SHIVAJI UNIVERSITY, KOLHAPUR.

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CHOICE BASED CREDIT SYSTEM

Syllabus For

B.Sc. Part - III

Information Technology (Entire)

SEMESTER – V AND VI

(Syllabus to be implemented from June, 2020 onwards.)

B. Sc. Part – I (IT Entire) CBCS PATTERN(2018 – 19)

Sr. No.	Course Title	TEACHING SCHEME						EXAMINATION SCHEME					
		THEORY			PRACTICAL			THEORY			PRACTICAL		
		No. of lectures	Hours	Credits	No. of lectures	Hours	Credits	Hours	Max	Min	Hours	Max	Min
S E M E S T E R – I													
1	DSC-101	4	3.2	**3**	4	3.2	**2**	2	50	20	**PRACTICAL EXAMINATION IS ANNUAL**		
2	DSC-102	4	3.2	**3**				2	50	20			
3	DSC-103	4	3.2	**3**	4	3.2	2	2	50	20			
4	DSC-104	4	2.4	**3**	4	3.2	2	2	50	20			
5	DSC-105	4	2.4	**3**	4	3.2	2		50	20			
6	AECC-A	4	3.2	**3**	--	--	--	2	50	20			
	TOTAL	**24**	**19.2**	**18**	**16**	**12.8**	**8**		**300**				
S E M E S T E R – II													
1	DSC-201	4	3.2	**3**	4	3.2	**2**	2	50	20	**As per BOS Guide-lines**	100	40
2	DSC-202	4	3.2	**3**				2	50	20			
3	DSC-203	4	3.2	**3**	4	3.2	2	2	50	20		100	40
4	DSC-204	4	3.2	**3**	4	3.2	2	2	50	20		100	40
5	DSC-205	4	3.2	**3**	4	3.2	2		50	20		100	40
6	AECC-B	4	3.2	**3**	--	--	--	2	50	20			
		24	**19.2**	**18**	**16**	**12.8**	**8**		**300**		**Theory**		**Practical**
	TOTAL	**48**	**38.4**	**36**	**32**	**25.6**	**16**		**600**		**300+300= 600**		**400**

- Student contact hours per week : 35.2 Hrs(minimum)
- Theory and Practical Lectures : 48 Minutes Each
- Total Marks for B.Sc.-I (Including English) : **1000**
- Total Credits for B.Sc.-I (Semester I & II) : **52**

- **DSC -** Discipline Specific Core Course.
- **AECC**- Ability Enhancement Compulsory Course (A & B) – English for Communication.

- ***Separate passing for each theory paper of 50 marks each. Minimum 20 (40%) marks out of 50 are required for passing.***
- ***Practical Examination conducted annually will be of 100 Marks for each course except English and minimum 40 marks are required for passing.***
- ***Separate passing for theory and practical.***

B. Sc. Part – II (IT Entire) CBCS PATTERN(2019 – 20)

Sr. No.	Course Title	TEACHING SCHEME						EXAMINATION SCHEME					
		THEORY			PRACTICAL			THEORY			PRACTICAL		
		No. of lectures	Hours	Credits	No. of lectures	Hours	Credits	Hours	Max	Min	Hours	Max	Min
S E M E S T E R – III													
1	DSC-301	4	3.2	**3**	4	3.2	**2**	2	50	20	**PRACTICAL EXAMINATION IS ANNUAL**		
2	DSC-302	4	3.2	**3**				2	50	20			
3	DSC-303	4	3.2	**3**	4	3.2	**2**	2	50	20			
4	DSC-304	4	3.2	**3**				2	50	20			
5	DSC-305	4	3.2	**3**	4	3.2	**2**	2	50	20			
6	DSC-306	4	3.2	**3**	4	3.2	**2**	2	50	20			
7	AECC-C	4	3.2	**4**	--	--	--	--	--	--			
	TOTAL	**28**	**22.4**	**22**	**16**	**12.8**	**08**		**300**				
S E M E S T E R – IV													
1	DSC-401	4	3.2	**3**	4	3.2	**2**	2	50	20	**As per BOS Guide-lines**	**100**	**40**
2	DSC-402	4	3.2	**3**				2	50	20			
3	DSC-403	4	3.2	**3**	4	3.2	**2**	2	50	20		**100**	**40**
4	DSC-404	4	3.2	**3**				2	50	20			
5	DSC-405	4	3.2	**3**	4	3.2	**2**	2	50	20		**100**	**40**
6	DSC-406	4	3.2	**3**	4	3.2	**2**	2	50	20		**100**	**40**
7	AECC-D	--	---	---	---	---	---	3	70 + 30	25+ 10	**Theory**	**Practical**	
	TOTAL	**26**	**19.2**	**18**	**28**	**22.4**	**08**		**100**	**35**	**300+400 =700**	**400**	
		56	**41.6**	**40**	**32**	**44.8**	**16**		**400**				

- Student contact hours per week : 41.6 Hrs(minimum)
- Theory and Practical Lectures : 48 Minutes Each
- Total Marks for B.Sc.-II (Including Env. St.) : **1100**
- Total Credits for B.Sc.-II (Semester III & IV) : **56**
- **DSC**- Discipline Specific Core Course
- **AECC**- Ability Enhancement Compulsory Course: Environmental Studies
- **AECC-C**: Environmental Studies Theory of 70 marks. Minimum 25 marks out of 70 are required for passing.
- **AECC-D**: Project 30 marks. Minimum 10 marks out of 30 are required for passing.
- ***Separate head of passing for each theory paper of 50 marks each. Minimum 20 (40%) marks out of 50 are required for passing.***
- ***Except Environmental Studies, Practical Examination for each course shall be conducted annually for 100***

marks and minimum 40 (40%) marks are required for passing.

- ***Separate head of passing for theory and practical.***

B. Sc. Part – III (IT Entire) CBCS PATTERN (2020-21)

S E M E S T E R – V																	
Sr. No.	**Subject Title**	**TEACHING SCHEME**						**EXAMINATION SCHEME**									
		THEORY			**PRACTICAL**			**THEORY**					**PRACTICAL**				
								University			**Internal**						
		No. of lectures	**Hours**	**Credits**	**No. of lectures**	**Hours**	**Credits**	**Hours**	**Max Marks**	**Min Marks**	**Max Marks**	**Min Marks**	**Hours**	**Max Marks**	**Min Marks**		
1	DSE-501	4	3.2	**2**	--	--	--	2	40	14	10	4	**PRACTICAL EXAMINATION IS ANNUAL**				
2	DSE-502	4	3.2	**2**	--	--	--	2	40	14	10	4					
3	DSE-503	4	3.2	**2**	5	4	2	2	40	14	10	4					
4	DSE-504	4	3.2	**2**	5	4	2	2	40	14	10	4					
5	DSE-505	4	3.2	**2**	5	4	2	--	--	--	--	--					
6	PW	--	--	--	5	4	2	--	--	--	--	--					
7	AECC-E	4	3.2	**2**	---	---	---	2	40	14	10	**4**					
	TOTAL	**16**	**12.8**	**12**	**20**	**16**	**8**		**200**		**50**						
S E M E S T E R – VI																	
1	DSE-601	4	3.2	**3**	--	--	--	2	40	14	10	4	**As per BOS Guide lines**			**100**	**40**
2	DSE-602	4	3.2	**3**	--	--	--	2	40	14	10	4				**100**	**40**
3	DSE-603	4	3.2	**3**	5	4	2	2	40	14	10	4				**100**	**40**
4	DSE-604	4	3.2	**3**	5	4	2	2	40	14	10	4					
5	DSE-605	4	3.2	**3**	5	4	2	--	--	--	--	--					
6	PW	--	--	--	5	4	2	--	--	--	--	--				**100**	**40**
7	AECC-F	4	3.2	**2**	---	---	---	2	40	16	10	4					
	TOTAL	**16**	**12.8**	**12**	**20**	**16**	**8**		**200**		**50**		**Theory**			**Practical**	
		32	**25.6**	**24**	**40**	**32**	**16**						**250+250= 500**			**400**	

- Student contact hours per week : 32 Hours (Min)
- Theory and Practical Lectures : 48 Min. Each
- Total Marks for B.Sc.-III (Including English.) **: 900**
- Total Credits for B.Sc.-III (Semester V & VI) : **40**

- **DSE**: Discipline Specific Elective Course
- **PW:** Project Work
- **AECC**- Ability Enhancement Compulsory Course (E & F): English for communication.

- ***Separate passing for each theory paper of 50 marks. Minimum 20 (40%) marks out of 50 are required for passing.***
- ***Practical Examination will be conducted annually for 300 marks. Out of which 100 marks for DSE -503 &DSE -603 combined, 100 marks for DSE -504 &DSE -604 combined and 100 marks for DSE -505 &DSE -605 combined. Minimum 40 (40%) marks are required for passing in each case.***

- ***Project Work will be evaluated for 100 marks and minimum 40 (40%) out of 100 are required for passing.***
- ***Separate passing for theory, practical and project.***

	B.Sc. – I	B.Sc. – II	B.Sc. – III	Total
Credits	52	56	40	148
Marks	1000	1100	900	3000

SHIVAJI UNIVERSITY, KOLHAPUR
B.Sc. (Information Technology) Entire
CBCS Syllabus to be implemented from June 2020-21 Onwards.
COURSE STRUCTURE
B.Sc. (Information Technology) Entire Part-III

B.Sc. (Information Technology) Entire Semester-V & VI

CBCS Syllabus to be implemented from June 2020 Onwards.

1. TITLE: Information Technology

2. YEAR OF IMPLEMENTATION: Revised Syllabus will be implemented from June 2020 onwards.

3. DURATION: B.Sc. Information TechnologyEntirePart- III, The duration of course shall be one year and two semesters.

4. PATTERN: Pattern of examination will be semester.

5. STRUCTURE OF COURSE:

STRUCTURE OF COURSE

Semester-V		
Course Code	**Title of Paper**	**Work load**
DSE-501	Enterprise Resource Planning	4

DSE-502	Software Engineering	4
DSE-503	C# Programming	4
DSE-504	Core Java	4
DSE-505	Android Programming	4
AECC-E	English for Communication	4
Practical Paper		
Lab-IX	Lab course-IX Based on DSE-503	4
Lab-X	Lab course-X Based on DSE-504	4
Lab-XI	Lab course-XI Based on DSE-505	4
Lab-XII	Lab course-XII Project Work	4

Semester-VI		
Course Code	**Title of Paper**	**Work load**
DSE-601	Computer Networks	4
DSE-602	Artificial Intelligence	4
DSE-603	ASP.NET	4
DSE-604	Advance Java	4
DSE-605	PHP MySQL	4
AECC-F	English for Communication	4
Practical Paper		
Lab-IX	Lab course-IX Based on DSE-603	4
Lab-X	Lab course-X Based on DSE-604	4
Lab-XI	Lab course-XI Based on DSE-605	4

Lab-XII	Lab course-XII Project Work	4

Note: Practical workload for each lab. Course shall be of 4 lectures of 48 minutes per batch20 students.

C) Standard of passing:

- The university theory examination shall be of 50 marks for each course and minimum 20 Marks (40%) are required for passing each theory course.
- The practical examination shall be conducted annually for 100 marks for each course except English and minimum 40 (40%) marks are required for passing.
- Separate passing for theory and practical.
- Nature of AECC-A and B question paper will be same as B.Sc.-I AECC-A and B question paper.
- Other rules except standard of passing shall be as per B.Sc. regular rules.

6. EQUIVALENCE IN ACCORDANCE WITH TITLES AND CONTENTS OF PAPERS (FOR REVISED SYLLABUS) : will be given later

B.Sc. Part –III Information Technology - Entire (Semester– V)

Course Code: DSE -501

Course Title: Entity Resource Planning

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 0, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Unit	Contents	Hours Allotted
I	**Introduction To ERP** • An overview of Enterprise • Business Functions and business processes • Integrated management information • What is ERP? • Evolution of ERP • Why ERP packages now? • Advantages of ERP • How does ERP create value **Risks and Benefits of ERP** • Benefits • Quantifiable Benefits • The intangible benefits and other factors • Risks • What is Risk? • Risk factors of ERP implementation • People Issues • Process risk • Technological risks • Implementation issues	18

	• Operation and Maintenance issues • Managing risks of ERP projects • Security and ERP.	
II	**Related Technologies and Modules in ERP 12 Lectures** • Related Technologies • Introduction • BPR • Data warehousing • Data Mining • OLAP • PLM • SCM • CRM • GIS • Intranet and Extranet. • Functional Modules • Introduction • Functional Modules of ERP software **ERP Package Selection and Market 8 Lectures** • package Selection • Reasons of ERP Implementation failure • Package Evaluation and Selection • ERP packages: make or buy. • ERP Market • Market overview • Top 10 companies in ERP development • Their Market share :global And Indian.	**18**

Recommended Books:

1) References: Enterprise Resource Planning, Alexis Leon (Tata MacGraw Hill)
2) ERP – A Managerial Perspective, S. Sadagopan (Tata MacGraw Hill)

B.Sc. Part –III Information Technology - Entire (Semester– V)

Course Code: DSE-502

Course Title: Software Engineering

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 0, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes:

- To understand the process of Software Engineering.
- Conceptualize the Software Development Life Cycle (SDLC) models.
- Familiarize with Software Design & its Strategies.
- Study Software Testing & Maintenance.

Unit	Contents	Hours Allotted
I	**Introduction to Software Engineering:** Software Components, Software Characteristics, Software Crisis, Software Engineering Processes, Software Quality Attributes. Software Development Life Cycle (SDLC) Models: Water Fall Model, Prototype Model, Spiral Model, Evolutionary Development Models, Iterative Enhancement Models. **Software Requirement Specifications (SRS):** Requirement Engineering Process,Data Flow Diagrams, Entity Relationship Diagrams,Software Quality Assurance (SQA): Verification and Validation, SQA Plans.	18
II		18

	Software Design Basic Concepts: Architectural Design, Low Level Design: Modularization, Design Structure Charts, Pseudo Codes, Flow Charts, Coupling and Cohesion Measures, Design Strategies: Function Oriented Design, Object Oriented Design, Top-Down and Bottom-Up Design. **Software Testing:** Objectives, Unit Testing, Integration Testing, Acceptance Testing, Regression Testing, Testing for Functionality and Testing for Performance, Top-Down and Bottom-Up Testing Strategies: Test Drivers and Test Stubs, Structural Testing (White Box Testing), Functional Testing (Black Box Testing). Need for Maintenance.	

Reference Books:

1. Roger S Pressman, Bruce R Maxim, “Software Engineering: A Practitioner’s Approach”, Kindle Edition, 2014.

2. Ian Sommerville,” Software engineering”, Addison Wesley Longman, 2014.

3. James Rumbaugh. MichealBlaha “Object oriented Modeling and Design with UML”, 2004.

4. Ali Behforooz, Hudson, “Software Engineering Fundamentals”, Oxford, 2009.

5. Charles Ritcher, “ Designing Flexible Object Oriented systems with UML”, TechMedia , 2008.

B.Sc. Part –III Information Technology - Entire (Semester– V)

Course Code: DSE -503

Course Title: C# Programming

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes:

1. This course will cover the practical aspects C#.NET framework.
2. The goal of this course is to introduce the students to the basics of OOPs and windows application program.

UNIT	CONTENTS	HOURS ALLOTTED
I.	**Introduction to .Net** • **NET Framework Architecture** – An Overview, Components of .NET , CLR, CLS, CTS, Microsoft Intermediate Language, Namespaces, .NET Framework Base Classes, DLL and Exe. • **An Overview of C#**: History and Features of C#, Data Types, Value and Reference Types, Boxing and Unboxing, Properties : Set and Get • **C# - Flow Control**: Branching, Switching and Looping Structure, Arrays	18
II	**Object Oriented Concepts :** • C# Program – Execution, Command Line	18

	Arguments, Programming Examples using Console application • Pass By Value and Pass Reference • Classes and Objects • Inheritance • Polymorphism • Abstract Classes • Sealed Classes • Partial Classes • Exception Handling **Introduction to Windows Form Application Using C#:** • IDE – (Integrated Development Environment) • Form Controls: Label, Button, Textbox, Checkbox, • RadioButton, Timer, calendar, • ListBox, Image and overview of remaining all common controls its properties and events.	

References:

1) C# 4.0 The Complete Reference Schildt Mc Graw Hill
2) Inside C# - By Tom Archer, Andrew Whitechapel (Microsoft Pub)
3) Programming in C#- E Balagurusamy

Practical Based on DSE-503:

1) Write a C# program that print hello word using command line argument.
2) Write a console application program to demonstrate switching, looping, branching statement.
3) Write a console application for swapping of 2 numbers using Pass by value.
4) Write a console application for swapping of 2 numbers using Pass by Reference.
5) Write a C# program that uses explicit keyword.
6) Write a C# program that uses implicit keyword.

7) Write a C# program to implement out parameter.
8) Write C# program to display factorial of number.
9) Write C# program to display prime factors of entered number.
10) Write C# program check entered number is even or odd.
11) Write C# program to demonstrate array.
12) Create DLL and implement in another console application.
13) Write C# program to demonstrate static and non-static methods.
14) Write C# program to demonstrate Inheritance.
15) Write C# program to demonstrate Interface.
16) Write C# program to demonstrate abstract class.
17) Write C# program to demonstrate partial class.
18) Write C# Program to demonstrate sealed Classes.
19) Write C# program to demonstrate exception handling- Arithmetic exception, Array exception, File Exception, Null Reference Exception.
20) Write C# program to demonstrate user define exception.
21) Demonstrate Windows Form Application Using C# with different control.

B.Sc. Part –III Information Technology - Entire (Semester– V)

Course Code: DSE-504

Course Title: Core Java

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes:

1.Object oriented programming concepts usingJava.
2.Knowledgeof input, its processing andgettingsuitableoutput.
3.Understand, design, implement and evaluate classes and applets
4. Understand concept of Multiprogramming and Exception Handling

UNIT	Contents	Hours Allotted
I.	**Introduction to java** • History of java • FeaturesofJava • Comparison between C++ and java • Java Virtual Machine(JVM) • Tokens • Java Keywords • Data Types-integer(byte,short,int ,long),floating point(float, double),char, boolean • Operators-arithemetic,relational,logical,unary,ternary,bitwise • Branching and looping statement • Typecasting-Implicit and Explicit • Command line arguments • Writing simple java program • Compiling and executing Java program	**18**

	Object Oriented Programming using java • Introduction- Class, Object and method • staticKeywords,Constructors,and destructor • super and thisKey Word • Encapsulation and Abstraction • Inheritance- Definition and its types- single,multilevel,hierarchical • Polymorphism-Definition and concepts of overloading and overriding • Difference between Overloading and overriding • Abstract Classes and Interfaces • String- String and String Buffer class • Defining package • System Packages –java, lang, awt, javax, swing, net, io, util. • user defined packages-creating and accessing the package	
II	**Multithreading, Exception Handling and Applets** • Creating threads, extending a thread class- declaring the class, run() method • Stopping and blocking threads • Life cycle of thread • Using thread method • Thread priority • Definition of exception • Syntax of exception handling code • Multiple catch statement • Using finally statement • Applets Definition • Building applet code • Applet life cycle • Adding applet code to HTML file Introduction to Abstract Window Toolkit (AWT)	**18**

Reference Books:

1. Programming with JAVA, A Primer by E Balaguruswamy
2. Herbert Schildt, Java2: The Complete Reference, Tata McGraw-Hill
3. Java Programming- RajendraSalokhe (Aruta Pub)
4. *The Java Tutorials: http://docs.oracle.com/javase/tutorial/)*
5. The Java Tutorials of Sun Microsystems Inc

Practical Based on DSE-504

1. Java programs based on branching and looping statements.

2. Java programs based Type Casting
3. Java programs based on command line arguments
4. Java programs based on constructors
5. Java programs based on inheritance
6. Java programs based on method overloading
7. Java programs based on method overriding.
8. Java programs based on interfaces
9. Java programs based on packages
10. Java programs based on multithreading
11. Java programs based on exception handling
12. Java programs with applets.

B.Sc. Part –III Information Technology - Entire (Semester– V)

Course Code: DSE-505

Course Title: Android Programming

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcome:

Students who complete this course will be able to:

1. Understand Android architecture.
2. Understand the UI Components of Android and designing UI Applications.
3. Develop, design and deploy applications on Emulator as well as real device.
4. Developing applications with database connectivity to SQLite (i.e. Saving, Retrieving, Loading data).

UNIT	Contents	Hours Allotted
I.	**Introduction to Android:** • Overview and evolution of Android , • Features of Android • Android architecture • Android platform and the Android Studio IDE • Setting up development environment. **Components Android** – • Activities, Services, Broadcast Receivers & Content providers **UI Components** - • Basic UI Designing (Form widgets ,Text Fields , Layouts ,[dip, dp, sip, sp] versus px), all other components (e.g. Button , Slider, Image view, Toast),	**18**

	Menu and Event Handling, • Views & notifications, Components for communication -Intents & Intent Filters.	
II	**Application Structure:** • Android Manifest.xml, • Resources & R.java • Activities and Activity Lifecycle. • First sample Application, • Deploying sample application on a real device Emulator- Android Virtual Device. **User Interface Design**: • Intents, Activity lifecycle, • Widgets and Layouts, UI Events, Event Listeners, Background Tasks **Data Handling -- Saving, Retrieving, Loading** • Storing Data in your app, using SQLite, • Sharing Data: Content Resolvers and Content Providers, Loading Data using Loaders.	**18**

Reference:

1) Beginning Android Application Development - Wei-Meng Lee Wiley
2) Android Programming for Beginners - John Horton - Packt Publishing Ltd.
3) Android Application Development: Programming with the Google SDK 2009 – Rick Rogers, John Lombardo, ZigurdMednieks, G. Blake Meike
4) Programming Android, Book - G. Blake Meike, Laird Dornin, Masumi Nakamura, and Zigurd R. Mednieks - O'Reilly Publishers.

E-Learning resources:

1) http://www.developer.android.com
2) http://developer.android.com/about/versions/index.html
3) http://developer.android.com/training/basics/firstapp/index.html
4) http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free

downloadable eBooks also).

Practical experiments Based on DSE-505:

1) Create “Hello World” application. That will display “Hello World” in the middle of the screen in the emulator.
2) Write an Android Program to Demonstrate Alert Dialog.
3) Create an application as login Form with Validation. (Check username and password)
4) Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
5) Create a menu with 5 options and selected option should appear in text box.5.
6) Create an Android application, where the user can enter player name and points in one view and display it in another view.
7) Create an application that allows the user to enter a number in the textbox named ‘getnum’. Check whether the number in the textbox ‘getnum’ is palindrome or not and Print the message accordingly when the user clicks on the button ‘check’.
8) Create a list of all courses in your college and on selecting a particular course teacher-in charge of that course should appear at the bottom of the screen.
9) Create an application with three option buttons, on selecting a button color of the screen will change.
10) Create and Login application as above. On successful login, pop up the message.
11) Create an application to Create, Insert, update, Delete and retrieve operation on the database.

B.Sc. Part –III Information Technology - Entire (Semester– V)

Sem-V: Ability Enhancement Compulsory Course (AECC)

Course Code: AECC-E

Course Title: English for Communication - III

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 0, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes:			
COs	**After the completion of the course the student should be able to**	Bloom's Cognitive level	Descriptor
CO1	**Comprehend** communication process, methods of communication and flow of communication in business context.	2	Understanding
CO2	**Apply** acquired LSRW skills into real life situations and in professional context	3	Applying
CO3	**Compose** effective business letters using standard language, style and structure	3	Applying

Unit No	Contents	Number of Hours
I	**A. Essentials of Communication** • Communication basics: definitions, process, levels • Forms/methods: verbal and non-verbal • Barriers and solutions • Flow/channels in business communication • Cross cultural communication **B. Basics of Effective Communication** • **Effective listening**: process of listening, types of	18 hrs

	listening, poor listening habits, strategies for effective listening • **Effective speaking**: various forms of speaking in business professional, art of public speaking • **Effective reading**: need, types, methods/tips/strategies, • **Effective writing**: punctuation marks, email and blog writing • **Thinking:** Thinking as a learning skill	
II	**Business Correspondence (Letter writing):** • Principles, elements • Layout (complete block, modified block, semi-block), • Types (permission, invitation, enquiry and replies, order, claim and adjustment)	18 hrs

Reference Books:

1. *Communication Skills* by Sanjay Kumar and PushpaLata, Oxford University Press.
2. *Business Communication* by Meenakshi Raman and Prakash Singh, Oxford University Press.
3. *Technical Communication* by Meenakshi Raman and Sangeeta Sharma, OUP.

B.Sc. Part –III Information Technology - Entire (Semester– VI)

Course Code: DSE-601

Course Title: Computer Networks

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 0, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes:

1. To master the terminology and concepts of the OSI reference model and the TCP / IP reference model.
2. To master the concepts of protocols, Transmission media
3. To be familiar with wireless networking concepts,
4. To be familiar with switching and routing concepts in networking technologies.

Unit	Content	Hours Allotted
I	• Network definition • network topologies • network classifications • network protocol • layered network architecture • overview of OSI reference model • overview of TCP/IP protocol suite • The telephone network fundamental of communication theory. • Asynchronous and synchronous transmission. • Transmission Media: Guided media - twisted-pair cable, coaxial cable, fiber-optic cable. Unguided media (wireless) - radio waves, microwaves, infrared.	18

II	• Switching and routing in network: Message switching, packet switching, packet routing. • TCP/IP: Introduction to TCP/IP and internetworking • operations related protocols and sockets • The IP - IP address structure major features of IP. • IP data gram, major IP service, features of TCP, • Passive and active operant the transmission control blocks (TCB).	**18**

Reference:

1. Black C “Computer networks protocols, standards and Interface”, prentice hall of India, 1996
2. stlling W, “Computer communication network” (4th Edition), prentice hall of India, 1993
3. Tanenbaum A.S. “Computer Network”, prentice hall of India, 1981
4. Forouzan, “TCP/IP Protocol Suite”, Tata McGraw Hill.
5. Walrand&Varaiya,“High Performance Communication Networks”, 2/e, Elsevier”, 2003
6. James F. Kurose, Keith W. Ross, “Computer Networking – A Top-Down Approach Featuring the Internet”, Fifth Edition, Pearson Education, 2009.

B.Sc. Part –III Information Technology - Entire (Semester– VI)

Course Code: DSE -602

Course Title: Artificial Intelligence

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 0, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes: At the end of this course, student will be able to

1. Identify problems where artificial intelligence techniques are applicable
2. Apply selected basic AI techniques; judge applicability of more advanced techniques.
3. Participate in the design of systems that act intelligently and learn from experience

UNIT	CONTENTS	HOURS ALLOTTED
I.	Introduction to AI: Introduction, History of AI, AI Problems, AI Techniques, Expert System, Problems of Expert System Heuristics Search Techniques: Generate and Test, Hill Climbing, Depth First Search, Travelling Salesman problem	**18**

II	Introduction to AI: Introduction, History of AI, AI Problems, AI Techniques, Expert System, Problems of Expert System Heuristics Search Techniques: Generate and Test, Hill Climbing, Depth First Search, Travelling Salesman problem	**18**

References:

1. Artificial Intelligence- A Modern Approach , Stuart J. Russell and Peter Norvig
2. The McGraw-Hill Companies-Artificial Intelligence, Elaine Rich, Kevin Knight, Shivashankar B Nair
3. Artificial Intelligence, Patrick Henry Winston

B.Sc. Part –III Information Technology - Entire (Semester– VI)

Course Code: DSE-603

Course Title: ASP.NET

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcome:
Students who complete this course will be able to:
1. Understand working of Asp.Net web application
2. Demonstrate Asp.Net server controls.
3. Study database operations using ADO.Net.
4. Understand importance and working of state management.

UNIT	Contents	Hours Allotted
I.	**Introduction to ASP.Net:** • Web browser, web server • HTTP request response structure • HTML form elements • GET/POST method • Client side and Server side programming • Web form life cycle, page events, • Visual studio IDE.	18

	Server Controls: • Textbox, Listcontrols, • FileUpload, Linkbutton, • Imagemap, Image, Imagebutton, • Calender, Literal control, • Radiobutton, Checkbox, • Validation Controls, Navigation controls, • Master Page, • Sitemap.	
II	**Asp.Net State Management:** • Cross page postback property of button • Response.Redirect • Server.transfer, • Response.Write, • Hiddenfield control, • View State, • Cookies, Session, Application, Global. Sax. **Database and ADO.Net:** • Sql Server Database. • Datacontrols :Gridview, Listview, FormView, DetailsView, Repeter, SqlDataSource. • Introduction to ADO.Net : • ADO.NET Architecture- Connection, command, data reader, data adapter, data set • Understanding connected layer of ADO.NET and disconnected layer of ADO.NET.	**18**

Reference:

1. ASP.NET Black Book- By Steven Holzner
2. Professional ASP.NET 2 –Wrox Series- Wallace B. McClure
3. Asp.Net using C#- RajendraSalokhe
4. Asp.Net: The Complete Reference

Practical experiments Based on DSE-603:

1. Program to demonstrate server controls
2. Program to demonstrate SqlDataSource.

3. Program to demonstrate data controls
4. Program to demonstrate ADO.Net connected architecture.
5. Program to demonstrate ADO.Net disconnected architecture
6. Program to demonstrate Response.Redirect.
7. Program to demonstrate cross page posting.
8. Program to demonstrate client side state management.
9. Program to demonstrate serverside state management.
10. Program to create master page.

B.Sc. Part –III Information Technology - Entire (Semester– VI)

Course Code: DSE-604

Course Title: Advanced Java

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course outcome: After completion of this course student will be able to

1. Develop GUI using Java
2. Handle Database using java
3. Develop dynamic web pages using servlet and JSP

Unit	Content	Hours Allotted
I	**Java Swing and JDBC** **Swing** • Introduction • Swing container classes - JFrame, JDialog • Swing component classes-JTextField,JTextArea, JButton, JComboBox,JLabel, JList, JMenuBar, JTabbedPane, JOptionPane, JPanel, JTree, JMenu • Layout Manager- FlowLayout, BorderLayout, GridLayout, GridBagLayout • Event Handling **JDBC** • Introduction • JDBC driver and its types • JDBC connection steps • JDBC API- DriverManager class, Connection interface, Statement interface, PreparedStatment interface and ResultSet interface • Simple JDBC program	**18**

II	**Java Servlet and JSP** **Java Servlet** • Introduction to servlet • Life cycle of servlet • Servlet API- javax.servlet and javax.servlet.http • javax.servlet package interfaces(Servlet,ServletConfig, ServletContext), classes(GenericServlet) • javax.servlet.http-interfaces(HttpServletRequest,HttpServletResponse), classes(HttpServlet) • Introduction to Session , session tracking techniques • Cookies- types of cookies **Java Server Pages** • Introduction to JSP • JSP vs Servlet • Life cycle of JSP • JSP scripting elements- JSP scriptlet tag, JSP expression tag, JSP declaration tag • JSP implicit objects • JSP directive elements • JSP action elements- jsp:forward, jsp:include • Simple JSP application	**18**

Reference books-

- Herbert Schildt, Java2: The Complete Reference, Tata McGraw-Hill
- Object Oriented Programming with JAVA Essentilas and Applications , Mc Graw Hill
- Core and Advanced Java, Black Book- dreamtech
- Murach's Java Servlets and JSP

Practical experiments Based on DSE-604

1. Program to design frame using swing components.
2. Program on JDBC.
3. Program to design simple Login Page application using JDBC.
4. Program on servlet
5. Program to maintain session.
6. Program on cookies.
7. Program on create simple JSP application to check given number is Armstrong or not
8. Program on create simple JSP application to print Fibonacci sequence for given number.
9. Program on create simple JSP application to print factorial of given number.

B.Sc. Part –III Information Technology - Entire (Semester– VI)

Course Code: DSE-605

Course Title: PHP MySQL

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcome:
Upon successful completion of this course, students will be able to:
1. To design valid, well-formed, scalable, and meaningful pages using emerging technologies.
2. Understand, analyze and build web applications using PHP.
3. To develop and implement Database Driven Websites.

Units	Contents	Hours Allotted
I	**Installation and Introduction to PHP and MySQL** 1.1 XAMPP Installation 1.2 Apache, PHP, MySQL 1.3 Basic Syntax and Statement in PHP , Variables 1.4 Operators and Comments 1.5 Control Structure 1.6 Looping Statements, Function, Arrays 1.7 Introduction to database, SQL, using PhpMy Admin to run SQL queries 1.8 Forms in PHP -Reading Data in web pages- setting up web page to communicate	18

	with PHP 1.9 Handling text field , text arrays 1.10 Check box, Radio Button, Listbox, Password Control, Hidden Control, Image maps, File upload button ,Making Button Data Per list 1.11 Using Submit Button As HTML Button	
II	**Accessing Database and Session Cookies in PHP** 2.1 Connecting to Database Server 2.2 Connecting to Database 2.3 Reading to table 2.4 Displaying the table data 2.5 Classing the Connection 2.6 Setting Cookie 2.7 Reading a Cookie 2.8 Creating Session 2.9 Set Session 2.10 Destroying Session	18

Reference Books:

a. PHP and MySQL: Novice to Ninja by Kevin Yank
b. PHP- Complete Reference by Steven Holzner
c. Integrating PHP with Embedded System

Practical experiments Based on DSE-605:

d. Program to demonstrate first program in PHP.
e. Program to demonstrate scope of Variables.
f. Program to demonstrate static Keyword.
g. Program to demonstrate PRINT Statement in PHP.
h. Program to demonstrate String Functions in PHP - strlen(), strpos() function.
i. Program to demonstrate Constant string example.
j. Program to demonstrate Arithmetic Operators in PHP.
k. Program to demonstrate Increment and Decrement Operators .
l. Program to demonstrate Assignment Operators .
m. Program to demonstrate String Operators.
n. Program to demonstrate Conditional statements (Comparing two numbers).

o. Program to demonstrate Switch Statement.
p. Program to demonstrate Looping statements.
q. Program to Demonstrate User Defined Function in PHP.
r. Program to Demonstrate PHP Functions - Adding parameters.
s. Program to Demonstrate PHP Functions - Return values.
t. Program to Demonstrate Array in PHP.
u. Program to Demonstrate Numeric Array .
v. Program to Demonstrate Associative array.
w. Program to Demonstrate Multidimensional array in PHP.
x. Program to Demonstrate Factorial program in PHP using recursive function.
y. Program for finding the smallest number in an array.
z. Program to Demonstrate sorting in PHP.
aa. Program to Demonstrate $_GET and $_POST functions in PHP.
bb. Program to Demonstrate date() and time() function in PHP.
cc. Program to Demonstrate Exception Handling in PHP using Try, Throw and Catch.
dd. Program to Demonstrate Multiple Exception In PHP.
ee. Program to Demonstrate Re-Throwing Exception in PHP.
ff. Program to Demonstrate Form handling in PHP.
gg. Another Example for PHP form
hh. How to connect to MYSQL database using PHP
ii. Display the data from MYSQL database in web form.

B.Sc. Part –III Information Technology - Entire (Semester– VI)

Sem-VI: Ability Enhancement Compulsory Course (AECC)

Course Code: AECC-F

Course Title: English for Communication-IV

Total Contact Hours: 36 Hrs. (45 lectures of 48 minutes each)
Teaching Scheme: Theory: 4 lectures/ Week, Practical: 4/ Week, Credits: 02
Evaluation pattern: Theory 40; internal evaluation 10; Total Marks: 50

Course Outcomes:			
COs	**After the completion of the course the student should be able to**	Bloom's Cognitive	
		level	Descriptor
CO1	**Comprehend** the employment skills to have an effective first impression	2	Understanding
CO2	**Construct** effective technical reports and prepare effective presentations	3	Applying
CO3	**Use** various interpersonal skills as per the need of situation and context	3	Applying

Unit No	Contents	Number of Hours
Unit I	**A. Employment Communication:** • Covering letter and resume writing • Group discussion: purpose, nature, do's and don'ts, body language, tips and strategies • Interviews: types, FAQs, elements of preparation, do's and	18 hrs

	don’ts of winning job interviews, tips and techniques **B. Technical report writing and presentation:** • Importance of reports, objectives, characteristics • Categories of report, • Formats (memo, letter) • Structure/elements of manuscript reports • Preparing effective presentations	
Unit II	**Essential Interpersonal Skills/Soft Skills** • Developing personality: various personality traits, types of personalities, tips • Self esteem: Know thyself • Positive attitude building • Emotional intelligence (EQ) • Teamwork • Leadership • Time management • Business ethics and values	18 hrs

Reference Books:

1. *Communication Skills* by Sanjay Kumar and PushpaLata, Oxford University Press.
2. *Business Communication* by Meenakshi Raman and Prakash Singh, Oxford University Press.
3. *Technical Communication* by Meenakshi Raman and Sangeeta Sharma, OUP.
4. *Personal Development for Life and Work* by Masters and Wallace, Cengage Learning.
5. *Managing Soft Skills for Personality Development* by B.N. Ghosh, Tata McGraw Hill.
6. *Soft Skills* by K. Alex, S. Chand and Company.

NATURE OF QUESTION PAPER AND SCHEME OF MARKING:

- Separate passing for each theory paper of 40 marks. Minimum 16 (40%) marks out of 40 are required for passing. internal evaluation 10 marks, Minimum 4 (40%) marks out of 10 are required for passing.
- Separate passing for practical and project.

- **Nature of the Theory Question Paper –**
  - Que. 1 Multiple choice questions. [8 Marks]
    (It contains total 8 questions.)
  - Que. 2 Attempt any two out of three. [2*8 = 16]
  - Que. 3 Attempt any four out of six. [4*4 = 16]

- **Practical Examination will be conducted annually for 300 marks.**
  - 100 marks for practical Paper – IX is based on DSE -503 &DSE -603 combined.
  - 100 marks for practical Paper – X is based on DSE -504 &DSE -604 combined.
  - 100 marks for practical Paper – XI is based on DSE -505 &DSE -605 combined.

  - **Structure of Practical question paper for Laboratory Course –IX , X and XI is as follows**
    1. Solve any three questions (Out of five questions)
    2. Each question carries 25 marks
    3. 15 marks for Viva and 10 marks are reserved for journal Minimum 40 (40%) marks are required for passing in each case.

Laboratory Course –XII (Project and Viva)

- Project Work will be evaluated for 100 marks and minimum 40 (40%) out of 100 is required for passing.

- The project should be undertaken preferably by group of two students, who work jointly and implement the project.
- The group is expected to complete analysis of problem/Task, System design, coding and minimum five to six reports
- The external viva-voce examination will be conducted by external examiners appointed by the university.

Marks Distribution for Laboratory Course –XII (Project and Viva)

- Documentation -20 Marks
- On-line presentation-30 Marks
- Viva -50 Marks

Guidelines for Project:

Number of Copies: The student should submit two Hard-bound copies of the Project Report i.e. one for the institute and one for the candidate.

Acceptance/Rejection of Project Report: The student must submit an outline of the project report to the college for approval. The college holds the rights to accept the project or suggest modifications for resubmission. Only on acceptance of draft project report, the student should make the final copies.

Format of the Project Report:

The student must adhere strictly to the following format for the submission of the Project Report.

a. Paper:

The Report shall be typed on white paper, A4 size, for the final submission. The Report to be submitted to the must be original and subsequent copies may be photocopied on any paper.

b. Typing:

The typing shall be of standard letter size, 1.5 line spaced and on one side of the paper only. (Normal text should have Times New Roman Font size 12 or 13. Headings can have bigger size)

c. Margins:

- The typing must be done in the following margins:
- Left -----1.5 inch, Right ----- 1 inch
- Top ----- 1 inch, Bottom ----- 1 inch

d. Front Cover:

The front cover should contain the following details:

- TOP: The title in block capitals of 6mm to 15mm letters.
- CENTRE: Full name in block capitals of 6mm to 10mm letters.
- BOTTOM: Name of the University, Course, Year of submission -all in block capitals of 6mm to 10mm letters on separate lines with proper spacing and centring.

f. Blank Sheets:

At the beginning and end of the report, two white black bound papers should be provided, one for the purpose of binding and other to be left blank.

Appendix - 2

- Input Design
- Report Design
- Implementation
- Testing

Standard Project Report Documentation Format

a) Covering Page
b) Institute/College certificate
c) Guide Certificate
d) Student declaration
e) Acknowledgement
f) Index with Chapter Scheme

1) Introduction to Project

-Introduction

-Existing System

-Need and scope of System

-Organization Profile

2) Proposed System

-Objectives

-Requirement Engineering.

• Requirement Gathering.

• SRS

3) System Diagrams

• DFD

• ERD

• UML

4) System Requirements

• Hardware

• Software

5) System Design

• Database Design

• Input Design

• Output Design

6) User Guideline

7) Source Code

8) Outputs

- Input screens and Reports (with valid Data)

7) Conclusion and Suggestions

- Conclusion and suggestions
- Future enhancement
- Bibliography:

Note: Minimum 5 to 6 reports are essential as outputs of the project work done by the student