



**JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J.T.LALVANI COLLEGE OF COMMERCE
(AUTONOMOUS)**

"A" Road, Churchgate, Mumbai - 400 020, India.

**Affiliated to
University of Mumbai**

Program: B.Sc IT

Proposed Courses: T.Y.BSc.IT

Semester V

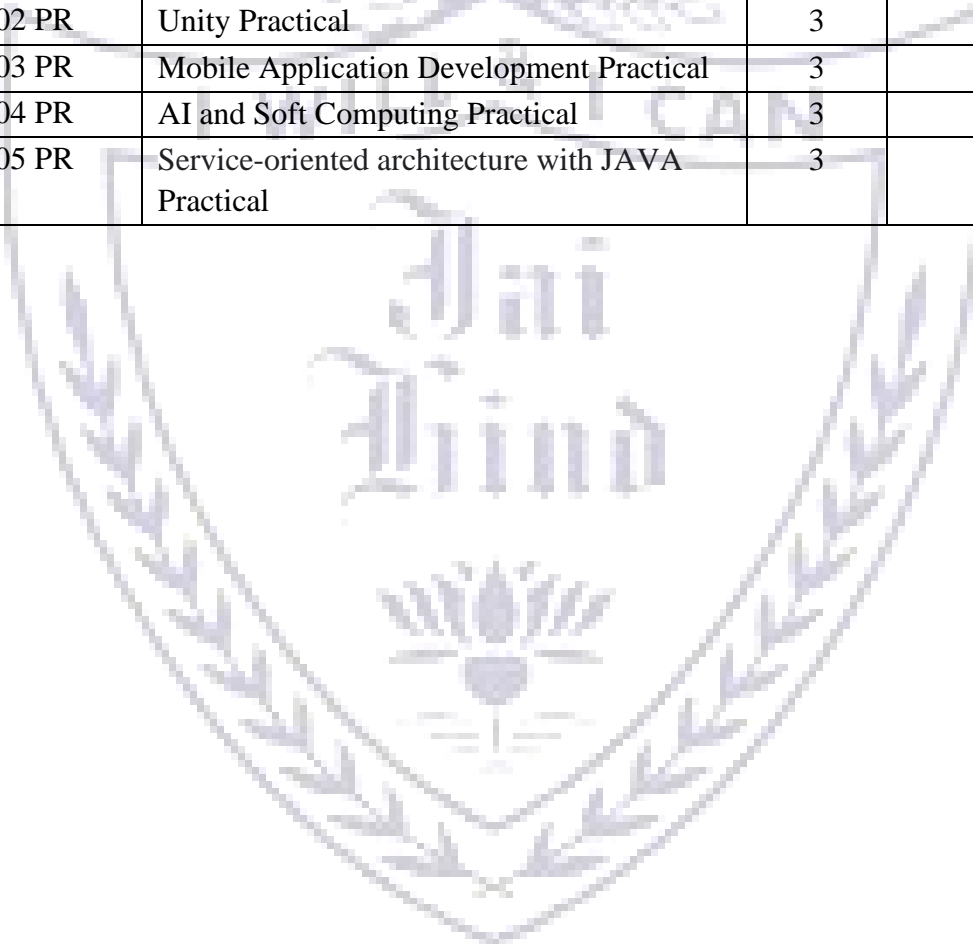
**Credit Based Semester and Grading System (CBCS) with effect from
the academic year 2023-24**



T.Y.BSc. IT

Academic year 2023-2024

Semester V			
Course Code	Course Title	Credits	Lectures /Week
SBIT501	Theory Of Computing	2	5
SBIT502	Unity	3	5
SBIT503	Mobile Application Development	3	5
SBIT504	AI and Soft Computing	3	5
SBIT505	Service Oriented Architecture with JAVA	3	5
SBIT501 PR	Project Dissertation and Implementation	3	3
SBIT502 PR	Unity Practical	3	3
SBIT503 PR	Mobile Application Development Practical	3	3
SBIT504 PR	AI and Soft Computing Practical	3	3
SBIT505 PR	Service-oriented architecture with JAVA Practical	3	3



Semester V – Theory

Course Code: SBIT501	Course Title: Theory Of Computing (Credits: 02 Lectures/Week:05)	
	Objectives: <ul style="list-style-type: none"> ➤ To give an overview of the theoretical foundations of computer science from the perspective of formal languages ➤ To illustrate finite state machines to solve problems in computing ➤ To explain the hierarchy of problems arising in the computer sciences. ➤ To familiarize Regular grammars, context free grammar. Outcomes: Upon the completion of the course students will be able to: <ul style="list-style-type: none"> ➤ To use basic concepts of formal languages of finite automata techniques. ➤ To Design Finite Automata's for different Regular Expressions and Languages. ➤ To Construct context free grammar for various languages. ➤ To solve various problems of applying normal form techniques, push down automata and Turing Machines 	
Unit I	FINITE AUTOMATA: Introduction, Deterministic Finite Automata (DFA) - Formal definition, simpler notations (state transition diagram, transition table), language of a DFA. Nondeterministic Finite Automata (NFA)- Definition of NFA, language of an NFA, Equivalence of Deterministic and Nondeterministic Finite Automata, Applications of Finite Automata, Finite Automata with Epsilon Transitions, Eliminating Epsilon transitions, Minimization of Deterministic Finite Automata, Finite automata with output (Moore and Mealy machines) and Inter conversion.	15 L
Unit II	REGULAR EXPRESSIONS: Introduction, Identities of Regular Expressions, Finite Automata and Regular Expressions- Converting from DFA's to Regular Expressions, Converting Regular Expressions to Automata, applications of Regular Expressions. REGULAR GRAMMARS: Definition, regular grammars and FA, FA for regular grammar, Regular grammar for FA. Proving languages to be non-regular -Pumping lemma, applications, and Closure properties of regular languages.	15 L
Unit III	CONTEXT FREE GRAMMAR: Derivation Trees, Sentential Forms, Rightmost and Leftmost derivations of Strings. Ambiguity in CFG's, Minimization of CFG's, CNF, GNF, Pumping Lemma for CFL's, Enumeration of Properties of CFL (Proof's omitted). PUSHDOWN AUTOMATA: Definition, Model, Acceptance of CFL, Acceptance by Final State and Acceptance by Empty stack and its Equivalence, Equivalence of CFG and PDA.	15 L
Unit IV	TURING MACHINES: Formal definition and behavior, Languages of a TM, TM as acceptors and TM as a computer of integer functions, Types of TMs. RECURSIVE AND RECURSIVELY ENUMERABLE LANGUAGES: Properties of recursive and recursively enumerable languages, Universal Turing machine, The Halting problem, Undecidable problems about TMs. Context sensitive language and linear bounded automata (LBA), Chomsky hierarchy, Decidability, Post's correspondence problem (PCP), undecidability of PCP	15 L

Textbook:

1. John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, Introduction to Automata Theory, Languages of Computation , 3rd Edition, Prentice Hall, ISBN: 0321455363.
2. Linz P, An Introduction to Formal Languages and Automata , Narosa Publishing House Pvt. Ltd., New Delhi, ISBN: 9788173197819.
3. Michael Sipser, Introduction to Theory of Computation , Cengage Learning India Private Limited, Indian Edition, ISBN: 8131505138.
4. H.R. Lewis and C.H. Papadimitriou, Elements of Theory of computation, 2nd Edition, Prentice Hall, ISBN: 0132624788.
5. J. E. Savage, Models of Computation, Exploring the Power of Computing , Addison Wesley, 1998, Available at <http://cs.brown.edu/~jes/book/>.
6. Martin J.C, Introduction to Languages and Theory of Computation , Tata McGraw Hill, 3rd Edition, ISBN: 9780070660489.

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

(i) C.A.-I : Test – 20 Marks of 40 mins. duration

(ii) C.A.-II :Assignment- 20 Marks

II. Semester End Examination (SEE)- 60 Marks

Course: SBIT502	Course Title: Unity (Credits : 03 Lectures/Week: 05)	
	Objectives: <ul style="list-style-type: none"> ➤ The basic objective is to educate students for the fast growing industry of games development. ➤ C# language will be used with unity. ➤ Topics included 2D, 3D graphics and User Interface. ➤ Animation and movement of objects. Outcomes: <ul style="list-style-type: none"> ➤ After completing this course, students are capable of making 2D and 3D models, user interface and games using unity game engine. 	
Unit I	Working with Unity: Getting Around in Unity, Working with Game Objects, Working with Components ,Working with Prefabs, Working with Scenes, Managing Assets, Building Unity Projects, Accessing Preferences Scripting: Working with MonoBehaviours, Using Callbacks, Creating Frame Rate–Independent Behavior, Accessing Components , Finding Objects, Using Coroutines, Singletons, Loading a Level (Scene),Storing Data on Disk, Saving and Loading the Game State, Managing Objects Using an Object Pool,Storing Data in Assets Using ScriptableObject Input: Working with Keyboard Input, Working with Mouse Input ,Locking and Hiding the Mouse Cursor Working with Gamepads,Customizing Unity’s Input System,Responding to Pointer Events from the Event System	15 L
Unit II	Math: Storing Coordinates of Varying Dimensions Using Vectors, Rotating in 3D Space, Performing Transformations in 3D Space with Matrices, Working with Angles, Finding the Distance to a Target, Finding the Angle to a Target 2D Graphics: Importing Sprites, Adding a Sprite to the Scene, Creating a Sprite Animation, Creating a Sprite with 2D Physics, Customizing Sprite Collision Shapes, Using a Composite Collider , Using the Sprite Packer, Applying Forces to 2D Objects ,Creating a Conveyor Belt , Using a Custom Material for Sprites, Managing Sprite Sorting, Using Sorting Groups, Creating a Scene 3D Graphics: Creating a Simple Material,Controlling a Material’s Property Through a Script, Creating an Unlit Material, Setting Up a Material Using Textures, Making a Material Use a Shader, Setting Up a Bloom Effect Using Post-Processing, Using High-Dynamic-Range Colors, Setting Up a Project to Use a Scriptable Render Pipeline ,Creating a Shader Using the Shader Graph ,Creating a Glowing Effect Using the Shader Graph, Exposing Properties from a Shader Graph, Animating a Shader over Time	15 L

<p>Unit III</p>	<p>Physics and Character Control : Understanding FixedUpdate, Implementing MouseLook, Controlling a 3D Character, Interacting with Switches and Objects, Picking Up and Putting Down Objects, Detecting When an Object Is Touching Another Object, Detecting When an Object Is in a Trigger Area, Implementing Moving Platforms, Implementing Platform Riding, Responding to Being Pushed by Objects</p> <p>Animation and Movement: Animating an Object, Basic Character Movement, Inverse Kinematics, Masked Movement , Blended Movement, Navigation and Animating in Sync, Cinematic Camera Tracking, Automatically Switching Cameras, Keeping Multiple Objects in View, Dollying a Camera</p> <p>Gameplay: Managing Quests, Managing Hitpoints , Creating a Top-Down Camera , Dragging a Box to Select Objects, Creating a Menu Structure , Creating a Wheeled Vehicle, Keeping a Car from Tipping Over, Creating Speed Boosts, Creating a Camera That Orbits Around Its Target, Creating Orbiting Cameras That Won't Clip Through Walls, Detecting When the Player Has Completed a Lap</p>	<p>15 L</p>
<p>Unit IV</p>	<p>Behavior and AI: Defining a Path That AI Entities and the Player Can Follow, Letting Entities in Your Game Follow a Path, Enemies Detecting When They Can See the Player, Finding a Good Distribution of Random Points (Poisson Disc) , Enemies Detecting Where They Can Take Cover, Building and Using a State Machine</p> <p>Sound and Music Playing Sounds, Setting Up a Mixer, Using Audio Effects, Using Send and Receive Effects, Ducking, Using Multiple Audio Zones, Playing Audio Through Code, Using a Sound Manager</p> <p>User Interface: Working with UI Control, Theming Controls, Animating the UI, Creating a List of Items , Fading Out List Items, Creating Onscreen Position Indicators, Custom Editors, Property Drawers, Attribute Drawers , Asset Processing , Scripted Importers, Wizards</p>	<p>15 L</p>
<p>Textbooks:</p> <ol style="list-style-type: none"> 1. unity-game-development-cookbook, Essential for Every Game , by Paris Buttfield-Addison, Jon Manning, Tim Nugent 2. Game Programming: Developing with Unity in C# for Beginner, Ortus Publishing, 2018 3. Unity 3D Game Development by Ryan Henson Creighton, 2010 4. Building Virtual Reality with Unity and Steam VR Murray Jeff W., 201 		

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

(i) C.A.-I : Test – 20 Marks of 40 mins. duration

(ii) C.A.-II : Mini Project- 20 Marks

II. Semester End Examination (SEE)- 60 Marks

Course: SBIT503	Course Title: Mobile Application Development (Credits: 03 Lectures/Week: 05)	
	Objectives: <ul style="list-style-type: none"> ➤ Students will be introduced to Android programming and learn to develop Android applications. ➤ Topics include installing Android development tools. ➤ creating user interfaces and utilizing location-based services. ➤ Introduction to firebase authentication and real time database ➤ Introduction to swift programming and ios application development Outcomes: Upon the completion of the course students will be able to: <ul style="list-style-type: none"> ➤ Install and configure Android application development tools. ➤ Design and develop user Interfaces for the Android platform with firebase as a backend ➤ Apply Java programming concepts to Android application development. ➤ Install and configure Xcode for iOS application development using swift language 	
Unit I	Introduction to Android: Overview, History, Features of Android, Architecture of Android, Overview of Stack, Linux Kernel, Native Libraries, Android Runtime, Application Framework, Applications SDK Overview, Platforms, Tools – (JDK, SDK, Android Studio, ADT, AVD, Android Emulator), Versions, Creating your first Android Application Activities, Fragments and Intents: Introduction to Activities, Activity Lifecycle, Introduction to Intents, Linking Activities using Intents, Introduction to Fragments, Adding Fragments Dynamically, Lifecycle of Fragment, Interaction between Fragments	15 L
Unit II	Android User Interface: Understanding the components of a screen, Views and View Groups, Layouts, Tab Layout, Scroll View, Utilizing Action Bar, Adding Action Items to the Action Bar, Customizing the Action Items and Application Icon Designing Your User Interface with Views: Using Basic Views, Text View, Button, Image Button, Edit Text, Check Box, Toggle Button, Radio Button, and Radio Group Views, Progress Bar View, Auto Complete Text View, Using Picker Views, Time Picker View, Date Picker View, Using List Views to Display Long Lists, List View, RecyclerView List Using the Spinner View, Menus and Services: Using Menus with Views, Creating the helper methods, Options Menu, Context Menu, Creating your own services.	15 L
Unit III	Databases: Firebase Introduction, Firebase Features, Android Studio, Adding Firebase to App, Firebase Assistance, Firebase Authentication, Real time Database, Setup & Configuration, Data organization, Read and Write, Update and Delete, Using Google reCAPTCHA in Android Application XML Parsing SAX, JSON Parsing:	15 L

	<p>Messaging and E-mail: SMS Messaging, Sending SMS Messages Programmatically, Getting Feedback after Sending a Message, Sending SMS Messages Using Intent, Receiving SMS Messages, Sending E-mail</p> <p>Location-Based Services and Google Map: Display Google Maps, Creating the project, Obtaining the Maps API Key, Displaying the Map, Displaying the Zoom Control, Changing Views, navigating to a specific location, Adding Markers, Getting the location that was touched, Geo coding and Reverse Geo coding, Getting Location Data, Monitoring a Location.</p>	
Unit IV	<p>Introduction of Interface: Introduction to X Code IDE, iPhone History & Versions, Views & View Controllers, Storyboard & interface builder, Creating First iOS Application.</p> <p>Swift: What is Swift? History of Swift, Swift Syntax, Swift Data types, Swift Variables, Swift Constants, Swift Literals, Swift vs Objective C, First Swift Program, Swift Operators, Control Statement, Swift Loops, Swift Strings, Swift Functions.</p> <p>iOS UI Controls: iOS: Label, iOS: Button, iOS: Text Field, iOS: Date Picker, iOS: Slider, iOS: Stepper, iOS: Switch</p> <p>iOS Container Views: iOS: UI View, iOS: Table View, iOS: Collection View, iOS: Scroll View</p>	15 L
<p>Textbook:</p> <ol style="list-style-type: none"> 1. BEGINNING ANDROID PROGRAMMING WITH ANDROID STUDIO (WROX BEGINNING GUIDES), BY JEROME DIMARZIO 2. PROFESSIONAL ANDROID™ 4 APPLICATION DEVELOPMENT (WROX BEGINNING GUIDES), RETO MEIER 3. Android System Programming by Roger Ye, PACKT PUBLISHING 4. FIREBASE ESSENTIALS - ANDROID EDITION ,BY NEIL SMYTH 5. Mastering Firebase for Android Development, Kumar S Ashok, PACKT PUBLISHING 6. IOS 15 Programming Fundamentals with Swift: Swift,Xcode, and Cocoa Basics,MattNeuburg 7. IOS DEVELOPER NOTES FOR PROFESSIONALS - GOALKICKER.COM 8. https://developer.android.com/reference 9. https://developer.android.com/guide 10. https://developer.apple.com/tutorials/app-dev-training 11. https://firebase.google.com/docs/auth 		

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

- (i) C.A.-I : Test – 20 Marks of 40 mins. duration
- (ii) C.A.-II : Mini Project- 20 Marks

II. Semester End Examination (SEE)- 60 Marks



Course: SBIT504	Course Title: Artificial Intelligence and Soft Computing (Credits: 03 Lectures/Week: 05)	
	<p>Objectives:</p> <ul style="list-style-type: none"> ➤ Understanding what is AI ➤ Various search methods ➤ Use various knowledge representation methods ➤ Use Prolog Programming language using predicate logic ➤ Provide an introduction to the basic principles, techniques and applications of soft computing ➤ Understanding of the basic areas of Soft Computing including Artificial Neural Networks and Fuzzy Logic. <p>Outcomes:</p> <ul style="list-style-type: none"> ➤ Upon the successful completion of the course students should be able to: ➤ Explain what constitutes “AI” and how to identify systems with AI ➤ Explain how AI enables capabilities that are beyond conventional technology ➤ Use classical AI techniques such as search algorithms, neural networks, tracking, robot localisation ➤ Comprehend the fuzzy logic and the concept of fuzziness involved in various systems ➤ To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations 	
Unit I	<p>Introduction: What is Artificial Intelligence? Foundations of AI, history, Aim and scope of artificial intelligence.</p> <p>Intelligent Agents: agents and environment, good behavior, nature of environment, the structure of agents.</p> <p>Problem Solving: Solving problem by searching, Uninformed search strategies, Informed search strategies; adversarial search: Games, Optimal Decision in game, Minimax algorithm, Alpha-Beta pruning; Constraint Satisfaction problem: Constraint propagation, backtracking search for CPSs.</p> <p>Knowledge Representation: Knowledge-Based Agent, First order Logic: Syntax and semantics of FOL, Inference in FOL, Unification, Forward and Backward chaining</p>	15 L
Unit II	<p>Conceptual Graphs: A Network Language, Agent-Based and Distributed Problem Solving</p> <p>AUTOMATED REASONING: Introduction to Weak Methods in Theorem Proving, The General Problem Solver and Difference Tables, Resolution Theorem Proving</p> <p>UNDERSTANDING NATURAL LANGUAGE: The Natural Language Understanding Problem, Deconstructing Language, A Symbolic Analysis, Syntax, Syntax and Knowledge with ATN Parsers, Stochastic Tools for Language Analysis, Natural Language Applications</p>	15 L

	Overview of Expert System Technology:Rule-Based Expert Systems, Model-Based, Case-Based, and Hybrid Systems,Planning	
Unit III	<p>Introduction to soft computing: What is Soft Computing? Difference between Hard and Soft computing, Requirement of Soft computing, Major Areas of Soft Computing, Applications of Soft Computing.</p> <p>Neural Networks: What is Neural Network, Learning rules and various activation functions, Single layer Perceptrons , Back Propagation networks, Architecture of Backpropagation(BP) Networks, Backpropagation Learning, Variation of Standard Back propagation Neural Network, Introduction to Associative Memory:Adaptive Resonance theory and Self Organizing Map, Recent Applications.</p>	15 L
Unit IV	<p>Genetic Algorithm: Fundamentals of GA, Structure of GA, Basic concept,creation of offspring, Encoding, Fitness function, Reproduction, Inheritance operator, CrossOver, Inversion and deletion, Mutation Operator.</p> <p>Fuzzy Systems: Fuzzy Set theory, Fuzzy versus Crisp set, Fuzzy Relation, Fuzzification, Minmax Composition, Defuzzification Method, Fuzzy Logic, Fuzzy Rule based systems, Predicate logic, Fuzzy Decision Making, Fuzzy Control Systems, Fuzzy Classification.</p>	15 L
<p>Textbook:</p> <ol style="list-style-type: none"> 1. Artificial Intelligence: A Modern Approach, Stuart Russel, Peter Norvig, PHI 2. Artificial Intelligence A Guide to Intelligent Systems Second Edition Michael Negnevitsky. 3. George F. Luger Artificial Intelligence: Structures and Strategies for Complex Problem Solving,Fourth Edition, Pearson, 2002. 4. Principles of S.oft Computing (2nd Edition) Dr. S. N. Sivanandam,Dr. S. N. Deepa 5. Natural Language Processing with Python Book by Edward Loper, Ewan Klein, and Steven Bird 6. S. Rajsekarán & G.A. Vijayalakshmi Pai, “Neural Networks,Fuzzy Logic and Genetic Algorithm:Synthesis and Applications” Prentice Hall of India. 7. A Guide to Expert Systems Book by D. A. Waterman 8. N.P.Padhy,”Artificial Intelligence and Intelligent Systems” Oxford University Press. 9. Siman Haykin,”Neural Networks”Prentice Hall of India 10. Artificial Intelligence & Soft Computing for Beginners, Anandita Das Bhattacharjee 		

Evaluation Scheme

[A] Evaluation scheme for Theory courses

- I. Continuous Assessment (C.A.) - 40 Marks**
 - (i) **C.A.-I: Test – 20 Marks of 40 mins. duration**
 - (ii) **C.A.-II: Mini Project - 20 Marks**

- II. Semester End Examination (SEE)- 60 Marks**

Course Code: SBIT505	Course Title: Service Oriented Architecture with JAVA (Credits: 03 Lectures/Week:05)	
	<p>Objectives:</p> <ul style="list-style-type: none"> ➤ Java web application development ➤ Business Component Development ➤ Exposure to lots and lots of working examples/applications ➤ To gain understanding of the basic principles of service orientation ➤ To learn service oriented analysis techniques ➤ To learn technology underlying the service design ➤ To learn advanced concepts such as service composition. ➤ To know about various WS- * specification standards <p>Outcomes: After the completion of this course student will be able to Understand primary concepts of SOA</p> <ul style="list-style-type: none"> ➤ Know the integration of SOA technological points with Web Services. ➤ Implement of SOA in development cycle of Web Services. ➤ Build Database connection for all types web applications. ➤ Develop enterprise applications using Java Beans concepts for the given problem with Persistence 	
Unit I	<p>Introduction to Jakarta EE8: Platform Overview, Architecture, Profiles, Application Components, Jakarta EE Server Support for Application , Dependency Injection, Jakarta EE Application Model, Distributed Multitiered Applications, Security, Jakarta EE Componets, Jakarta EE Clients: Web Clients , Application Clients, Java Beans Component Architecture, Jakarta EE Server Communications, Business Components, Enterprise Information System Tier, Jakarta EE Containers, Web Services Support, Communication Protocols.</p> <p>The SOA: Architecture, Application Architecture, Client-Server Architecture, 1-Tier Application, 2-Tier Application, 3-Tier Application, N-Tier application, Enterprise Computing or Architecture, Business Application, Information Technical, The Design, Security, Administration, EA for Managers, EA for Developers, Analogy of SOA, Web Services for SOA, 'Orientation' of Web Services, History of SOA, The SOA Bandwagon, Why SOA?</p>	15 L
Unit II	<p>Introduction to Java Web Services Java Web Services, JAX-WS and JSR-181, A Simple Service definition with @WebService, JSR-181, @WebService, Modifying the Generated Service, Other Annotations (@WebMethod, @SOAPBinding), The SEI (Service Endpoint Interface, JAX-WS Capabilities, WSDL to Java Mapping, Capabilities (XML Messaging, Handlers, SOAP/HTTP, Client Programming, JAX-WS Clients, Programming Model, Generating Classes from WSDL, Writing a JAX-WS client, Dynamic Clients WSDL – Web Services Description Language</p>	15 L

	<p>XML Namespace and XML Schema Overview, Namespaces and Schema in WSDL Documents, WSDL Structure and Elements, A WSDL Document, SOAP 1.1 Binding for WSDL</p> <p>SOAP: SOAP Overview, Message Structure, SOAP Faults, Attachments, SOAP Messaging and HTTP Binding, SOAP Styles and Encoding</p> <p>SAAJ, DOM, and SOAP Handlers: SAAJ Overview, Message Structure and API, Creating/Sending Messages DOM Overview, Using DOM with SAAJ, Soap Handlers</p>	
Unit III	<p>JAXB – Java Architecture for XML Binding</p> <p>Overview and Architecture, Generating Java Classes from XML Schema, Customizing Generated Java, Generating XML Schema from Annotated Java Classes, Web Services, WSDL, JAXB</p> <p>WSDL & Java: Starting from WSDL, Binding Customizations, Starting from WSDL and Java</p> <p>XML-Based (Bare) Web Services: XML Messaging Overview, JAX-WS Providers, A SOAP Provider an Source Provider, XML Clients with Dispatch, XML/HTTP Messaging with Provider, Overview of REST and JAX-RS</p>	15 L
Unit IV	<p>Introduction To Enterprise Javabeans: Enterprise Bean Architecture, Benefits of Enterprise Bean, Types of Enterprise Bean, Accessing Enterprise Beans, Enterprise Bean Application, Packaging Enterprise Beans, Working With Session Beans: When to use Session Beans? Types of Session, Beans, Remote and Local Interfaces, Accessing Interfaces, Lifecycle of, Enterprise Beans, Packaging Enterprise Beans, Example of Stateful Session, Bean, Example of Stateless Session Bean, Example of Singleton Session, Beans.</p> <p>Working with Message Driven Beans: Lifecycle of a Message Driven Bean, Uses of Message Driven Beans, The Message Driven Beans Example.</p> <p>Interceptors: Request And Interceptor, Defining An Interceptor, AroundInvoke Method, Applying Interceptor, Adding An Interceptor To An Enterprise Bean, Build and Run the Web Application.</p> <p>Java Naming and Directory Interface: What is Naming Service? What is Directory Service? What is Java Naming and Directory interface? Basic Lookup, JNDI Namespace in Java EE, Resources and JNDI, Datasource Resource Definition in Java EE. Persistence, Object/Relational Mapping And JPA: What is Persistence? Persistence in Java, Current Persistence Standards in Java, Why another Persistence Standards? Object/Relational Mapping,</p> <p>EJB-Based Web Services: EJB Overview, Session Beans, Programming EJB, Creating/Configuring EJB Based Web Services</p>	15 L
<p>Textbook:</p> <ol style="list-style-type: none"> 1. Thomas Erl, “Service Oriented Archit ecture: Concepts, Technology, and Design”, Pearson education. 2. Service-Oriented Computing: Semantics, Processes, Agents, Munindar P. Singh and Michael N. Huhns, John Wiley & Sons, Ltd., 2005 <p>Additional References:</p> <ol style="list-style-type: none"> 1. SOA Using Java™ Web Services by Mark D. Hansen 2. SOA Design Pattern By Thomas Erl PHI 		

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

(i) C.A.-I : Test – 20 Marks of 40 mins. duration

(ii) C.A.-II : Mini project- 20 Marks

II. Semester End Examination (SEE)- 60 Mark



Semester IV – Practical

Course Code: SBIT501PR	Practical Title: Project Dissertation and Implementation (Credits : 03 Practicals/Week: 03)
	<p>1.1 PROJECT REPORT:</p> <p>Title Page Original Copy of the Approved Proforma of the Project Proposal Certificate of Authenticated work Role and Responsibility Form Abstract Acknowledgement Table of Contents Table of Figures</p> <p>CHAPTER 1: INTRODUCTION</p> <p>1.1 Background 1.2 Objectives 1.3 Purpose, Scope, and Applicability 1.3.1 Purpose 1.3.2 Scope 1.3.3 Applicability 1.4 Achievements 1.5 Organisation of Report</p> <p>CHAPTER 2: SURVEY OF TECHNOLOGIES</p> <p>CHAPTER 3: REQUIREMENTS AND ANALYSIS</p> <p>3.1 Problem Definition 3.2 Requirements Specification 3.3 Planning and Scheduling 3.4 Software and Hardware Requirements 3.5 Preliminary Product Description 3.6 Conceptual Models</p> <p>CHAPTER 4: SYSTEM DESIGN</p> <p>4.1 Basic Modules 4.2 Data Design 4.2.1 Schema Design 4.2.2 Data Integrity and Constraints 4.3 Procedural Design 4.3.1 Logic Diagrams 4.3.2 Data Structures 4.3.3 Algorithms Design 4.4 User interface design 4.5 Security Issues 4.6 Test Cases Design</p> <p>CHAPTER 5: IMPLEMENTATION AND TESTING</p> <p>5.1 Implementation Approaches 5.2 Coding Details and Code Efficiency 5.2.1 Code Efficiency 5.3 Testing Approach 5.3.1 Unit</p>

Testing
5.3.2 Integrated Testing
5.3.3 Beta Testing
5.4 Modifications and Improvements
5.5 Test Cases
CHAPTER 6: RESULTS AND DISCUSSION
6.1 Test Reports
6.2 User Documentation
CHAPTER 7: CONCLUSIONS
7.1 Conclusion
7.1.1 Significance of the System
7.2 Limitations of the System
7.3 Future Scope of the Project
REFERENCES
GLOSSARY

Evaluation Scheme

[B] Evaluation scheme for Practical courses-50 Marks

Course: SBIT502PR	Practical title:Unity Practical (Credits : 03 Practicals /Week: 03)
	<ol style="list-style-type: none"> 1. Unity objects and components, creating our own component 2. Unity Engine UI <ol style="list-style-type: none"> I. Images II. Buttons III. Toggle IV. Slider V. Dropdown VI. Inputfield 3 . Creating Countdown Timer, digital clock 4 . Introducing to C# with unity <ol style="list-style-type: none"> I. If else statement II. While do while loop III. For loop IV. Switch statement 5 . Creating a simple calculator 6. a) Create Terrain b) Create main menu(play, options and Quit) 7 . Design and animate a Game Character in unity. 8 . Create roll ball game 9 . Create thunder road 10.Create space shooter game

Evaluation Scheme

[B] Evaluation scheme for Practical courses-50 Marks

Course: SBIT503PR	Practical title: Mobile Application Development Practical (Credits :03 Practicals/Week:01)
	<ol style="list-style-type: none"> 1. Introduction to Android Studio and programming resources <ol style="list-style-type: none"> a. Introduction to android and android studio: Activities, Services, Content Providers, Broadcast Receivers, USB debugging mode, Simple “Hello World” program. b. Programming Resources Android Resources: (Color, String, Drawable, Image) 2. Developing basic APP <ol style="list-style-type: none"> a. Create an android interactive user app using different layouts. Linear,Relative, Frame, List View, Grid View, Tab Layout b. Create an android app that demonstrates Activity Lifecycle. 3. Develop an application for working with Menus and Screen Navigation. 4. Programs on implicit and explicit intent. 5. Programs on Services 6. Develop an application for working with Firebase 7. Develop APP for connecting to internet <ol style="list-style-type: none"> a. Develop an application for connecting to the internet and sending email. b. Develop an application for working with location-based services 8. Developing APP using Xcode <ol style="list-style-type: none"> a. Introduction to Xcode and setup of an emulator to execute a simple “HelloWorld” app. b. Programs on using UI controls and Outlets. 9. Develop iOS APP <ol style="list-style-type: none"> a. Develop a Temperature converter application. b. Develop an ios app by using different types of Container Views. 10. Firebase authentication using iOS

Evaluation Scheme

[B] Evaluation scheme for Practical courses-50 Marks.

Course: SBIT504PR	Practical Title: AI and Soft Computing Practical (Credits :03 Practicals/Week:01)
	<p>1.(a) Write a program to simulate 4-Queen / N-Queenproblem.</p> <p>Write a program to implement BFS & DFS</p> <p>2. (a) Write a program to implement alpha beta search.</p> <p>(b) Write a program for Hill climbing problem.</p> <p>(c) A * algorithm</p> <p>3 (a) Design the simulation of tic –tac –toe game using min-max algorithm.</p> <p>4. (a) Solve the block of Worldproblem.</p> <p>(b) Write a program to derive the predicate.</p> <p>5.a) Using the NLTK tool perform stemming and lemmatization</p> <p>b) Count word Frequency</p> <p>c) Perform Tokenizing and Language Detection</p> <p>6. Create a perceptron with appropriate no. of inputs and outputs. Train it using fixed increment learning algorithm until no change in weights is required. Output the final weights.</p> <p>7.Multilayer Perceptron and Application</p> <p>8. Introduction to Fundamental of Fuzzy Logic and Basic Operations.</p> <p>Implement Union, Intersection, Complement and Difference operations on fuzzy sets. Also create fuzzy relation by Cartesian product of any two fuzzy sets and perform maxmin composition on any two fuzzy relations.</p> <p>9.Create a simple ADALINE network with appropriate no. of input and output nodes. Train it using delta learning rule until no change in weights is required. Output the final weights.</p> <p>10.Solve Greg Viot’s fuzzy cruise controller using MATLAB Fuzzy logic toolbox.</p> <p>11.Solve Air Conditioner Controller using MATLAB Fuzzy logic toolbox</p>

Evaluation Scheme

[B] Evaluation scheme for Practical courses-50 Marks

Course Code: SBIT505PR	Practical Title:Service-oriented architecture with JAVA Practical (Credits : 03 Practicals/Week: 03)
	<p>Prac1: Calculator Webservice using Jax-ws</p> <p>Prac2: Create a web service for UGC that contains a method which accepts college name as parameter and returns the NAAC rating. Design a application client to test the above web service</p> <p>Prac3(Jax-ws with Database): Create a web service for UGC that contains a method which accepts college name as parameter and returns the NAAC rating. The college names and their ratings are stored in database. Design a web client to test the above web service.</p> <p>Prac4(Simple Restful Service)</p> <p>Prac 5 (General Jax Rs with Parameters)</p> <p>Prac 6 Jax Rs using Maven Artifacts</p> <p>Prac7 EJB Stateless Converter Bean</p> <p>Prac8 Stateless Converter Bean with JDBC</p> <p>Prac9: Stateful Session Bean Cart</p> <p>Prac10: JPA: Creation of a Entity Class through the Data base</p> <p>Prac11: JSF Navigation and Managed Bean Demo with Login Page</p> <p>Prac12: Calculator JSF and Mobile Validator JSF : Using Managed bean and using Validators in JSF</p> <p>Practical 14: Loan calculator</p> <p>Practical 15 : Connecting JAX-RS with EJB</p>

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