

**HINDUSTHAN COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)
COIMBATORE – 641 028.**

M. Sc. INFORMATION TECHNOLOGY

SCHEME OF EXAMINATIONS – CBCS PATTERN

(For the Students admitted from the Academic year 2016-2017 and onwards)

CODE NO.	SUBJECT	LECTURE HRS./ WEEK	EXAM DURATION (HRS)	MAX. MARKS			CREDIT POINTS
				IE	EE	TOTAL	
First Semester							
16ITP01	Analysis and Design of Information Systems	5	3	25	75	100	4
16ITP02	Big Data Analytics	5	3	25	75	100	4
16ITP03	Advanced JAVA Programming	5	3	25	75	100	4
16ITP04	Advanced Software Engineering	5	3	25	75	100	4
16ITP05	Graphics and Multimedia	5	3	25	75	100	4
16ITP06	Practical I: Advanced JAVA-Lab	5	3	40	60	100	4
Second Semester							
16ITP07	Advanced Operating Systems	5	3	25	75	100	4
16ITP08	Advanced RDBMS	5	3	25	75	100	4
16ITP09	Programming in .Net Framework (VB & ASP)	6	3	25	75	100	4
16ITP10	Practical II: Programming Lab – RDBMS	6	3	40	60	100	4
16ITP11	Practical III : Programming Lab - .Net Framework Lab	6	3	40	60	100	4
16GSP01	Skill Based: Cyber Security	2	-	100	-	100	2
Third Semester							
16ITP12	Internet and Web Designing	5	3	25	75	100	4
16ITP13	Mobile Computing	5	3	25	75	100	4
16ITP14	Network Security and Management	5	3	25	75	100	4
16ITP15	Cloud Computing	5	3	25	75	100	4
16ITP16	Practical IV: Web Programming Lab	5	3	40	60	100	4
16ITP17	Elective I a) Wireless Application Protocols (OR) b) Embedded Systems	5	3	25	75	100	4
Fourth Semester							
16ITP18	Advanced Programming in Open Source Tools - PHP	5	3	25	75	100	4
16ITP19	Software Project Management	5	3	25	75	100	4
16ITP20	Practical V: Web Application in PHP Programming Lab	5	3	40	60	100	4
16ITP21	Elective II a) Enterprise Resource Planning (OR) b) Artificial Intelligence and Robotics	5	3	25	75	100	4
16ITP22	Project Work	-	-	50	150	200	4
							90

Code No.	Subject	Semester No.
16ITP01	ANALYSIS AND DESIGN OF INFORMATION SYSTEMS	I
Objective:	To understand the analysis and design of information system Learn the system and process Specifications and various data input methods.	
Unit No.	Topics	Hours
Unit I	Information and Management Types of information - Need of computer based information system - Management structure - Management and information requirements - Quality of information - Examples of Information systems.	12
Unit II	Information system analysis overview Overview of Design of an Information system - The Role and Task of a System Analyst - Attributes of a System Analyst - Tools used by System Analyst - Information Gathering: Strategy to gather information – Information Sources – Methods of Searching for information – Interviewing Techniques.	12
Unit III	System Requirement Specification Data Dictionary - Steps in system Analysis - Modularizing requirements specification - Feasibility Analysis: Deciding on project goals - Examining alternative solutions - Evaluating proposed system - Cost-Benefit analysis- Payback period – Feasibility report – System Proposal - Data Flow Diagram: Symbols used in DFDs - Describing a system with a DFD - Good conventions in developing DFDs - Logical and Physical DFDs.	12
Unit IV	Process Specification Process specification methods – Structured English - Decision Tables: Decision table Terminology and Development - Extended Entry Decision table – Establishing the logical correctness of decision tables – use of Karnaugh maps to detect Logical errors in Decision table – Eliminating redundant specifications.	12
Unit V	Data Input Methods Data input – Coding Techniques - Detection of Error in Codes – Validating Input data - Interactive Data input. Designing Outputs: Output devices - Objectives of output design - Design of output Reports- Design of screens - Use of Business Graphics – Control, Audit and Security of information System - System Design Examples.	12

Text Book

1. Rajaraman V., "Analysis And Design of Information Systems", Prentice-Hall of india, 2nd Edition , 2005.

Reference Books

1. James A Senn., "Analysis And Design of Information Systems", TMcGH, Second Edition , 2009.
2. Langer, Arthur M., "Analysis And Design of Information Systems", Springer-Verlag London Ltd, Third Edition, 2008.
3. Shouhong Wang, Hai Wang., "Information Systems Analysis And Design", Universal Publishers, 2012.

Dr. V. SARAVANAN
MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.


Code No.	Subject	Semester No.
16ITP02	BIG DATA ANALYTICS	I
Objective:	To impart knowledge on Big data, predictive analysis and Hadoop structure.	
Unit No.	Topics	Hours
Unit I	Understanding Big Data What is Big Data - Varieties of Data - Unstructured data – Trends in Data Storage- Industry Examples of Big Data.	10
Unit II	Big Data Technology Big data Technology – New and older approaches- Data Discovery – Open source technologies for Big Data Analytics- Cloud and Big Data –Big Data Foundation-Computation-Limitations- Big Data Emerging Technologies.	12
Unit III	Business Analytics Business Analytics- Consumption of Analytics- Creation to Consumption of Analytics-Data visualization by Organizations – 90/10 rule of critical thinking – Decision sciences and analytics-Learning over knowledge-Agility-Scale and convergence-Privacy and security in Big Data.	13
Unit IV	Predictive Analytics Predictive Analytics –Linear Regression – Decision trees-Neural networks-Classification trees-Ensemble methods-Association Rules- Segmentation, Sequence Rules, Social Network analytics.	12
Unit V	Hadoop Hadoop – Components of Hadoop – Hadoop File System –Hadoop Technology Stack-Data ware housing Hadoop Concepts-Applications of Hadoop using PIG, YARN, HIVE.	13

Text Book :

1. Micheal Minnelli, Ambiga Dhiraj, Michele Chambers, "Big Data and Big Analytics", Wiley and Sons Inc, 2012
2. Bart Baesens, "Analytics in a Big Data World", Wiley and Sons Inc, 2014.

Reference Books

1. Sameer Wadkar, Madhu Siddalingaiah and Jason Wenner, "Pro Apache Hadoop", APress, Second Edition, 2014.
2. Paul Zikopoulos, Chris Eaton, "Understanding Big Data", McGraw Hill Professional, 2011.
3. Vignesh Prajapati, "Big Data Analytics with R and Hadoop", Packt Publishing Ltd, 2013.


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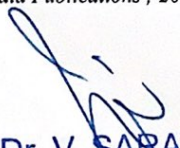
Code No.	Subject	Semester No.
16ITP03	ADVANCED JAVA PROGRAMMING	I
Objective:	To enrich knowledge of advanced key concepts used in java language which help to create database connectivity, networking and java beans capability.	
Unit No.	Topics	Hours
Unit I	Overview Object Oriented Programming - Simple Program - Second short program - Two control statements. Introducing Classes - class fundamentals - Declaring objects - assigning object reference variables - introducing methods - constructors.	12
Unit II	Multithreaded Programming The Java Thread Model - Main Thread - creating a Thread - Creating Multiple Threads - using is Alive () and join() - Thread Priorities - Synchronization - Inter thread communication - Suspending ,resuming and stopping Threads.	12
Unit III	Networking Networking basics - java and the Net - InetAddress - Inet4Address and Inet6Address - TCP/IP Client Sockets - URL - URL Connection - TCP/IP Server Sockets - Datagrams - URL Class.	12
Unit IV	Swing Japplet - JFrame and JComponent - Icons and Labels - Handling Threading Issues - Text Fields - Buttons - Jbutton Class - Checkboxes - Radiobuttons - ComboBoxes - TabbedPanels - Scroll Panes - Trees.	12
Unit V	Java beans Introduction - Advantage of java bean - Introspection - Bound and constrained properties - Persistence - Customizers - Java Bean API - Bean Example.	12

Text Book

1. Herbert Schildt "The complete Reference Java", Tata McGraw Hill, 5th Edition, 2005

Reference Books

1. Deitel & Deitel, "Java How to Program", Prentice Hall, 5th Edition ,2002
2. Peter Hagggar, "Practical Java: Programming Language Guide", Addison Wesley Pub Co, 1st Edition, 2000.
3. Jane Jaworski, "Java Unleashed", SAMS Techmedia Publications , 2002.


Dr. V. SARAVANAN
 MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP04	ADVANCED SOFTWARE ENGINEERING	I
Objective:	To enable the students to learn the basic functions, principles and concepts of Software Engineering.	
Unit No.	Topics	Hours
Unit I	The Product and The Process The Evolving role of Software – Process methods and tools – Software process models – Linear sequential model – Prototyping model – Real model – Evolutionary software process model – Formal methods model – Fourth generation techniques – Project management concepts – Software process and project metric.	12
Unit II	Software Project Planning Software Project Planning – Observation on estimating software Scope, Resources, Project estimation, Decomposition techniques, Empirical estimation models – The Make Busy divisions – Risk management – Software Risk identification – Risk projection, Risk mitigation – Monitoring and management.	12
Unit III	Project Scheduling and Tracking Project Scheduling and Tracking – Basic concepts – Defining a task set for the software project – Scheduling plan – Software quality assurance – Quality concepts and assurance – Software reliability – ISO 9000 Quality standards – Software configuration management – Software reviews – Formal technical reviews – Statistical quality assurance.	12
Unit IV	Conventional Methods For Software Engineering System Engineering: System engineering hierarchy – Analysis concepts and principles – Requirements analysis – Communication techniques – Analysis, principles – Software prototyping – Specification modeling and information flow – Behavioral modeling – Mechanics of structured analysis – Design concepts and principles – Design process – Principles – Concepts – Effective modular design. Architectural design – Data design – Transform mapping – Transaction Mapping – User Interface Design.	12
Unit V	Software Testing Methods Fundamentals – Test case design – White box testing – Basis path testing – Control structure testing – Black box testing – Testing for specialized environment – Testing strategies – Unit testing – Integration – Validation – System testing – Art of debugging. . Object Oriented Software Engineering-Concept and Principles, Design. Reengineering-Business Process Re-engineering, Software Re-engineering.	12

Text Book

1. Roger S Pressman, "Software Engineering: A Practitioner's Approach", McGraw Hill, 2000.

Reference Book

1. Richard Fairley, "Software Engineering Concepts", McGraw-Hill, 2004.
2. Rajib Mall, "Fundamentals of Software Engineering", PHI, Second Edition, 2004.
3. Sommerville, "Software Engineering", Pearson Education, Seventh Edition, 2009.

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Department of Information Technology
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Code No.	Subject	Semester No.
16ITP05	GRAPHICS AND MULTIMEDIA	I
Objective:	To Learn the Basics of Graphics. To understand Multimedia Engineering principles, techniques, tools and compression.	
Unit No.	Topics	Hours
Unit I	Overview of Graphics Systems Video Display Devices – Raster Scan Systems – Random Scan Systems – Graphics Monitors and Workstations – Input Devices –Hard Copy Devices – Graphics Software.	12
Unit II	Multimedia Overview and Text Introduction – Multimedia Presentation and Production – Characteristics of a Multimedia Presentation – Multiple media - Uses of Multimedia – Text-Introduction – Types of Text – Unicode Standard - Font – Insertion of Text – Text Compression – File Formats.	12
Unit III	Image and Graphics Introduction – Image types – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Specification of Digital Images – Device Independent Color Models–Image Processing Software- Image File Formats – Image Output on Monitor – Image Output on Printer. Graphics-Introduction – Components of a Graphics System – Coordinate Systems – line Drawing Algorithms – Circle Drawing Algorithms - Filling Algorithms – Clipping Algorithms – Transformations – 3D Graphics - 3D Modeling.	12
Unit IV	Audio and Video Audio: Introduction - Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Psycho Acoustics – Elements of Audio systems – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio–Synthesizers – Musical Instruments Digital Interface – Audio File Formats. Video : Introduction - Analog Video Camera –Video Signal Formats – PC Video – Video Recording Formats and Systems –Video File Formats – Video Editing – Video Editing Software.	12
Unit V	Animation and Compression Introduction – Historical Background – Uses of Animation – Keyframes and Tweening – Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the web – 3D Animation – Creating Animation – Rendering Algorithms – Animation Software – File Formats – Compression-Introduction – Types of Compression – Types of Redundancies – Lossless/Statistical Compression Techniques–Lossy/Perceptual Compression Techniques.	12

Text Book

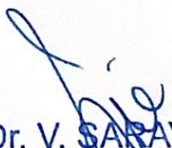
1. Donald Hearn, M. Pauline Baker., "Computer Graphics", PHI, 2nd Edition , 2012.
2. Ranjan Parekh., "Principles of Multimedia", TMH, 2007.

Reference Books

1. Amarendra N Sinha, Arun D Udai., "Computer Graphics", TMH, 2007.
2. Tay Vaughan., "Multimedia: Making It Work", TMH, Eighth Edition, 2010.
3. Judith Jeffcoate., "Multimedia In Practice: Technology and Applications", Pearson Education, 2007.

Dr. V. SARAVANAN
MCA., M.S. (CS), M.Tech. (IT), Ph.D.
Professor / Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP06	PRACTICAL I: ADVANCEED JAVA - LAB	I
Objective	Students will have knowledge on the construction of networking and java bean applications	
Ex. No.	PROGRAM LIST	
1.	Write a java Program to implement REMOTE METHOD INVOCATION.	
2.	Write a java program to execute EVENT HANDLING.	
3.	Write a java program to implement SOCKET PROGRAMMING concept.	
4.	Write a java program to display IPADDRESS OF HOST MACHINE .	
5.	Write a java program to perform GENERIC SERVLET MESSAGE .	
6.	Write a java program to implement GUI WITH BORDER LAYOUT.	
7.	Write a java program to implement SWING CONCEPTS.	
8.	Write a java program to display different countries DATE AND TIME format.	
9.	Write a java program to perform TABBED PANES.	
10.	Write a java program to implement JAVA BEANS applications.	
11.	Write a java program to execute NETWORKING concept.	
12.	Write a java program to perform ANIMATION of different shapes	


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Code No.	Subject	Semester No.
16ITP07	ADVANCED OPERATING SYSTEM	II
Objective:	On successful completion of the course the students should have acquired knowledge in Processes, concurrency, File management etc.,	
Unit No.	Topics	Hours
Unit I	Operating system Overview Operating system Objectives and Functions - Evolution of Operating systems - Process - Process states - Process Description - Process Control - Security Issues - Processes and Threads - Symmetric MultiProcessing (SMP).	12
Unit II	Concurrency Principles of Concurrency - Mutual Exclusion - Semaphores - Monitors - Message Passing - Readers/Writers Problem - Principles of Deadlock - Deadlock Prevention - DeadLock Avoidance - DeadLock Detection - An Integrated DeadLock Strategy - Dining Philosophers Problem.	12
Unit III	Memory Management Memory Management Requirements - Memory Partitioning - Paging - Segmentation - Security Issues - Virtual memory - Hardware and control structures - Operating System Software.	10
Unit IV	Scheduling Uniprocessor Scheduling - Types of scheduling - Scheduling Algorithms - Multiprocessor Scheduling - Real - Time Scheduling - Computer Security threats - Computer Security Concepts - Threats, Attacks and Assets - Intruders - Malicious software overview - Viruses - worms and bots - Root kits - Computer Security Techniques.	13
Unit V	Input/Output and File Management I/O Management and Disk Scheduling - I/O devices - organization of the I/O function - Operating System design Issues - I/O Buffering - Disk scheduling - RAID - Disk Cache - File Management - File organization and Access - File directories - File Sharing - Record Blocking - Secondary Storage Management - File system security.	13

Text Book

1. William Stallings. "Operating systems", Pearson Prentice Hall, 6th Edition, 2009.

Reference Books

1. Pramod Chandra P. Bhatt, "An Introduction to Operating Systems", Prentice Hall of India, 2003.
2. Andrew S. Tanenbaum, "Modern Operating System", Prentice Hall of India, Second, 2001.
3. Achyut s.Godbole, "Operating Systems", Tata Mc Graw - Hill Publishing Company Ltd, 2005.

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Code No.	Subject	Semester No.
161TP08	ADVANCED RDBMS	II
Objective:	On successful completion of the course the students should have gained knowledge in Database design,SQL Queries, Object Data bases etc.,	
Unit No.	Topics	Hours
Unit I	Introduction to Database Design Database Design and ER Diagrams - Entities, Attributes and Entity Sets - Relationships and Relationship Sets - Additional Features of the ER Model - Conceptual Design With the ER Model - Relational Model - Integrity constraints over relations - Enforcing integrity constraints -Querying relational data - Logical database design - ER to Relational -Introduction to Views -Destroying/Altering Tables and Views.	12
Unit II	SQL: Queries, Programming, Triggers The form of a basic SQL Query - UNION,INTERSECT and EXCEPT - Nested Queries - Aggregate operators - Null values -Complex integrity constraints in SQL - Triggers & Active data bases - Designing Active Databases.	12
Unit III	Overview of Transaction Management The ACID Properties - Transactions and Schedules - Concurrent execution of Transactions - Lock - based concurrency control - Performance of Locking -Transaction support in SQL - Introduction to Crash Recovery - Concurrency Control - Introduction to Lock Management - Lock Conversions - Dealing With DeadLocks - Specialized Locking Techniques - Concurrency control without locking.	12
Unit IV	Schema Refinement and Database Security Introduction to Schema refinement - Functional dependencies - Reasoning about functional dependencies - Normal forms -Properties of Decompositions - Normalization - Schema Refinement in data base design - other kinds of dependencies. Security And Authorization - Introduction to Database security - Access control - Discretionary Access control - Mandatory Access control - Additional issues to security.	12
Unit V	Object - Database Systems Structured Data Types - Operations on Structured Data - Encapsulation and ADTs - Inheritance - Objects - OIDs and Reference Types - Database Design for an ORDBMS - ORDBMS Implementation Challenges - OODBMS - Comparing RDBMS, OODBMS and ORDBMS.	12

Text Book

1. Raghu Ramakrishnan, Johannes Gehrke - "Database Management Systems", McGraw - Hill Higher Education, Third Edition, 2003.

Reference Books

1. Elmasri, Navathe, "Fundamentals of Database Systems", Pearson Education Asia, Fourth Edition, 2004.
2. Nilesh Shah, "Database Systems using Oracle", Prentice Hall of India, 2002.
3. Rajesh Narang, "Database Management Systems", Prentice Hall of India, 2004.


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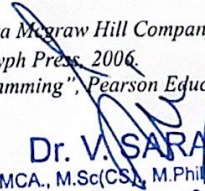
Code No.	Subject	Semester No.
16ITP09	PROGRAMMING IN .NET FRAMEWORK (VB & ASP)	II
Objective:	On successful completion of the course the students should have understood Visual .Net programming and how to build the applications using Asp.Net.	
Unit No.	Topics	Hours
Unit I	.NET Framework Overview of the.NET Framework: .NET Framework Conceptual Overview – Common Language Runtime –Common Type System – Meta Data and Self describing Components – Cross - Language Interoperability – Assemblies in the Common Language Runtime –Application Domains - .NET Framework Class Library Overview – Runtime Hosts – Basic Structural Diagram of .NET Framework – Versions of .NET Framework.	15
Unit II	Introduction to ASP.Net Introduction to ASP.NET - Setting up for ASP.NET - The development environment –ASP & ASP.NET: An overview – ASP.NET Programming Languages - Basics of Programming - Program Flow – Effective Coding Techniques – Designing Applications - Dynamic Website Applications Works - Processing ASP.NET Applications.	15
Unit III	Introduction to VB.NET Properties windows and setting properties of forms and controls - Visual Basic.NET variables – Data Types – Constant – Building Project – Displaying Output – operators – Conditional statements – If - then, Select - case – Looping – Do, For next, nested loops. Import statement – Msg Box Functions – Input Box Functions – User defined and Built – in Functions – Controls. .	14
Unit IV	Arrays Arrays – Menus – Built - in Dialog Boxes – Dialog classes – Files – Handling files using function and classes – Directory class – File class – File Processing.	13
Unit V	Programming ASP.NET with VB.NET VB.NET Programming Language Structures –Built in ASP.NET objects & Interactivity - The response object –The ASP Server object - Web forms & ASP.NET - Web forms - ASP.NET Configuration, Scope and State - ASP.NET and configuration - ASP.NET and state –The application object –ASP sessions – The session object.	15

Text Book

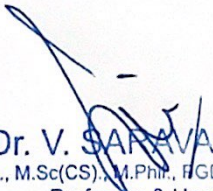
1. PankajAgarwal, "Principles of .NET Framework", Vayu Education of India, 2009.
2. Dave Mercer, "ASP.NET A Beginners Guide", Tata McGraw Hill Company Limited, 2002.

Reference Books


1. Cornell, "Visual Basic 6 From the Ground up" Tata McGraw Hill Company Limited, 2005.
2. CharulShukla, "ASP.NET 2.0 black book", Paraglyph Press, 2006.
3. Matt J.Couch, "ASP.NET and VB.NET Web Programming", Pearson Education, 2002.


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 MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
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 Department of Information Technology
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Code No.	Subject	Semester No.
16ITP10	PRACTICAL II: PROGRAMMING LAB – RDBMS	II
Objective:	Students will be exposed to the RDBMS packages and the database connectivity.	
Ex. No.	PROGRAM LIST	
1.	COLLEGE ADMISSION SYSTEM. (BOTH UG AND PG)	
2.	STUDENT DATABASE MANAGEMENT SYSTEM	
3.	BUS PASS BOOKING AND RENEWAL SYSTEM.	
4.	PERSONAL INFORMATION SYSTEM	
5.	NEWS PAPER VENDOR MANAGEMENT SYSTEM	
6.	STUDENT MARK STATEMENT PROCESSING SYSTEM	
7.	HOSTEL MANAGEMENT SYSTEM	
8.	DEPARTMENTAL STORE MANAGEMENT SYSTEM.	


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 MCA., M.Sc(CS), M.Phil., FGDC., Ph.D.,
 Professor & Head
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Code No.	Subject	Semester No.
16ITP11	PRACTICAL III: PROGRAMMING LAB – .Net FRAMEWORK	II
Objective:	On successful completion of the course the students must have the knowledge to develop database applications in .NET environment.	
Ex. No.	PROGRAM LIST	
1.	Develop a form in VB.Net to display VARIOUS FONT STYLES.	
2.	Develop a VB.Net application to show the EMPLOYEE DETAILS.	
3.	Develop a VB.Net application to display the SIMPLE CALCULATOR.	
4.	Develop a VB.Net application for STUDENTS INFORMATION SYSTEM.	
5.	Develop a menu based VB.Net application to implement A TEXT EDITOR WITH CUT, COPY, PASTE, SAVE AND CLOSE OPERATIONS.	
6.	Develop a COLLEGE WEB SITE using ASP.Net.	
7.	Develop an ASP.Net application for REGISTRATION FORM.	
8.	Develop an ASP.Net application to perform ONLINE EXAMINATION SYSTEM.	
9.	Develop an ASP.Net application for E-COMMERCE.	
10.	Develop an ASP.Net application for ONLINE VOTING SYSTEM	


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Code No.	Subject	Semester No.
16ITP12	INTERNET AND WEB DESIGNING	III
Objective:	On successful completion of the course the students will have a thorough knowledge on XML, XHTML and Scripting Language	
Unit No.	Topics	Hours
Unit I	XHTML Introduction - Editing XHTML - Headings - Linking - Images - Special Characters and Horizontal Rules - Lists - Tables - Forms - Internal Linking - meta Elements - Cascading Style Sheets (CSS) - Introduction - Inline Styles - Embedded Style Sheets - Linking External Style Sheets - Positioning Elements - Backgrounds - Element Dimensions - Box Model and Text Flow - Building a CSS Drop - Down Menu.	12
Unit II	JAVA Script : Introduction & Control Statements Introduction – Operators: Arithmetic, Equality and Relational Operators - Logical Operators, Assignment Operators, Increment and Decrement Operators - Control Statements: if, if.. else, Switch, Break and Continue – - FOR Repetition Statement - WHILE, DO..WHILE Repetition Statement.	11
Unit III	JAVA Script : FUNCTIONS and ARRAYS Functions: Introduction - Function Definitions - Random Number Generation - Scope Rules - JavaScript Global Functions – Recursion. Arrays: Introduction - Declaring and Allocating Arrays - Random Image Generator Using Arrays - References and Reference Parameters - Passing Arrays to functions - Sorting Arrays - Multidimensional Arrays.	13
Unit IV	JAVA Script : OBJECTS and EVENTS Objects: Introduction - Math Object - String Object - Date Object - Using Cookies. Events: Introduction - Registering Event Handlers - Event onload - Event onmousemove, the event Object and this - Rollovers with onmouseover and onmouseout - form Processing with onfocus and onblur - More Form Processing with onsubmit and onreset - event Bubbling.	12
Unit V	XML Introduction – XML Basics – Need for XML – Advantages of XML – working with an XML documents – Structuring Data - XML Name Space – DTD - XML Schema.	12

Text Book

1. Paul J.Deital & Harvey M.Deital "Internet & World WideWeb – How to Program", Pearson International Edition – IV, 2009.

Reference Books

1. Andy Harris, "HTML, XHTML & CSS All-in-one for Dummies", Wiley Publishing Inc, 2nd Edition, 2011.
2. Menavage T. "Java Script for Absolute Beginners", Springer India Pvt. Ltd., 2011.
3. "HTML and XML an Introduction", NIIT, PHI Learning Private Limited, 2012.

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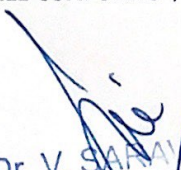
Code No.	Subject	Semester No.
16ITP13	MOBILE COMPUTING	III
Objective:	To understand mobile computing phenomenon in terms of key technologies, relevant standards and applications, Critically analyze security issues of mobile and wireless computing systems.	
Unit No.	Topics	Hours
Unit I	Introduction History of Mobile Communication, Simplified Reference Model, Wireless Transmission Frequencies for radio transmission, Signals, Antennas, Signal Propagation, Multiplexing, Modulation, Spread Spectrum, Cellular Systems, Medium Access Control: SDMA, FDMA, TDMA, and CDMA , Comparison of S/F/T/CDMA.	10
Unit II	Telecommunication Systems GSM, DECT, TETRA, UMTS and IMT- 2000, Satellite Systems: Applications, Basics: GEO, LEO, MEO, Routing, Localization, Handover, Examples.	12
Unit III	Broadcast Systems Overview, Cyclical repetition of data, Digital audio broadcasting, Digital video broadcasting, Convergence of broadcasting and mobile communications, Wireless LAN: Infrared Vs radio transmission, Infrastructure and ad hoc networks, IEEE802.11, HIPERLAN, and Bluetooth.	13
Unit IV	Wireless ATM Motivation, Working group, WATM services, Reference model, Functions, Radio access layer, Handover, Location management, Addressing, Quality of service, Access point control protocol, Mobile network layer: Mobile IP, Dynamic host configuration protocol, Ad-hoc networks.	15
Unit V	Mobile Transport layer Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmission/ fast recovery, Selective retransmission, Transaction oriented TCP, Support for mobility: Wireless application protocol, mode, SyncML, WAP2.0.	10

Text Books:

1. Jochen Schiller, "Mobile Communications", Pearson Education, First Edition, 2000.

Reference Books:

1. Yi-Bing Lin and Imrich Chlamtac, "Wireless and Mobile Network Architecture", John Wiley and Sons, Second Edition, 2001.
2. Wallace Jackson, " Android Apps for Absolute Beginners", APRESS, 2nd Edition, 2012.
3. Ashoke K Talukder, Roopa R Yavagal, "MOBILE COMPUTING", TATA McGRAW HILL, 2007.


Dr. V. SAMYANAN
 MCA., M.Sc(CS), M.Phil, PGDCA, Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP14	NETWORK SECURITY AND MANAGEMENT	III
Objective:	To impart knowledge on various aspects of Network based Applications. Objective of this course is to learn different layers of network technologies, practical solutions etc.,	
Unit No.	Topics	Hours
Unit I	Introduction Need of networks – Management principles - security principles - network management - security attacks - denial of service - information leakage - regular file access - misinformation - special file - Database access - Remote arbitrary code execution - qualities of good network - security, policies and standards - information policy - security policy - physical security - social engineering - security procedures - building a security plan.	12
Unit II	Security Infrastructure Infrastructure components - network category - platform category - physical components - process category - goals of security infrastructure - data confidentiality - data integrity - data availability - design guidelines - authentication - authorization - accounting - physical access controls - logical access controls - security models - biba integrity model - Clark - Wilson security model.	12
Unit III	Cryptography Terminology and background - encryption algorithm - cryptanalysis - data encryption models - substitution ciphers - transposition ciphers - cryptographic algorithms - secret key cryptography - stream ciphers - block ciphers - code - book ciphers - public key cryptography - diffie - hell man algorithm - RSA algorithm - message digest - digital signatures - security mechanisms - speech cryptography.	12
Unit IV	Hardware and Software Security Smartcard - Biometrics - Virtual Private Networks - Types of VPNs - VPN software - Operating Systems - Trusted Operating Systems. - Security Breaches - Kerberos - Public key infrastructure - Pretty Good privacy - Security Protocols - secure socket layer – Transport Layer Security - IPSec.	12
Unit V	Database Security Introduction - characteristics - database security issues - security requirements - user - authentication security - session security - vendor specific security - oracle - Sybase - Microsoft - Netscape - data warehouse control and security - identifying data - classification of data - quantifying data - identifying data vulnerability - data backup and recovery.	12

Text Book :

1. Brijendra Singh, "Network Security and Management", PHI Publications Pvt Ltd, 3rd Edition, 2011.

Reference Books

1. William Stallings, "Cryptography and network security", Prentice Hall of India, 2008
2. Nealkrawetz, "Introduction to Network Security", Indian edition, 2008
3. Uday O Pabrai, Vijay K Gurbani, "Internet & TCP/IP Network Security", McGraw-Hill, 2008

Dr. V. S. ...
MCA, M.G.
Department of ...
Hindusthan College of ...
Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP15	CLOUD COMPUTING	III
Objective:	To learn the different layers of the cloud technologies, practical solutions such as Google, Amazon, Microsoft, Salesforce.com, etc. solutions as well as theoretical solutions.	
Unit No.	Topics	Hours
Unit I	Introduction Defining Cloud Computing: Definition - Cloud Types - Characteristics of Cloud Computing - Role of Open standards - Cloud Architecture: Cloud Computing Stack: Composibility.	12
Unit II	Platforms Infrastructure - Platforms - Virtual Appliances - Communication protocols - Applications - Connecting to the cloud - Cloud Services: Infrastructure as a Service - Platform as a Service - Software as a Service	12
Unit III	Services and Security Identity as a Service - Compliance as a Service - Platforms: Load balancing and visualization- Understanding Hypervisors - Cloud Security: Securing the Cloud.	12
Unit IV	Storage Capability Securing the data - Moving applications to the Cloud - Cloud Storage: Definition - Provisioning - Cloud storage - Cloud Backup solutions - Cloud storage Interoperability	12
Unit V	Applications Moving applications to the Cloud - A Study on Google Web Services - Amazon Web Services - Microsoft Cloud Services.	12

Text Book :

1. *Barrie Sosinsky, "Cloud Computing Bible", Wiley India Pvt. Ltd., 2011.*

Reference Books

1. *Roger Jennings, " Cloud Computing with Windows Azure Platform", Wiley India Pvt. Ltd, 2009.*
2. *Miller Michael, "Cloud Computing: Web - Based Applications That Change the Way You Work and Collaborate Online", Que Publishing, 2008*
3. *Kris Jamsa, " Cloud Computing: Saas , Paas , Iaas , Virutalization, Business models , Mobile Security and more", 2013.*

Dr. V. SARAVANAN
MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP16	PRACTICAL IV: WEB PROGRAMMING LAB	III
Objective:	On successful completion of the course the students will be able to develop database applications in JavaScript	
Ex. No.	PROGRAM LIST	
1.	Design a web page using all XHTML tags.	
2.	Write an XHTML program using Component Style Sheet.	
3.	Write a program for EXAMINATION RESULT CALCULATIONS using JavaScript control structures.	
4.	Write a program to design COMPANY WEB PAGE using JavaScript.	
5.	Write a program for RANDOM IMAGE GENERATOR by using JavaScript functions.	
6.	Write a program to DESIGN FAREWELL INVITATION by using JavaScript.	
7.	Write a program for JOB SEARCH ENGINE using JavaScript	
8.	Write a program to CREATE COLLEGE WEBSITE by using JavaScript.	
9.	Write a program for MOUSE EVENTS by using JavaScript.	
10.	Design TWO WEB PAGES AND CREATE LINK between them.	


Dr. V. SARAVANAN
 MCA., M.Sc(CS), M.Phil., PEDCA., Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP17	ELECTIVE I: WIRELESS APPLICATION PROTOCOL	III
Objective:	On successful completion of the course the students should have: Understood the trends and principles of WAP Contents	
Unit No.	Topics	Hours
Unit I	Mobile Internet Introduction - Key services for mobile internet - Overview of the Wireless Application Protocol: The Origin of WAP - Overview of WAP Architecture - Components of the WAP Standard - Network Infrastructure service supporting WAP Clients-WAP Architecture Design Principles.	12
Unit II	The Wireless Markup Language Overview - The WML Document Model - WML Authoring - URLs Identify Content - Markup Basics - WML Basics - Basic Content - Events, Tasks and Bindings - Variables - Controls - Miscellaneous Markup - Sending Information - Application Security - Other Data - The meta Element - Document Type Declarations - Errors and Browser Limitations - Content Generation - WML Version Negotiation.	12
Unit III	Enhanced WML:WML Script and WTAI WML Script Overview - Language Basics - WML Script Standard Libraries - Other WML Script Libraries - WML Script Development - Binary WML Script - User Interface Design - Designing a Usable WAP Site - Structured Usability Methods - User Interface Design Guidelines - Design Guidelines for Selected WML Elements.	12
Unit IV	Push Messaging Overview of WAP Push - Push Access Protocol - WAP Push Addressing - Push Message - MIME media types for push messages - Push Proxy gateway - Push Over - the Air Protocol - Push Initiator Authentication and Trusted Content - Wireless Telephony Applications (WTA) - Overview of the WTA Architecture - The WTA Client Framework - The WTA Server and Security - Design Considerations - Application Creation Toolbox - Future WTA Enhancements.	12
Unit V	The Mobile Internet Future Better Content, Easier Access - Beyond Browsing - Beyond Cellular - Mobile Data Unleashed - WML Script Standard Libraries References - Crypto Library (Optional) - Dialogs Library - Float Library - Lang Library - String Library - URL Library - WML Browser Library - WTA Public Library.	12

Text Book :

1. Sandeep Singal et al. "WAP writing applications for Mobile Internet" Pearson Education, 2000.

Reference Books

1. Dale Bubrook "WAP:A beginners guide", Tata McGraw Hill, 2001.
2. Ted Wugofski,Wei Meng Lee,"Beginning WAP" Wrox Publishers, 2000.
3. Steve Mann,Scott Sbihli,"The Wireless Application protocol(WAP): A Wiley Tech Brief, 2002.

Dr. K. SARAVANAN
MCA., M.Sc.(CS), M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

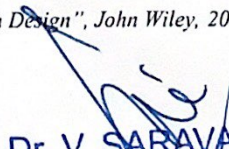
Code No.	Subject	Semester No.
16ITP17	ELECTIVE I: EMBEDDED SYSTEMS	III
Objective:	To reveal great impact and knowledge about the hardware parts of a computer. Their working and different capacities of registers, controllers, memory units are specified.	
Unit No.	Topics	Hours
Unit I	Introduction Introduction to Embedded System: Embedded System – Processor in the System – Hardware Units – Software Embedded into a System – Exemplary Embedded Systems.	12
Unit II	Processor and Memory Organization Structural Units in a Processor – Processor Selection for an Embedded System – Memory Selection for an Embedded system – Direct Memory Access – Devices and Buses for Device Networks - I/O Devices – Timer and Counting Devices – Serial Communication and Parallel Communication – Device Drivers and Interrupts Servicing Mechanism: Device Drivers – Device Drivers for Internal Programmable Timing Devices.	12
Unit III	Embedded Programming in C and C++ Software Programming in Assembly Language (ALP) and in High Level Language „C“ – Embedded Programming in C++ - Embedded Programming in Java – Optimization of Memory needs – Inter - Process Communication and Synchronization of Processes, Tasks and Threads: Multiple Processes in an Application – Problem of Sharing Data by Multiple Tasks and Routines – Inter Process Communication.	12
Unit IV	Real Time Operating Systems Real - Time and Embedded System Operating Systems – Interrupt Routines in RTOS Environment: Handling of Interrupt Source Call by the RTOSs - RTOS Task Scheduling Models, Interrupt Latency and Response Time of the Tasks as Performance Metrics – Performance Metric in Scheduling model for Periodic, Sporadic and A periodic Tasks	12
Unit V	Embedded Software Development process and Tools Introduction to Tools - host and target machines - linking and locating software - getting embedded software into the target system - issues in hardware - software design and co-design.	12

Text Book

1. Raj Kamal, "Embedded Systems – Architecture, Programming and Design", Tata McGraw - Hill, 2003.

Reference Books

1. David E. Simson, "An Embedded Software Primer", Addison - Wesley - 2001.
2. Steve Heath, "Embedded Systems Design", Elsevier, 2003.
3. Frank Vahid and Tony Givargis, "Embedded System Design", John Wiley, 2009.


Dr. V. SARAVANAN
 MCA., M.Sc(CS)., M.Phil., PGDCA., Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP18	ADVANCED PROGRAMMING IN OPEN SOURCE TOOLS - PHP	IV
Objective:	Understand the programming concepts of PHP Scripting Language and to construct simple and complex queries using MySQL and PHP	
Unit No.	Topics	Hours
Unit I	Introduction , Data types and Control Structures Introduction to PHP and MySQL - PHP Variables - Types - Output - Learning PHP Number Handling - Numerical Types - Mathematical Operators - Simple Mathematical Functions - Control Structures - Boolean Expressions - Branching - Looping.	12
Unit II	Functions Using functions - Function Documentation - Defining Your Own Functions - Functions and Variable Scope - Learning PHP String Handling - Strings in PHP - String Functions.	12
Unit III	Arrays The Uses of Arrays - What are PHP Arrays - Creating Arrays - Retrieving Values - Multidimensional Arrays - Inspecting Arrays - Deleting from Arrays - Advanced Array functions - Transformations of Arrays - Stacks and Queues - Translating between Variables and Arrays - Sorting - Printing functions for Visualizing Arrays.	12
Unit IV	Object - Oriented PHP and File System Overview of Object - Oriented Programming (OOP) - Basic PHP Constructs for OOP - Advanced OOP Features - Introspection Functions - OOP Style in PHP - Working with the File system - file Permissions - File Reading and Writing Functions - File system and Directory Functions - Network Functions - Data and Time Functions - Calendar Conversion Functions.	12
Unit V	MYSQL Database Integration Introducing Databases and MYSQL - Performing Database Queries - Integrating Web forms and Databases - Improving Database Efficiency - MySQL Gotchas.	12

Text Book :

1. Steve Suehring, Tim Converse and Joyce Park , "PHP6 and MySQL Bible", Wiley India, New Delhi, 2009

Reference Books

1. Dacie Cristian, "Pack Pub AJAX and PHP" - 2006
2. Steven Holzner, "The Complete Reference", Tata McGraw Hill Edition, NewDelhi, 2009.
3. Jason Gilmore W, "Beginning PHP and MySQL from Novice to Professional", Apress, New Delhi, 2nd Edition, 2007.

Dr. V. SARAVANAN
MCA., M.Sc(CS).., M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

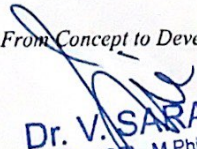
Code No.	Subject	Semester No.
16ITP19	SOFTWARE PROJECT MANAGEMENT	IV
Objective:	To enable the students to learn the concepts of software project management and principles of software project management	
Unit No.	Topics	Hours
Unit I	Product Life Cycle Introduction - Idea generation - Prototype development phase - Alpha phase - Beta phase - protection phase - Maintenance and obsolescence phase - Project Life cycle models- Different life cycle models- Waterfall model - Prototype model - RAD model - Spiral model.	12
Unit II	Software Configuration Management Basic definitions and terminology - The Process and Activities of Software Configuration audit - Software Configuration management in geographically distributed teams - Metrics in software configuration management Tools and Automation - Software Quality Assurance- Defining quality - Importance of Quality - Quality control and assurance - Cost and benefits of quality - Software Quality Analyst's functions - SQA Tools-Risk Management-Risk Identification - Risk Quantification-Risk Monitoring.	13
Unit III	Software Requirement Gathering Inputs and start criteria for requirements - Dimensions for requirement gathering - Steps to be followed - Output and Quality records - Skill sets- Estimation- Need for Estimation - Phases of estimation - Estimation Methodology - Models for size estimation - Translating Estimates.	13
Unit IV	Design and Development Phase Some difference in chosen approach - Salient features of design - Evolving an architecture / blue print - Design for reusability - Technology choices / constraints - Design standards - Design for portability - User interface issues - Design for testability - Design for portability - User interface issues - Design for testability - Design for Diagnosability - Design for maintainability - Design for installability and inter-operability.	11
Unit V	Testing and Maintenance: Testing - Activities of Testing - Test scheduling - Types of Testing - Issues in Testing - Management Structure for Testing - Metrics. Maintenance: Introduction- Activities - Management Issues - Configuration Management- Skill sets - Estimating Size, efforts, and Resources for Maintenance phase - Metrics.	11

Text Book


1. Gopalswamy Ramesh., "Managing Global Software Projects", MC Graw Hill Education (India) Private Limited, New Delhi, 2005.

Reference Books

1. Bob Hughes, Mike Cotterell and Rajib Mall., "Software Project Management", Tata MC Graw Hill Education Private Limited, 5th Edition, 2011.
2. Kelkar S.S., "Software Project Management - A Concise Study", PHI Learning Private Limited, Third Edition, 2013.
3. Kieron Conway., "Software Project Management - From Concept to Development", The Coriolis Group, New Delhi, 2001.


Dr. V. SARAVANAN
 MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP20	PRACTICAL V: WEB APPLICATION IN PHP PROGRAMMING LAB	IV
Objective	Construct simple and complex queries using MySQL and PHP.	
Ex. No.	PROGRAM LIST	
1.	Write a program to send an HTML formatted Email with attachment in PHP.	
2.	Write a PHP Program for Form Validation.	
3.	Write a program for login authentication using PHP and MySQL .	
4.	Create Student Database Using PHP and MYSQL.	
5.	Write a program to upload a file in PHP.	
6.	Write a program to create a registration form using PHP and MySQL.	
7.	Create a Pay slip for an employee using PHP and MySQL.	
8.	Download a small project module and convert into our Requirement.	
9.	Create a web program to access the data from user groups by setting Privileges.	
10.	Create an Admin panel to control User data in client side.	


Dr. V. SARAVANAN
 MCA., M.Sc(CS)-, M.Phil., PGDCA., Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP21	ELECTIVE II: ENTERPRISE RESOURCE PLANNING	IV
Objective:	To understand the concepts and benefits of an ERP	
Unit No.	Topics	Hours
Unit I	Introduction to ERP Common ERP Myths – A Brief History of ERP – The Advantages of ERP - ERP Packages – Over Expectations in ERP – Roadmap for Successful ERP Implementation – The Role of CIO – Concepts of ERP - Risk and Benefits of ERP.	12
Unit II	ERP and Related Technologies Introduction – ERP – Data Warehousing – Data Mining - OLAP – PLM – SCM – CRM – GIS - Advanced Technology and ERP Security – Technological Advancements – Middleware – Computer Crimes – Security and ERP – Computer Security – Crime and Security – ERP Marketplace and Market Dynamics - ERP Functional Modules.	12
Unit III	ERP Implementation Process ERP Implementation Life Cycle - Introduction - Transition Strategies – Big Bang Strategy – Phased Implementation – Parallel Implementation – Process Line Transition Strategy – Hybrid Transition Strategy – Choosing a Strategy - ERP Implementation Process.	12
Unit IV	Consultants, Vendors, and Employees ERP Project Teams - Introduction- In-house Implementation Pros and Cons – Vendors – Consultants – Employees and Employee Resistance – Dealing with Employee Resistance – Contracts with Vendors, Consultants and Employees - Success & Failure Factors of an ERP Implementation.	12
Unit V	ERP Operation & Maintenance And eBusiness Introduction- After Going live – Ongoing Implementation Efforts – Upgrading Versus New Software – Operation and maintenance of the ERP System – Operation of the ERP System- ERP Maintenance Phase- ERP and eBusiness- Introduction – ERP and eBusiness – eBusiness- Supply Chain Integration – The ebusiness Process Model- Components of the eBusiness Supply Chain- ERP/eBusiness Integration - ERP, Internet and WWW-ERP II.	12

Text Book

1. Alexis Leon, "Enterprise Resource Planning", Tata McGraw Hill Education Pvt Ltd, New Delhi, Second Edition, 2008.

Reference Books

1. Venkateswaren N, "Enterprise Resource Planning", Scitech Publications (India) PVT. LTD, 2008..
2. Vinod Kumar Garg, Venkatakrisnan N.K, "Enterprise Resource Planning Concepts and Practice", Prentice-Hall of India Private Limited, New Delhi, 2008.
3. Diwan Parag, Sharma Sunil, "Enterprise Resource Planning – Manager Guide", Prentice-Hall of India, New Delhi, 2002.

Dr. V. SARAVANAN
MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

Code No.	Subject	Semester No.
16ITP21	ELECTIVE II: ARTIFICIAL INTELLIGENCE AND ROBOTICS	IV
Objective:	On Successful completion of the course the students will gain knowledge about Robotics and their applications.	
Unit No.	Topics	Hours
Unit I	Introduction Introduction to Artificial Intelligence - AI Problems - AI Techniques - Criteria for success - Problem Spaces - Search - State space search - Production Systems - Problem Characteristics - Issues in design of Search.	12
Unit II	Heuristic Search techniques Generate and Test - Hill Climbing - Best - First - Problem Reduction - Constraint Satisfaction - Means - end analysis. Knowledge representation issues - Representations and mappings - Approaches to Knowledge representations - Issues in Knowledge representations - Frame Problem.	12
Unit III	Using Predicate logic Representing simple facts in logic - Representing Instance and relationships - Computable functions and predicates - Resolution - Natural deduction - Representing knowledge using rules: Procedural Vs Declarative knowledge - Logic programming - Forward Vs Backward Reasoning - Matching - Control knowledge.	12
Unit IV	Fundamentals of Robotics Introduction - Classification of Robotics - History of Robots - Advantages and Disadvantages of Robots - Robot Components - Robot degree of Freedom - Robot Joints and Coordinates - Robot Workspace - Robot Reach - Robot Languages.	12
Unit V	Sensors: Introduction to internal and external sensors of the Robot - Position Sensors - Velocity Sensors - Acceleration Sensors - SONAR and IR Sensors - Touch and tactile Sensors. Robots: Application of Robots - Selection of Robots - Economic Factors and Justification for Robotic Application - Safety Requirements.	12

Text Book

1. Elaine Rich and Kevin Knight, "Artificial Intelligence", Tata McGraw Hill Publishers company Pvt Ltd, Third Edition, 2003
2. Craig J.J. "Introduction to Robotics, Mechanics and Control", Pearson Education, New Delhi, 2004

Reference Books

1. George F Luger, "Artificial Intelligence", 4th Edition, Pearson Education Publ, 2002.
2. Saced B Nika, "Introduction to robotics", Pearson Education, New Delhi 2003.
3. Sudha Sathasivan, "Artificial Intelligence", Charulatha Publications, 2013

Dr. V. SARAVANAN
MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
Professor & Head
Department of Information Technology
Hindusthan College of Arts and Science
Coimbatore - 641 028.

Code No.	Subject	Semester No.																																																							
16ITP22	PROJECT WORK	IV																																																							
Objective	<ul style="list-style-type: none"> To Provide Students with the opportunity to apply Computer related concepts To Provide Students with educational opportunities and experiences through direct participation in Information Technology related research To recognize the Students efforts in completing the Project by displaying their work 																																																								
<table border="1"> <thead> <tr> <th colspan="2"><u>Institutional / Industrial Training</u></th> <th><u>Mini Project</u></th> <th colspan="2"><u>Project Work</u></th> </tr> <tr> <th>Components</th> <th>Marks</th> <th></th> <th>Components</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td><i>I.E</i></td> <td></td> <td></td> <td><i>I. E</i></td> <td></td> </tr> <tr> <td>Work Diary</td> <td>25</td> <td>-</td> <td>a) Attendance Marks</td> <td>20</td> </tr> <tr> <td>Report</td> <td>50</td> <td>50</td> <td>b) Review Marks</td> <td>30</td> </tr> <tr> <td>Viva-voce Examination</td> <td>25</td> <td>50</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100</td> <td>100</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td><i>E.E</i>^{*1}</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>a) Final Report Marks</td> <td>120</td> </tr> <tr> <td></td> <td></td> <td></td> <td>b) Viva-voce Marks</td> <td>30</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Total</td> <td>200</td> </tr> </tbody> </table>			<u>Institutional / Industrial Training</u>		<u>Mini Project</u>	<u>Project Work</u>		Components	Marks		Components	Marks	<i>I.E</i>			<i>I. E</i>		Work Diary	25	-	a) Attendance Marks	20	Report	50	50	b) Review Marks	30	Viva-voce Examination	25	50			Total	100	100						<i>E.E</i> ^{*1}					a) Final Report Marks	120				b) Viva-voce Marks	30				Total	200
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Dr. V. SARAVANAN
 MCA., M.Sc(CS), M.Phil., PGDCA., Ph.D.,
 Professor & Head
 Department of Information Technology
 Hindusthan College of Arts and Science
 Coimbatore - 641 028.