill.
2. "Artifical Intelligence" 4 ed. Pearson.
3. Nelsson N.J., Principles of Artificial Intelligence, Springer Verlag, Berlin.
4. Dan W. Patterson "Introduction to Artifical Intelligence and Expert Systems", Prentice India.
5. Nils J. Nilson "Principles of Artifical Intelligence", Narosa Publishing House.
6. Clocksin&C.S.Melish "Programming in PROLOG", Narosa Publishing House.
7. M.Sasikumar,S.Ramani etc. "Rule based Expert System", Narosa Publishing House.