Syllabus of

B.Sc. (Information Technology)

Part III (Semester- V)

Designed by Dr. S.B. Kishor

GONDWANA UNIVERSITY, GADCHIROLI

SESSION 2014-2015

B. Sc. – III [Information Technology]

SEMESTER V

Paper 1	Computer Forensic Science	**Theory : 80 Marks** **Internal : 20 Marks**	**Practical : 50 Marks**
Paper 2	Dynamic Web Development With Scripting	**Theory : 80 Marks** **Internal : 20 Marks**	
Paper 3	Data Communication and Cloud Computing	**Theory : 80 Marks** **Internal : 20 Marks**	**Practical : 50 Marks**
Paper 4	Computational Linguistics	**Theory : 80 Marks** **Internal : 20 Marks**	

B.Sc. (IT) -III (Semester – V)

Paper-1 : Computer Forensic Science

Paper-2 : Dynamic Web Development With Scripting

Paper-3 : Data Communication and Cloud Computing

Paper 4 : Computational Linguistics

Practical 1 based on paper 1 and 2

Practical 2 based on paper 3 and 4

B.Sc. (IT) - III
SEMESTER – V
PAPER-1: Computer Forensic Science   [Marks: 80
(5BIT1)

UNIT I: Internet Crime
Internet Crime: Definition, Types of Internet Crime, Hacking and Cracking, Cyber Terrisom, Child Pornography, Stalking, Cyber Theft, Cyber Fraud, Phishing, Password Cracking, Evidence Collection, Email Tracing, Internet Fraud.

UNIT II: Security
Authentication: Requirements, Authentication Function, Message Authentication Codes, Hash Functions, Security of Hash Functions, Secure Hash Algorithm, Digital Signatures, Authentication Protocols , Digital Signature Standard, Electronic Signature, Biometric, Intrusion Detection Password Management, Viruses and Related Threat, Virus Counter Measure, Firewall Design Principles, Trusted Systems.

UNIT III: Cryptography
Cryptography: Encryption, Decryption, Encryption Techniques, Cipher Principles, Data Encryption Standard, Block Cipher Design, Principles and Modes of Operation, Public Key, Private Key, Domain Name, Steganography, Network Security.
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UNIT IV: Cyber Law
Cyber Law: Introduction, Definition of Cyber Law, Legal Identity, IT ACT: History of Information Technology Act 2000; IT Act and E-Mail, Copyright, Patent, Trade Marks.

Books:
1) Vakul Sharma, "Handbook of Cyber Laws ", McMillan ISBN 0333-93817-8.
2) KamleshAgrawala, Murli D. Tiwari,"IT and Indian Legal System", McMillan ,ISBN 9780333 937921.
3) William Stallings "Cryptography and Network Security", Pearson, 4th Edition, ISBN 978-81-775-8774-6.

References:
1) William Stallings, "Cryptography and Network Security Principles and Practices" Pearson, 4th Edition, ISBN 81-7758-774-9.
2) William Stallings, "Network Security Essentials Application and Standards", Pearson, 4th Edition, ISBN 978-81-317-6175-5.

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SEMESTER-V

Paper II:Dynamic Web Development With Scripting   [Marks : 80 (5BIT2)

UNIT 1: Introduction
Introduction to WWW, Components of Web, Types of Website, Types of Web Sites, Types of Web Side Architecture, Static and Dynamic Web Pages Features of Static and Dynamic Sides, Architectures of Static and Dynamic Web Sites, Introduction of HTML.

UNIT II: VB Script:Introduction of Scripting Language.
Introduction to VBScript, Features of VBScript, Data Types in VBScript, Elements of VBScript: Identifiers, Operators, Control Statements, Control Structure,
Functions: Variant Function, Math Function, Formatting Function, String Manipulation Function, Type Conversion Methods Supported By VBScript, Arrays in VBScript, Regular Expression.

UNIT III: JavaScript:
Introduction, Features of JavaScript, Structure and Basic Syntax of JavaScript, Data Types, Operators Supported By JavaScript, Control Structure, Dialog Boxes Supported By JavaScript, Functions In JavaScript Built In Function, User Defined Function, Recursion, Arrays

UNIT IV: JavaScript- Object:
JavaScript Document Object Model: Built-In Objects In JavaScript, String Object, Math Object, Date Object, Boolean Object, Number Object, User Defined Objects, Handling (WEB PAGE) Events Using JavaScript
Form Objects: - Methods and Properties of Form Object, The Text Element, The Button Element (Submit and Reset Element), Password Element, Checkbox Element, Radio Element, Text Area Element, Select and Option Element, Multiple Choice Select List, Cookies.

Books:
1) Ivan Bayross, "Web Enabled Commercial, Application, Development using HTML JavaScript, DHTML, Pearl, CGI", BPB, ISBN 81-8333-008-8.
2) Lee Purcell, Mary Jane Mara, "The ABCs of JavaScript", ISBN 81-7029-826-1
3) Kalat K.," Internet Programming with VBScript and JavaScript",CourseTechn., ISBN: 9812400915.

References:
1) NIIT,"Building Web Application", Prentice Hall of India, ISBN 81-203-2714-4

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SEMESTER- V

Paper-III: Data Communication and Cloud Computing   [Marks : 80
(5BIT3)

UNIT I: Data Communication
Data Transmission- Concept and Terminology, Analog and Digital Data Transmission, Transmission Impairment, Transmission Media.**Data Encoding –** Digital Data, Analog Data, Digital Signal, Analog Signal.**Digital Data Communication-** Asynchronous and Synchronous Transmission, Error Detection Technique, Interfacing.**Data Link Controls** – Line Configuration, Flow Control, Error Controls, Data Link Control Protocols. **Multiplexing –** Frequency Division Multiplexes, Synchronous Time Division Multiplexing.

UNIT II: Data Communication Network
Circuit Switching- Communication Network, Circuit Switching, Single Node Network, Digital Network Concept, Concept Signaling. **Packet Switching-** Packet Switching Principal, Virtual Circuit and Datagram, Routing, Traffic Controls, X.25.**LAN and MAN –** LAN, MAN Technology, Bus/Tress Star Topologies, Optical Fiber Bus, Ring Topology, and Medium Access Control Protocols, LAN/MAN Standards.

UNIT III: Communication Architecture
Protocols and Architecture- Protocol, The Layered Approach, OSI Model, TCP/IP Protocol Suite, System Network Architecture. Internetworking – Principles of Internetworking, The Bridge, Routing With Bridge, Connectionless Internetworking, Connectionless Internetworking Work Protocol, Router-Level Protocol, Connection Oriented Internetworking.

UNIT IV: Cloud Computing Basics
Cloud Computing Overview: Applications, Intranets and cloud first movers in the cloud, **Your Organization and Cloud Computing:**When you can use Cloud Computing, Benefits, limitations, Security concurrence, Regular issues. **Cloud Computing with the Titans-** Google.**Hardware & Infrastructure:** Clients,Security, Network, Services.

Books:
1) Willam Stalling "Data and Computer Communication", PHI, ISBN-81-7808-442-2
2) Forouzan,"Data Communication and Network",TMH, ISBN-0-07-049935-7
3) Toby Velte, Anthony Velte, "Cloud Computing A Practical Approach",McGraw-hill,ISBN : 0071626948.

Reference:
1) Tim Mather, SubraKumarsamy," Cloud Security and Privacy", ISBN:0596802765

B.Sc. (I.T.)- III
SEMESTER-V
Paper-IV: COMPUTATIONAL LINGUISTICS[Marks : 80
(5BIT4)

UNIT – I: Prolog Programming andAI
Prolog: Introduction to Turbo Prolog, Structure of Languages. Cut, Fail, Recursion, Lists and Complex Structure **Introduction toAI:** Definition of AI, AI Technique, Tic-Tact-Toe, Pattern Recognition, Level of The Model, Criteria For Success, Problems and Problems Spaces, Defining The Problem, Production System, Control Strategies, Heuristic, Problem Characteristics.

UNIT – II: Problem Solving
Basic Problem Solving Methods, State Space Search; Production Systems, Depth-First, Breadth-First Search, Heuristic Search - Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction End, Means-End Analysis.

UNIT – III: Knowledge Representation
Representing Simple Facts In Logic, Conservation to Clause Form, Resolution In Prepositional Logic and Predicative Logic, Unification Algorithm.

UNIT – IV: Structural Representation and Natural Language Understanding
Structural Representation of Knowledge: Some Common Language Structures, Choosing Level of Representation, Finding The Right Structure, Declarative Representation.
Natural Language Understanding : Concept of Understanding, Keyword Matching, Syntactic andSymantic Analysis, Understanding Language Generation and Matching Translation, General Concept of Implementation of A.I. System, Introduction to Pattern Recognition, Translation.

Books:
1) Rich, Knight, Nair, "Artificial Intelligence", TMH, 3rd Ed,   ISBN 9780070087705
2) Dan W Patterson "Introduction to Artificial Intelligence and Expert Systems",PHI Publication, ISBN- 8120307771
3) NJ Nilsson, "Principles of AI", Narosa Pub. House, 1990, ISBN-8185198292

References:
1) Peter Jackson, "Introduction to Expert Systems", AWP, MA, 1992, ISBN: 0079097855
2) R.J. Schalkoff, "Artificial Intelligence - An Engineering Approach", TMH, 1992, ISBN: 0070550840
3) Burnham and Hall,"Prolog Programming and Application", A.R.Hall, ISBN:04702026.