Department : **Humanities & Social Sciences**			Programme: **B.Tech.**				
Semester : **Fifth**			Course Category Code: **HSM**			Semester Exam Type: **TY**	
Course Code	Course Name		Periods / Week			Credit	Maximum Marks
			L	T	P	C	CA	SE	TM

Course Code	Course Name	Periods / Week L	Periods / Week T	Periods / Week P	Credit C	CA	SE	TM
HS202	**Industrial Economics and Management**	3	-	-	3	40	60	100

Prerequisite	**Nil**	
Course Outcome	**CO1**	Assess the knowledge of mathematics to understand industrial micro economics/macroeconomics
	CO2	Implement various management techniques based on the needs
	CO3	Implement various investment evaluation based on the needs
	CO4	Apply formula and workout problem
	CO5	Understand Case studies on General, Production and Financial management

UNIT-I	**Micro and Macro Economics and its Applications**	Periods: 9	
Nature and Scope of Economic science: Micro – Macro Economics, Economic decisions and Technical decisions. Demand and Supply concepts: Types of Demand, Determinants of Demand and Supply, concept of Equilibrium, Elasticity of Demand, cost components, Concepts of ISO-Quant – Break Even Analysis – Market structure – Price of Product Nature of pricing in different types of competition Small Scale Industries – Role of SSI in Indian Economy. Macro Economics: Nature and functions of Money – National Income – GNP and Savings – Inflation and Deflation concept – Business Cycle – Foreign Trade and Balance of payment.			**CO1**
UNIT-II	**Management Techniques**	Periods: 9	
Types and Principles of Management – Elements of Management – Planning, Organising, Staffing, Directing, Coordinating Controlling - Scope of Management – Types of Organization Merits and Demerits – Types of (Ownership) of a firm Merits and Demerits.			**CO2**
UNIT-III	**Industrial Finance**	Periods: 9	
Need for Finance – Types of finance – Sources of finance – Types of Investment – Evaluation of Investment – Preparation of Trading, Profit and loss Account and Balance Sheet – types of accounting and significance of each types.			**CO3**
UNIT-IV	**Production Management**	Periods: 9	
Theory of Production Function – Types of Production Merits and Demerits – Process Planning – Routing – Scheduling – Material Control Concepts of Productivity – Measurement of Productivity – Inspection and Dispatches.			**CO4**
UNIT-V	**Marketing Management**	Periods: 9	
Core Concepts of Marketing -0 Needs – Wants – Demand, Marketing Vs Selling – Products and Markets – Pricing and related factors – Channels of Distribution – Promotion Advertising – Market Research Vs Marketing Research.			**CO5**

Lecture Periods: 45	Tutorial Periods: -	Practical Periods: -	Total Periods: 45

Reference Books

1. Varshney Maheswari, Managerial Economics, S Chand & Co, New Delhi, 2011.
2. Dutt & Sundaram, Indian Economy, S Chand & Co, New Delhi, 2015.
3. Pandey I.M, Elements of Financial Management, Wiley Eastern Ltd, New Delhi, 2015.
4. H.L. Ahuja, Macro Economics for Business and Management, S Chand & Company Ltd, 2011.
5. O.P Khanna, Industrial Engineering and Management, Dhanpat Rai and Sons, 2009.
6. Philip B Kotler, Marketing Management, Mac Millan, New York 2011.

Department : **Computer Science and Engineering**			Programme: **B.Tech. (CS)**				
Semester : **Fifth**			Course Category Code: **PCC**			Semester Exam Type: **TY**	
Course Code	Course Name		Periods / Week			Credit	Maximum Marks

Course Code	Course Name	L	T	P	C	CA	SE	TM
CS215	**Platform Technologies**	3	-	-	3	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Relate the basic concepts of programming language with C#
	CO2	Develop programs using object oriented programming concepts
	CO3	Build window based applications using C#
	CO4	Develop web based applications using .NET Framework
	CO5	Appraise the .net framework with its advanced features

UNIT-I	**Introduction**	**Periods: 9**	
Introducing C#, Understanding .NET, overview of C#, Literals, Variables, Data Types, Operators, checked and unchecked operators, Expressions, Branching, Looping, Methods, implicit and explicit casting, Constant, Arrays, Array Class, Array List, LINQ, String, String Builder, Structure, Enumerations, boxing and unboxing.			**CO1**

UNIT-II	**Object Oriented Aspects Of C#**	**Periods: 9**	
Class, Objects, Constructors and its types, inheritance, properties, indexers, index overloading, polymorphism, sealed class and methods, interface, abstract class, abstract and interface, operator overloading, delegates, event handling, lambdas, exception handling, Threading, C# best practices.			**CO2**

UNIT-III	**Application Development on .Net**	**Periods: 9**	
Building windows application, Creating our own window forms with events and controls, menu creation, inheriting window forms, SDI and MDI application, Dialog Box(Modal and Modeless), accessing data with ADO.NET, Dataset, typed dataset, Data Adapter, handling exceptions, validating controls, transactions, connection pooling, windows application configuration.			**CO3**

UNIT-IV	**Web Based Application Development on .Net**	**Periods: 9**	
Programming web application with web forms, ASP.NET introduction, working with XML and .NET, session management techniques, web.config, creating web services, handling transaction, handling exceptions.			**CO4**

UNIT-V	**CLR And .Net Framework**	**Periods: 9**	
Assemblies, Versioning, Attributes, reflection, viewing meta data, type discovery, reflection on type, marshalling, Remoting.			**CO5**

Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Reference Books

1. Herbert Schildt, The Complete Reference: C# 4.0, Tata McGraw Hill, 2012.
2. Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson and Morgan Skinner, Professional C# 2012 and .NET 4.5, John Wiley & Sons Inc., 2012.
3. Ian Griffiths, Matthew Adams and Jesse Liberty, Programming C# 4.0, Sixth Edition, O'Reilly, 2010.
4. Paul Deitel and Harvey Deitel, C# 6 for Programmers, Sixth Edition, Deitel® Developer Series, 2016.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**					
Semester : **Fifth**		Course Category Code: **PCC**			Semester Exam Type: **TY**		
Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	SE	TM
CS216	**Computer Networks**	3	-	-	3	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Demonstrate the software and hardware requirements of a network
	CO2	Select the appropriate MAC protocol for a given network
	CO3	Evaluation of networking conditions of a network
	CO4	Propose the solutions to improve the end to end performance of the network.
	CO5	Select various networking protocols required for the development of a network application

UNIT-I	**Physical Layer**	**Periods: 9**	
Introduction – Uses – Network Hardware – Software – Reference Models – Theoretical Basis For Communication – Transmission Media – Wireless Transmission – Electromagnetic Spectrum – Radio Transmission – Digital Modulation – Baseband Transmission.			CO1
Unit-II	**Data Link Layer**	**Periods: 9**	
Data Link Layer – Design Issues – Services - Framing - Error Control - Flow Control - Error Detection and Correction Codes – Hamming Code – Cyclic Redundancy Check - Data Link Layer Protocols - Simplex Protocol – Sliding Window Protocols. Medium Access Control Sublayer – Channel Allocation Problem – Multiple Access Protocols – ALOHA – CSMA Protocols - Collision-Free Protocols - Wireless LAN Protocols. Ethernet MAC Sublayer Protocol – 802.11 MAC Sublayer Protocol - Data Link Layer Switching - Uses of Bridges - Learning Bridges - Repeaters, Hubs, Bridges, Switches, Routers, and Gateways.			CO2
Unit-III	**Network Layer**	**Periods: 9**	
Network Layer – Design Issues – Routing Algorithms - The Optimality Principle - Shortest Path Algorithm – Flooding - Distance Vector Routing - Link State Routing. Congestion Control – Approaches - Traffic-Aware Routing - Admission Control - Traffic Throttling - Load Shedding – Internetworking - Tunneling - Internetwork Routing - IPv4 - IP Addresses – IPv6.			CO3
Unit-IV	**Transport Layer**	**Periods: 9**	
Transport Layer - Services - Berkeley Sockets -Example – Elements of Transport Protocols – Addressing - Connection Establishment - Connection Release - Flow Control and Buffering–UDP – TCP: Segment Header – Connection Establishment – Connection Release – Sliding Window - Timer Management - Congestion Control.			CO4
Unit-V	**Application Layer**	**Periods: 9**	
Application Layer – DNS – Name Space – Resource Records – Name Servers – E-Mail - Architecture and Services - User Agent - Message Formats - Message Transfer - Final Delivery – WWW – Architecture - HTTP – Content Delivery - Server Farms and Web Proxies - Peer-To-Peer Networks. Network Security: Introduction to Cryptography - Substitution Ciphers - Transposition Ciphers – Public Key Algorithms – RSA – Authentication Protocols - Authentication Using Kerberos.			CO5
Lecture Periods: 45	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 45**

Reference Books

1. Tanenbaum, A.S. and David J. Wetherall, Computer Networks, Fifth Edition, Prentice Hall, 2011
2. Larry L. Peterson and Bruce S. Davie, Computer Networks- A System Approach, Fifth Edition, Elsevier, 2012
3. Stallings, Data and Computer Communications, Tenth Edition., Prentice Hall Int. Ed., 2013
4. James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, Third Edition, Pearson Education, 2006.

Department : **Computer Science and Engineering**		Programme: **B.Tech. (CS)**					
Semester : **Fifth**			Course Category Code: **PCC**		Semester Exam Type: **TY**		
Course Code	Course Name	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CA	SE	TM
CS217	**Automata Theory and Compiler Design**	3	1	-	4	40	60	100
Prerequisite	**Nil**							
Course Outcome	CO1	Understand the equivalence between non-deterministic finite state automata and deterministic finite state automata						
	CO2	Understand the equivalence between context-free grammars and non-deterministic pushdown automata						
	CO3	Appreciate the power of the turing machine, as an abstract automaton, that describes computation, effectively and efficiently						
	CO4	Able to design and implement the phases of compilers						
	CO5	Understand and apply code generation and code optimization techniques						

UNIT-I	**Finite Automata and Regular Expressions**	**Periods: 12**	
Formal Languages and Regular expressions, Deterministic and Non-Deterministic Finite Automata, Finite Automata with ε-moves, Equivalence of NFA and DFA, Minimization of Finite Automata, Two-way Finite Automata, Moore and Mealy machines, Applications of Finite Automata.			**CO1**
UNIT-II	**Grammars , PDA and Turing Machines**	**Periods: 12**	
Chomsky hierarchy, Properties of regular sets, Pumping Lemma for regular languages, Context-Free Grammars – Derivation trees, Ambiguous and unambiguous grammars ,Chomsky Normal Forms and Greibach Normal Forms. Pushdown Automata and Context-Free Languages. Turing machines (TM) – Turing Machine constructions – Storage in finite control – Variations of TMs.			**CO2 CO3**
UNIT-III	**Phases of Compiler and Lexical Analyzer**	**Periods: 12**	
Compilers - Analysis of the source program - The phases of a compiler - Cousins of the compiler - Compiler construction tools - Lexical Analysis - The role of the lexical analyzer -- Input buffering - Specification of tokens - Recognition of tokens -A language for specifying lexical analyzers - Design of a lexical analyzer.			**CO1 CO3**
UNIT-IV	**Syntax Analysis and Syntax-Directed Translation**	**Periods: 12**	
The role of the parser - Context-free grammars - Top-down parsing - Bottom-up parsing - Operator-precedence parsing – automatic construction of efficient parser – predictive parser - LR parsers - Parser generators. Syntax-directed definitions -Construction of syntax trees - Bottom-up evaluation of S-attributed definitions -L-attributed definitions - Analysis of syntax-directed definitions.			**CO4**
UNIT-V	**Intermediate Code Generation and Code Generation**	**Periods: 12**	
Intermediate languages-Declarations -Assignment statements -Boolean expressions -Back patching - Procedure calls. Issues in the design of a code generator - Run-time storage management -Basic blocks and flow graphs - The DAG representation of Basic Block- Next use information - simple code generator - Register allocation and assignment –Code Optimization-Peephole optimization - Generating code from DAGs.			**CO5**

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Reference Books

1. John E. Hopcroft and Jeffrey D. Ullman, Introduction to Automata Theory, Languages and Computation, Third Edition, Pearson Publishers, 2007.
2. Alfred V. Aho, Monica S. Lam, Ravi Sethi and Jeffrey D. Ullman, Compilers: Principles, Techniques, and Tools, Second Edition, Pearson Education, Inc, 2006.
3. Michael Sipser, Introduction to the Theory of Computations, Thomson Learning, 1997.
4. John C. Martin, Introduction to Languages and the Theory of Computation, TMH, 2003.

Department : **Computer Science and Engineering**			Programme: **B.Tech. (CS)**				
Semester : **Fifth**			Course Category Code: **PCC**		Semester Exam Type: **LB**		
Course Code	Course Name		Periods / Week		Credit	Maximum Marks	
			L	T	P	C	CA	SE	TM

Course Code	Course Name	L	T	P	C	CA	SE	TM
CS218	**Platform Technologies Laboratory**	-	-	3	1.5	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Able to develop programs using c# language constructs
	CO2	Apply object oriented concepts to write C# programs
	CO3	Build window applications using .net framework using C#
	CO4	Develop and analyze web based applications through C#
	CO5	Grasp .net advanced concepts through application development

Programming Using C#

1. Programs using basic concepts like arrays, LINQ, strings, enumeration, etc.	**CO1**
2. Programs using the following concepts: • Class, constructers, properties, indexers • Inheritance, Polymorphism • Delegates, Exception handling • Multi-threading	**CO2**
3. Develop window based applications to understand and demonstrate: • Windows application for any automation process • Menu, SDI and MDI concepts with essential components • Database connectivity with ADO • Data validation	**CO3**
4. Developing web based applications to understand: • Web Application using ASP.Net • Creation of Web services • Accessing data from XML resources	**CO4**
5. Programs using to learn advanced concepts: • Assemblies • Reflection • Remoting	**CO5**

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 45	Total Periods: 45

Reference Books

1. Herbert Schildt, The Complete Reference: C# 4.0, Tata McGraw Hill, 2012.
2. Christian Nagel et al. Professional C# 2012 with .NET 4.5, Wiley India, 2012.
3. Ian Griffiths, Matthew Adams and Jesse Liberty, Programming C# 4.0, Sixth Edition, O'Reilly, 2010.
4. Paul Deitel and Harvey Deitel, C# 6 for Programmers, Sixth Edition, Deitel® Developer Series, 2016.

Department : **Computer Science and Engineering**			Programme: **B.Tech. (CS)**				
Semester : **Fifth**			Course Category Code: **PCC**		Semester Exam Type: **LB**		
Course Code	Course Name		Periods / Week		Credit	Maximum Marks	
		L	T	P	C	CA	SE	TM

Course Code	Course Name	L	T	P	C	CA	SE	TM
CS219	**Computer Networks Laboratory**	-	-	3	1.5	40	60	100
Prerequisite	**Nil**							

Course Outcome	**CO1**	Apply the existing algorithms for error and flow control
	CO2	Experiment with the network simulation environment
	CO3	Experiment with socket programming
	CO4	Develop various applications using socket programming
	CO5	Design the necessary security and authentication algorithms

1. Implementation of a Program For CRC and Hamming Code for Error Handling.	**CO1**
2. Writing a Code for Simulating Sliding Window Protocols.	**CO1**

3. Implementation (Using NS2/Glomosim/ Your Simulation Program) and Performance Evaluation of the Following Routing Protocols:
  A) Shortest Path Routing
  B) Flooding
  C) Link State
  D) Hierarchical
	CO2

4. Implementation of a socket program for Echo/Ping/Talk commands.	**CO3**
5. Creation of a Socket between two Computers and Enable File Transfer between them. a. TCP b. UDP	**CO3**
6. Implementation of a Program for Remote Command Execution (Two M/Cs May Be Used).	**CO3**
7. Create a Socket For HTTP for Web Page Upload & Download.	**CO4**
8. Write a program to implement RCP. (Remote Capture Screen)	**CO4**
9. Implementation of Public Key Encryption.	**CO5**
10. Implementation of TELNET. (Remote Login)	**CO4**
11. Implementation of an Authentication algorithm to access a File.	**CO5**
12. Simulation of DNS server.	**CO5**

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 45	Total Periods: 45

Reference Books

1. Tanenbaum, A.S. and David J. Wetherall, Computer Networks, Fifth Edition, Prentice Hall, 2011.
2. Larry L. Peterson and Bruce S. Davie, Computer Networks- A System Approach, Fifth Edition, Elsevier, 2012.
3. Stallings, Data and Computer Communications, Tenth Edition, Prentice Hall Int. Ed., 2013.
4. James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, Third Edition, Pearson Education, 2006.

Department : **Humanities & Social Sciences**			Programme: **B.Tech.**				
Semester : **Fifth**			Course Category Code: **MCC**		Semester Exam Type: **-**		
Course Code	Course Name		Periods / Week			Credit	Maximum Marks		
			L	T	P	C	CA	SE	TM
SH203	**Essence of Indian Traditional Knowledge**		3	-	-	-	-	-	-
Prerequisite	Nil								
Course Outcome	**CO1**	Understand connect up and explain basics of Indian traditional knowledge in modern scientific perspective							
UNIT-I					Periods: 23				
Basic structure of Indian knowledge system, Modern science and Indian knowledge system, Yoga and holistic health care.							**CO1**		
UNIT-II					Periods: 22				
Philosophical tradition, Indian linguistic tradition, Indian artistic tradition.							**CO1**		
Lecture Periods: 45		**Tutorial Periods: -**		**Practical Periods: -**		**Total Periods: 45**			

Reference Books

1. N. Sivaramakrishnan (Ed.) Culteral Heritage of India – Course Materal, Bharatiya Vidya Bhavan, Mumbai, Fifth Edition, 2014.
2. Swami Jitatmanand, Modern Physics and Vedanta, Bharatiya Vidya Bhavan.
3. Fritz of Capra, Tao of Physics.
4. Yoga Sutra of Patanjali, Ramakrishna Mission, Kolkatta.
5. R.N. Jha, Science of Consciousness Psychotherapy and yoga Practices, Vidyanidhi Prakashan, Delhi 2016.
6. S.C Chaterjee and D.M Datta, An Introduction to Indian Philosophy, University of Calcutta, 1984.
7. Krishna Chaitanya, Arts of India, Abhinav Publications, 1987.