



**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 :BVOC (Software Development)

Proposed Course : S.Y.BVOC (Software Development)

**Credit Based Semester and Grading System (CBCS) with
effect from the academic year 2022-23**

S.Y.BVOC (Software Development)

Academic year 2022-2023

Semester IV			
Course Code	Course Title	Credits	Lectures /Week
General Component			
SBSD401	Financial Literacy	2	3
SBSD402	Research Methodology	2	3
SBSD403	Human Resource Management	2	3
Skill Component			
SBSD404	Android App Development	2	3
SBSD405	C# and ASP.Net MVC	2	3
SBSD406	Computer and Network Security	2	3
SBSD407	Advance SQL with Oracle	2	3
SBSD404 PR	Android App Development Practical	2.5	3
SBSD405 PR	C# and ASP.Net MVC Practical	2.5	3
SBSD406 PR	Computer and Network Security Practical	2.5	3
SBSD407 PR	Advance SQL with Oracle Practical	2.5	3

Semester IV – Theory

Course Code: SBSD401	Financial Literacy (Credits:02 Lectures/Week:03)	
Learning Objectives	<ul style="list-style-type: none"> ☐ This paper will help in understanding the basics of accounting which is very essential for all the students to know in any sector. ☐ The paper will provide basic understanding and knowledge on such financial aspects such as Taxation, Financial services and Insurance. ☐ Will help students prepare for jobs in in dealing with financial accounts, taxation and other financial dealings in a company. 	
Course description	The course prepares students in various aspects of financial literacy which is essential in today’s workspaces. It covers aspects of Accounting and book keeping, basics of direct and indirect taxes and financial instruments and services.	
	THEORY	(45 Lectures)
Unit I	Introduction to Book keeping Functions for Accounting, Rules of Debit and Credit, Compound Journal Entry. Ledger Posting and Trial Balance. Trading Account, Profit & Loss Account and Balance Sheet	10 L
Unit II	Basics of Direct Tax-Individual & Company Terms- Assessment, assessee, assessment year, previous year, financial year, Chargeability, Person, TDS, PAN, Standard Exemption. Residential status. Heads of Income, Computation& Deductions	10 L
Unit III	Basics of Indirect Tax Terminologies-Custom duties, GST, Stamp Duty, STT, Luxury Tax, Excise, Entertainment Tax Introduction to dual model of GST a) GST Regime b) GST Council a) Person liable for registration b) Person not liable for registration c) Compulsory registration	15 L

Unit IV	Basics of Financial Services and Insurance Meaning, Classification and scope of Financial Services Types of Financial Instrument Types of Insurances	10 L
<p>REFERENCES:</p> <ol style="list-style-type: none"> 1. Donald F. Sutton, 1986. Financial Management in Hotel and Catering Heinemann, London. 2. Flamholds, Etle, Human Research Accounting, California. 3. G. Boni and F.F. Shartes, 1988 Hotel Organization Management and Accounting, Sir ISAAR, Pitman, London. 4. Horwarth and Toth, 1979, Hotel Accounting, Ronald Press, New York. 5. J. M. Negi, 1987, Financial and cost Control Techniques in hotel and Catering Industry. 6. L. S. Porwal, 1993, Accounting theory, An Introduction Tata McGraw Hill Publishing Co., Ltd., New Delhi. 7. Leslie Chadwick, 1995 The Essence of Financial Accounting Prentice Hall of India Pvt. Ltd., New Delhi. 8. Owen, Accounting for Hospitality Tourism and Leisure, Pitman. 9. Richard, Katas, 1984, Management Accounting for Hotels and Restaurants, Surrey University Press. 10. Richard, Katas, 1989, Book-Keeping in hotel and Catering Industry, Surrey University Press, London. 11. Robert and Anthony, 1995, Management Accounting, Prentice Hall of India Pvt., Ltd. New Delhi. 12. R.D. Boardman, 1980, Hotel and Catering Costing and Budgets, Heinemann, London. 13. Adrill, P and Mclancey , 2001, Accounting and Finance for non-Specialists, Prentice Hall. 14. Dyson J R, 2001, Accounting for Non-Accounting Students, 5th Ed. Prentice Hall. 		

[A] Evaluation scheme for Theory courses

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

C.A.-I : Test – 20 Marks of 40 mins.Duration

C.A.-II: 20 marks Assignment/Presentation /Field visit

II. Semester End Examination (SEE)- 60 Mark

Course: SBSD402	Course Title: Title: Research Methodology (Credits : 02 Lectures/Week: 03)	
	<p>Learning Objectives:</p> <ul style="list-style-type: none"> ● Understand the Research Methodology with respect to the specific procedures or techniques used to identify,select,process and analyze information about a topic. <p>Course Outcomes:</p> <p>Upon the completion of the course students will be able to:</p> <ul style="list-style-type: none"> ● Students would get an understanding of what are the research concepts and its methodologies. ● Select and define appropriate research problems and parameters ● Prepare a project proposal ● Organize and conduct research in a more appropriate manner ● They would also get an understanding of literature reviews,data analysis,applying research concepts and report writing 	
Unit I	<p>Introduction to Research:</p> <p>RESEARCH FORMULATION AND DESIGN</p> <p>Motivation and objectives – Research methods vs. Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical, concept of applied and basic research process, criteria of good research.</p> <p>Foundation of Research</p> <p>What is Research? , Objectives of Research , Scientific Research , Research and Theory , Conceptual and theoretical Models, Importance of research methodology in scientific research</p>	10 L
Unit II	<p>Types and Methods of Research</p> <p>Classification of Research , Pure and Applied Research , Exploring or Formulative Research , Descriptive Research , Diagnostic Research/Study , Evaluation research/Studies , Action Research , Experimental Research , Analytical Study of Statistical Method , Historical Research , Surveys , Case Study , Field Studies</p> <p>Review of Literature</p> <p>Need for Reviewing Literature , What to Review and for what purpose , Literature Search Procedure , Sources of Literature ,</p>	10 L

	Planning of Review work , Note Taking , Library and documentation	
Unit III	<p>Planning of Research and Identifying the Problem Planning of Research</p> <p>The planning process , Selection of a Problem for Research , Formulation of the Selected Problems , Hypothesis formation , Measurement ,Research Design/Plan</p> <p>Defining and formulating the research problem, selecting the problem, necessity of defining the problem, importance of literature review in defining a problem, literature review-primary and secondary sources, reviews, monograph, patents, research databases, web as a source, searching the web, critical literature review, identifying gap areas from literature and research database, development of working hypothesis.</p> <p>Methods of data collection</p> <p>Types of Data , Meaning and Importance of Data , Sources of Data , Use of Secondary Data , Methods of Collecting Primary Data , Observation Method , Experimentation, Design of Experiments , Simulation</p>	15 L
Unit IV	<p>Report writing</p> <p>Types of Reports , Planning of Report Writing , Research Report Format,Principles of Writing ,Documentation , Data and Data Analysis Reporting in a Thesis , Writing of Report, Typing of Report , Briefing</p>	10 L
<p>Textbook:</p> <ol style="list-style-type: none"> 1. Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p. 2. Fundamentals of modern statistical methods by Rand R.wilcox. 3. Design and Analysis of Experiments by Montgomery D.C. (2001), John Wiley 4. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, Ess Ess Publications. 2 volumes. 5. Research in Education, Tenth Edition,Best and Kahn,Pearson 6. 		

Evaluation Scheme

Evaluation scheme for Theory courses

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

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

(ii) C.A.-II : Case Study- 20 Marks

II. Semester End Examination (SEE)- 60 Marks

Course: SBSD403	Course Title: Human Resource Management (Credits : 02 Lectures/Week: 03)	
	Objectives: <ul style="list-style-type: none"> ● This paper provides an understanding on aspects of HRM which students will be using in their professional career ● Students develop a basic understanding of Jobs, recruitment, compensation, Conflict Management and explore various aspects of leadership and decision-making ● The paper will analyse current issues and challenges In HR. Outcomes: <ul style="list-style-type: none"> ● Students will be able to appreciate the role and function of an HR Manager and incorporate it in their professional life. □ Students will learn various aspects and develop their perspective on HR 	
Unit I	Introduction to HRM: Fundamentals of Human Resource Management, Introduction-Meaning, Functions and Importance. Role of HR Manager & HRP Process Manpower Estimation Job analysis -Job Description-Job Specification. Recruitment -Sources, Selection Process, Placement and Induction	10 L
Unit II	Training, Performance and Compensation Management Training and Development-Objectives and Needs - Training Process Methods of Training-Tools and Aids - Evaluation of Training Programs. Performance Management, Productivity Management-Concepts-TQM-Kaizen-Quality Circles& Appraisals. Types of Compensation Systems, Compensation Equity Mandatory and voluntary benefits &Incentives	15 L
Unit III	Managing Conflict &Industrial Relations Grievance Procedure Collective Bargaining Settlement of Disputes Retirement/Separation - Superannuation – VRS Resignation - Discharge-Dismissal -Suspension-Layoff	10 L
	Current Issues and Challenges in HR Compliance with Laws and Regulations Workplace Diversity and Employee Welfare	10 L

Unit IV	Adapting to Innovation and Leadership changes	
<p>Textbook:</p> <ol style="list-style-type: none"> 1. Dessler, Gary. (2014).(14th ed)<i>Human Resource Management</i>. Upper Saddle River, NJ: Prentice Hall, 2. Mathis, Robert L., & Jackson, John H. (2014). (14th ed). <i>Human Resource Management</i>. Stamford, CT: Cengage Learning. 3. Armstrong, Michael. (2009). <i>Handbook of Human Resource Management Practice</i> (11th Edition), Kogan Page, London. 4. Seema Sangh, (2011) <i>Human Resource Management</i>, McMillan, Delhi, <p>Additional References:</p> <ol style="list-style-type: none"> 1. Sharma, A. M. (2005). <i>Personnel & HRM</i>, Pune: Himalaya Publishing House. 2. Monappa, Arun & Saiyadin, Mirza, (1985). <i>Human Resource Management</i>, New York: Tata McGraw Hill Publishing Co. 3. Pattanayak, Bisvvajeet, (2005). <i>Human Resource Management</i>, Delhi: Prentice - Hall India. 4. Decenzo, David A., & Robbins, Stephen P., (1994). <i>Human Resource Management</i>, New York: John Wiley & Son. Inc. 5. Michael, V. P., (1998). <i>Human Resource Management and Human Relations</i>, Pune: Himalaya Publishing House. 6. Wayne Mondy, (2009) <i>Human Resource Management</i>, Pearson Education, (10th Edition). 7. Harvard Business Review. 		

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: 20 marks Assignment/Presentation /Field visit

II. Semester End Examination (SEE)- 60 Marks

Course: SBSD404	Course Title: Android App Development(Credits :02 Lectures/Week:03)	
	<p>Objectives:</p> <ul style="list-style-type: none"> ● To provide comprehensive insight into developing applications running on smart mobile devices and demonstrate programming skills for managing tasks on mobile. ● To provide a systematic approach for studying definition, methods and its applications for Mobile-App development. <p>Outcomes:</p> <ul style="list-style-type: none"> ● Understand the requirements of the Mobile programming environment. ● Learn about basic methods, tools and techniques for developing Apps ● Explore and practice App development on Android Platform <p>Develop working prototypes of working systems for various uses in daily lives</p>	
Unit I	<p>Android Introduction:- Android Introduction, What is Android, History and Version Android Architecture, Core Building Blocks, Creating your first android application, Anatomy of an Android application, Introduction to Gradle, Android overall execution process Android Activity :Understanding Activity LifeCycle, Android UI Layout: Constraint Layout, Linear layout, Relative layout, Table layout, Frame layout, VerticalScrollView, Horizontal, ScrollView, , TabLayout Android Basic UI Widgets:- Working with EditText ,Button, Image Button, Toast, CheckBox, RadioButton, Spinner</p>	15 L
Unit II	<p>Android Intents & Fragments Implicit Intent, Explicit Intent, Life Cycle of a Fragment Lifecycle, Interactions between Fragments Android Advanced UI Widgets:- AutoCompleteTextView, ListView, RatingBar, WebView, SeekBar, DatePicker, TimePicker, AlertDialog, ProgressBar, ImageSwitcher, ImageSlider, SearchView Android Menu:Option Menu, Context Menu, Popup Menu</p>	15 L
Unit III	<p>AlarmManager: android AlarmManager Storage: Android Preferences, Internal Storage, External Storage Android SQLite: CRUD operation using SQLite database connection</p>	15 L

	XML and JSON: XML Parsing SAX, JSON Parsing Android Telephony: Phone Call, Send SMS, Send Email Android Device: Bluetooth, List Paired Devices, WIFI, Camera Sensor	
Unit IV	Graphics and animation, Multimedia: Drawing graphics in android, creating animations with androids graphics API, Playing audio & video Android Service: Android Service Google Map: Android Google Map, Current Location, Search Location Firestore: Firestore Authentication - Google Login, Real-time database. Research Component:- <ul style="list-style-type: none"> ● Radiation Reducer ● Anti Theft System ● Call Blocker ● Group Chat ● Heart beat monitor 	15 L
Textbook: <ol style="list-style-type: none"> 1. Professional Android™ 4 Application Development, Reto Meier, John Wiley & Sons, Inc. 2012. 2. Android Application Development, Black Book, Pradeep Kothari, Kogent Learning Solutions, DreamTech Press 3. “Beginning Android 4 Application Development”, Wei-Meng Lee, March 2012, WROX. 4. Google Android Developers - https://developer.android.com/index.html 		

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

Q.1 Answer any two -10 Marks

Q.2 Answer any two -10 Marks

Q.3 Answer any two -10 Marks

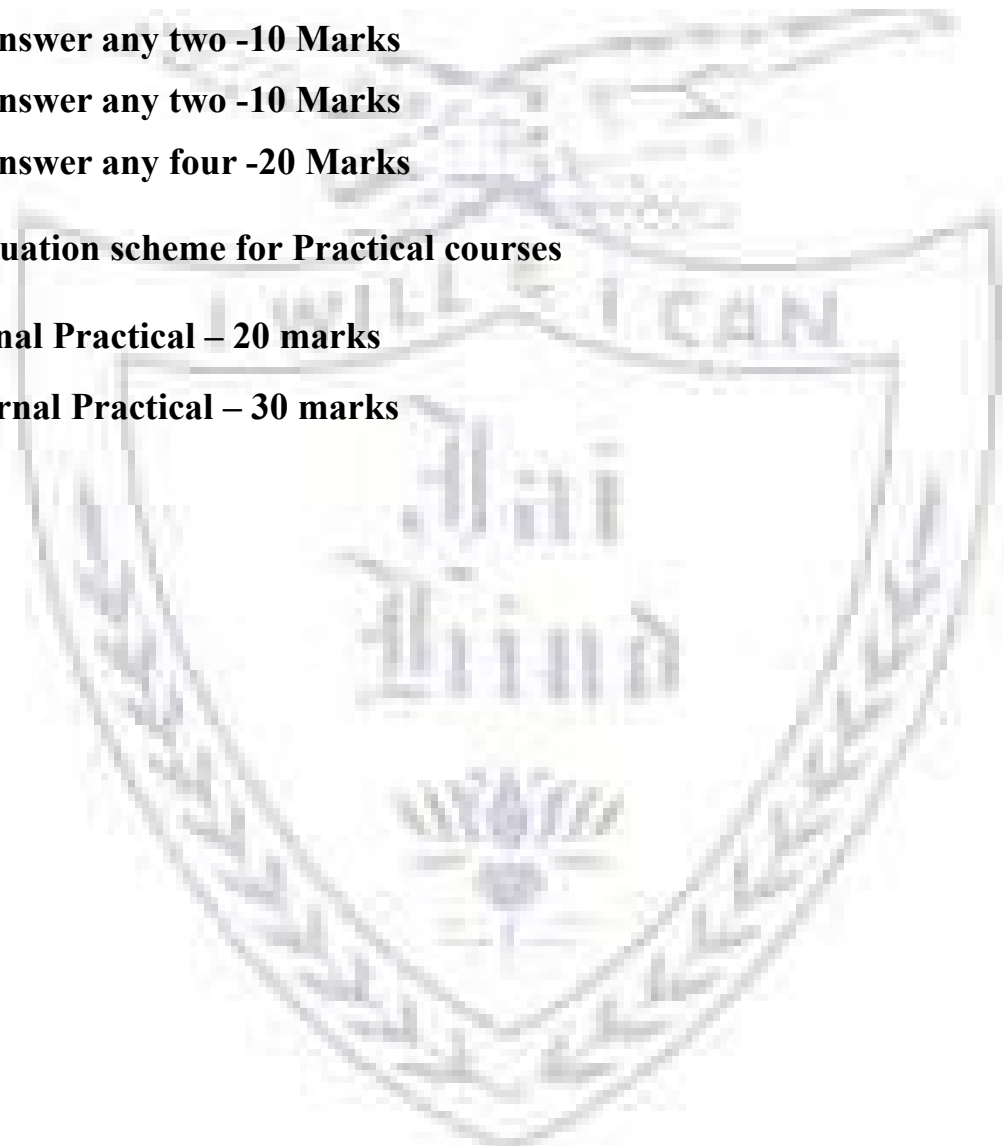
Q.4 Answer any two -10 Marks

Q.5 Answer any four -20 Marks

[B] Evaluation scheme for Practical courses

(i) Internal Practical – 20 marks

(ii) External Practical – 30 marks



Course: SBSD406	Course Title: C# and ASP.Net MVC (Credits : 02 Lectures/Week: 03)	
	<p>Objectives:</p> <ul style="list-style-type: none"> ● This course is designed to understand the basic object-oriented concepts through C# and will help students create applications and projects using the same language. ● To provide insight into .NET technologies for web programming and enable them to design and develop interactive and responsive web applications with MVC architecture. <p>Outcomes:</p> <ul style="list-style-type: none"> ● Develop a proficiency in the C# programming language and create applications with strong object oriented principles ● Understand the core MVC concepts ● Proficiently develop ASP.NET web applications using C# and MVC ● Implementing Navigation in MVC web apps ● Understanding the entity framework ● Learn how to create backend using LINQ and query databases using Entity Framework. ● Understand the working of ASP.NET Web API. 	
Unit I	<p>The Big Picture: The Evolution of Web Development, The .NET Framework</p> <p>The C# Language: The .NET Languages, C# Language Basics, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods.</p> <p>Types, Objects, and Namespaces: The Basics About Classes, Building a Basic Class, Value Types and Reference Types, Understanding Namespaces and Assemblies, Advanced Class Programming.</p>	15 L
Unit II	<p>Getting Started: A Quick Introduction to ASP.NET MVC, ASP.NET MVC 5 Overview, Installing MVC 5 and Creating Applications, The MVC Application Structure, project templates.</p> <p>Controllers: The Controller's Role, Controller Basics.</p> <p>Views: The Purpose of Views, View Basics, Understanding View Conventions, Strongly Typed Views, View Models, Adding a View, The Razor View Engine, Specifying a Partial View.</p> <p>Models: Modeling, Scaffolding, Model Binding.</p>	15 L

Unit III	<p>Forms and Html Helpers: Using Forms, HTML Helpers, Input Helpers, Rendering Helpers</p> <p>Data Annotations and Validation: Annotating Orders for Validation, Custom Validation Logic</p> <p>Routing: Uniform Resource Locators, How Routes Generate URLs, Custom Route Constraints</p> <p>State Management: Using hidden fields, query string, ViewData, ViewBag, TempData, Session and Cookie State.</p> <p>View Techniques: Defining a layout / MVC2, MVC3, MVC4 Master Page, Using Styles.</p>	15 L
Unit IV	<p>Entity Framework: Entity Framework Introduction, EF Architecture, Database First Approach, Code First Approach, Model First Approach, CRUD Operations using Repository Pattern, Scaffolding in Asp.Net MVC</p> <p>ASP.NET MVC & LINQ - working with Data: What is LINQ? Why to use it? LINQ API, LINQ Query syntax, LINQ Method syntax, LAMBDA Expressions, Standard Query Operators, Creating simple LINQ queries ,Using LINQ queries in a Web application</p> <p>The ASP.NET Web API: Building a Data Service, Paging and Querying Data, Exception Handling, Media Formatters</p> <p>Research Component: Developing MVC based Web application with the entity framework</p>	15 L
<p>Textbook and References:</p> <ol style="list-style-type: none"> 1. Beginning asp.net 4.5 in c# by Matthew MacDonald. 2. Professional ASP.NET MVC 5 by Jon Galloway, Brad Wilson, K. Scott Allen, David Matson. 3. Programming ASP.Net MVC 4 by Jess Chadwick, Todd Snyder, and Hrusikesh Panda 4. Pro ASP.Net MVC 5 by Adam Freeman 5. https://www.tutlane.com/tutorial/aspnet-mvc/different-types-of-project-templates-in-asp-net-mvc 6. https://www.c-sharpcorner.com/article/state-management-in-asp-net-mvc/ 7. https://www.c-sharpcorner.com/article/master-page-concept-in-mvc/ 8. https://www.tutlane.com/tutorial/aspnet-mvc/using-entity-framework-in-asp-net-mvc-4-with-example 9. https://www.tutorialsteacher.com/linq 		

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

Q.1Answer any two -10 Marks

Q.2Answer any two -10 Marks

Q.3Answer any two -10 Marks

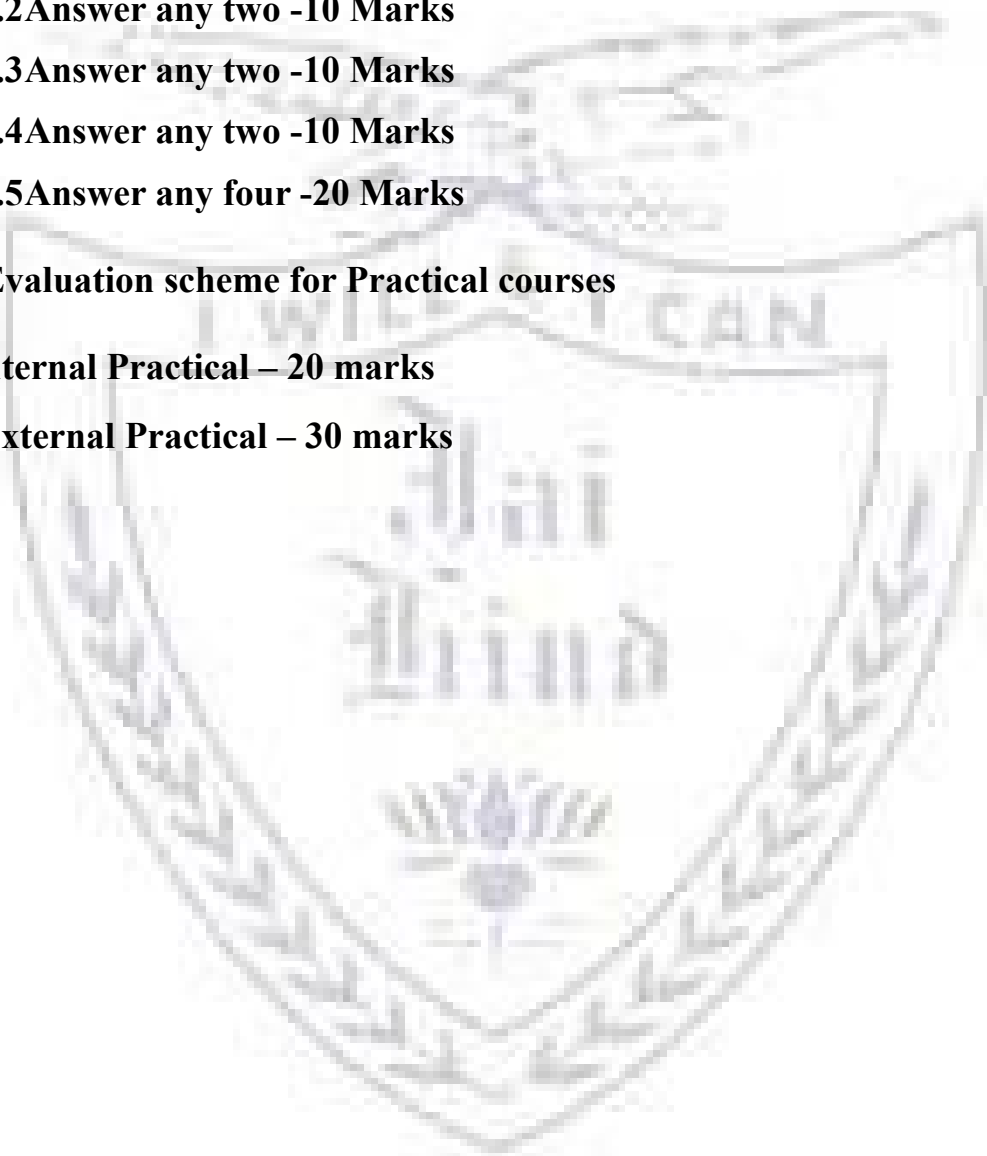
Q.4Answer any two -10 Marks

Q.5Answer any four -20 Marks

[B]Evaluation scheme for Practical courses

(i)Internal Practical – 20 marks

(ii)External Practical – 30 marks



Course: SBSD406	Course Title: Computer and Network Security (Credits : 02 Lectures/Week: 03)	
	<p>Objectives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students will learn the basic concepts in computer security including software vulnerability analysis and defense, networking and wireless security, applied cryptography, as well as ethical, legal, social and economic facets of security. <input type="checkbox"/> Understanding the principles underlying cryptographic concepts and technologies available today, including symmetric and asymmetric encryption, hashing, and digital signatures. <input type="checkbox"/> To understand the threats and vulnerabilities that are specific of a networked environment, and explain countermeasures including firewalls and intrusion detection systems <input type="checkbox"/> To understand how malicious code functions, what the vulnerabilities that make propagation possible and what methods and practices are available for mitigation <p>Outcomes:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify some of the factors driving the need for Computer Security <input type="checkbox"/> Understand network security concepts <input type="checkbox"/> Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniques used today. <input type="checkbox"/> Understand Various Encryption mechanisms for secure transmission of data and management of key required for required for encryption <input type="checkbox"/> Understand authentication requirements and study various authentication mechanisms <input type="checkbox"/> Develop an understanding of security policies as well as protocols to implement such policies in the form of message exchanges. <input type="checkbox"/> Students will be able to identify security breaches in a computer network <input type="checkbox"/> Students will have an understanding of a variety of cryptographic algorithms and protocols underlying network security applications. 	
Unit I	Information Security Overview : The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to	15L

	<p>Build a Security Program, The Impossible Job, The Weakest Link</p> <p>Risk Analysis: Threat Definition, Types of Attacks, Risk Analysis.</p> <p>Secure Design Principles: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.</p>	
Unit II	<p>Symmetric Key Algorithms : Algorithms types and modes, Overview of Symmetric key Cryptography, Data Encryption Standard (DES), Advanced Encryption Standard (AES), International Data Encryption Algorithm (IDEA)</p> <p>Asymmetric Key Algorithms: Overview of Asymmetric Key Cryptography, RSA algorithm</p>	15L
Unit III	<p>Digital Signatures: Digital Signatures Concept, Hash functions</p> <p>Key Distribution and Key Agreement: Diffie-Hellman Key Predistribution, Diffie-Hellman Key Exchange, The Station-to-station Protocol</p> <p>Authentication Applications: ACL, Network Hardening, Kerberos, X.509 Digital Certificate, Public-Key Infrastructure</p> <p>Firewalls: Overview, The Evolution of Firewalls, Core Firewall Functions, Additional Firewall Capabilities, Firewall Design.</p>	15L
Unit IV	<p>Storage Security: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices.</p> <p>Database Security: General Database Security Concepts, Understanding Database Security Layers, Understanding Database- Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.</p> <p>Wireless Network Security: Radio Frequency Security Basics, Data- Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways</p> <p>Intrusion Detection and Prevention Systems: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM).</p>	15L

Textbook:

1. The Complete Reference: Information Security, Mark Rhodes- Ousley, McGraw- Hill 2nd, 2013
2. Atul, K. *Cryptography and Network Security*, TataMcGrawHill
3. Behrouz A. Forouzan, *Cryptography and Network Security*, TataMcGrawHill
4. William Stallings, *Cryptography and Network Security*, Fifth Edition, Pearson Education

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

Q.1 Answer any two -10 Marks

Q.2 Answer any two -10 Marks

Q.3 Answer any two -10 Marks

Q.4 Answer any two -10 Marks

Q.5 Answer any four -20 Marks

[B] Evaluation scheme for Practical courses

(i) Internal Practical – 20 marks

(ii) External Practical – 30 marks

Course: SBSD407	Course Title: Advance SQL with Oracle (Credits :02 Lectures/Week:03)	
	<p>Objectives:</p> <ul style="list-style-type: none"> ● Enhance the knowledge and understanding of Database analysis and design. ● Enhance the knowledge of the processes of Database Development and Administration using SQL and PL/SQL. ● Enhance Programming and Software Engineering skills and techniques using PL/SQL. ● Preparation of background materials and documentation needed for Technical Support using PL/SQL. ● Use the Relational model and how it is supported by SQL and PL/SQL. <p>Outcomes:</p> <ul style="list-style-type: none"> ● Describe the fundamentals of the PL/SQL programming language ● Develop efficient PL/SQL programs to access Oracle databases ● Manage data retrieval with cursors and cursor variables ● Enhance performance using collection datatypes and bulk operations ● Create triggers to solve business challenges and enforce business rules ● Write and execute PL/SQL programs in SQL*Plus ● Debug PL/SQL programs ● Manipulate character strings in PL/SQL programs ● Execute PL/SQL data type conversion functions 	
Unit I	<p>Introduction: What is PL/SQL, Characteristics, PL/SQL program block: creating, displaying and executing.</p> <p>DDL and data types : Using Variables in PL/SQL- scalar, composite and reference; Operators in PL/SQL; Recognizing PL/SQL Lexical Units, Labels in PL/SQL, Recognizing Data Types- scalar, composite, reference, LOB; User-defined subtypes; conversion of Data Types; Writing PL/SQL Executable Statements; Built-in character, number and date functions; Nested Blocks and Variable Scope , Good Programming Practices</p> <p>DML: Review of SQL DML, Retrieving Data in PL/SQL, Manipulating Data in PL/SQL, Using Transaction Control Statements, aggregate queries</p>	15 L

	Control structure: Conditional Control: IF Statements, CASE Statements; Iterative Control: Basic Loop, WHILE Loop, FOR Loop, Nested Loop	
Unit II	<p>Cursors: Classification of Cursors, Introduction to Explicit Cursors, Using Explicit Cursor Attributes, Cursor FOR Loops, Cursors with Parameters, Using Cursors for UPDATE, Using Multiple Cursors</p> <p>Exception Handling: Handling Exceptions, Trapping System Exceptions, Trapping User-Defined Exceptions , Recognizing the Scope of Exceptions</p> <p>Collections: Overview- Collections Concept, Types of Collections, Choosing a Collection Type; Collection Built-in Methods, Working with Collections.</p>	15 L
Unit III	<p>Using and Managing Procedures: Creating Procedures, Using Parameters in Procedures, Passing Parameters</p> <p>Using and Managing Functions: Creating Functions ,Using Functions in SQL Statements , Review of the Data Dictionary , Managing Procedures and Functions , Review of Object Privileges</p> <p>Using and Managing Packages: Creating Packages , Managing Package Concepts, Package Body, referring Package Elements, Forward Declaration, Cursor Usage in package, Overloading, Dependency in packages, package Information</p>	15 L
Unit IV	<p>Autonomous Transaction in Oracle: Commit, Rollback, Savepoint, RollbackTo</p> <p>Triggers: Benefits of Triggers, Types of Triggers in Oracle, How to Create Trigger, :NEW and :OLD Clause, INSTEAD OF Trigger</p> <p>Bulk Collect: What is Bulk Collect? FORALL Clause, Limit Clause, Bulk Collect Attributes.</p> <p>Dynamic SQL: What is Dynamic SQL? Ways to write dynamic SQL- Execute Immediate, DBMS_SQL.</p> <p>Index: Concept, Types of Indexes- Implicit and Explicit (Unique, Composite, B-Tree, Bitmap, Function-based)</p> <p>Research Component:-</p> <ul style="list-style-type: none"> ● Secure data processing ● Distributed databases. ● Optimizing Query Processing ● Data Migration 	15 L

Textbook:

1. *Oracle PL/SQL Programming*, Fifth Edition By Steven Feuerstein, Bill Pribyl
2. *Murach's Oracle SQL and PLSQL* by Joel Murach, Murach and Associates

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

Q.1Answer any two -10 Marks

Q.2Answer any two -10 Marks

Q.3Answer any two -10 Marks

Q.4Answer any two -10 Marks

Q.5Answer any four -20 Marks

[B]Evaluation scheme for Practical courses

(i)Internal Practical – 20 marks

(ii)External Practical – 30 marks

Semester IV – Practical

Course: SBSD404PR	Practical Title: Android App Development Practical (Credits : 2.5 Practicals/Week: 01)
	<ol style="list-style-type: none">1. Install Android Studio and Run Hello World Program.2. Create an android app that demonstrates Activity Lifecycle and Instance State.3. Create an android app with Interactive User Interface using Layouts.4. Create an android app that demonstrates working with Input Controls, Alerts, and Pickers.5. Create an android app that demonstrates the use of an Options Menu.6. Create an android app that demonstrate Screen Navigation Using the TabLayout.7. Create an android app to show Android Notifications8. Develop an application for connecting to the internet and sending an email.9. Develop an application demonstrating Internal Storage to store private data on the device memory.10. Create an android app to save user data in a database and use of different queries.11. Develop an application for working with graphics and animation.12. Develop an application for working with device camera.13. Develop an application for working with location based services.14. Develop an application for working with Firebase Authentication15. Develop an application for working with Realtime Database

**Course:
SBSD405PR**

**Practical Title: C# and ASP.Net MVC
Practical (Credits : 2.5 Practicals/Week:
01)**

1. Working with basic C# and ASP .NET

- a) Create an application that obtains four int values from the user and displays the product.
- b) Create an application that receives the (Student Id, Student Name, Course Name, Date of Birth) information from a set of students. The application should also display the information of all the students once the data entered.
- c) Create an application to demonstrate following operations:
 - i. Generate Fibonacci series.
 - ii. Test for prime numbers.
 - iii. Use of foreach loop with arrays

2. Working with Object Oriented C# and ASP .NET

- a) Create simple application to demonstrate use of following concepts
 - i. Function Overloading
 - ii. Inheritance (all types)
 - iii. Constructor overloading
 - iv. Interfaces
- b) Create simple application to demonstrate use of following concepts
 - i. Using Delegates and events
 - ii. Exception handling

3. Creating a basic MVC based web application

4. Working with Razor view

5. Working with validation in a web application

6. Create Web Form to demonstrate use of Website Navigation controls

7. Implementing state management in MVC applications.

8. Working with Master Pages and styles

9. a) Create a web application to display records by using a database.

b) Working with data using Linq

10. Working with ASP.NET Web API in MVC

Course: SBSD406PR	Practical Title: Computer and Network Security Practical (Credits : 2.5 Practicals/Week: 03) 1. W.A.P. to implement Simple DES and AES Algorithm. 2. W.A.P. to implement Simple IDEA Algorithm. 3. W.A.P. to implement Simple RSA Algorithm. 4. W.A.P. to implement Simple SHA Algorithm. 5. W.A.P. to implement Simple Diffie-Hellman Algorithm. 6. Configure Routers a) OSPF MD5 authentication b) NTP c) to log messages to the syslog server d) to support SSH connections 7. Configure AAA Authentication a) Configure a local user account on Router and configure authenticate on the console and vty lines using local AAA b) Verify local AAA authentication from the Router console and the PC- A client 8. Configuring a Zone-Based Policy Firewall 9. Configure IOS Intrusion Prevention System (IPS) Using the CLI a) Enable IOS IPS. b) Modify an IPS signature. 10. Layer 2 VLAN Security
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Course: SBSD407PR	Practical Title: Advance SQL with Oracle Practical (Credits : 2.5 Practicals/Week: 01)
	<ol style="list-style-type: none"> 1. Creating anonymous PL/SQL blocks. 2. DDL and insert values in tables <ol style="list-style-type: none"> a. Querying single and multiple tables a. Creating simple tables and tables with constraints. 3. Manipulating data (Insert, update and delete) 4. Conditional statement and goto statement 5. Iterative control 6. Cursors with parameters to process a number of rows from multiple tables. 7. Create exception handlers for specific situations. 8. Function and procedures <ol style="list-style-type: none"> a) Creating and invoking functions from SQL statements b) Creating and invoking stored procedures. c) Re-create the source code for a procedure and a function. d) Create procedures that issue DML and query commands. 9. Working with packages <ol style="list-style-type: none"> a) Create package specifications and package bodies. Invoke the constructs in the packages b) Create a package containing an overloaded function. 10. Triggers <ol style="list-style-type: none"> a) Create statement and row triggers. b) Create procedures that will be invoked from the triggers. 11. Working with transaction control statements 12. Working with Index