SubjectName-**भाषा और सांस्कृति**	
SubjectType-आधार पाठ्यक्रम	SubjectCode-**X3-FCEA1T**

इकाई	विषय	घण्टे
इकाई 1	1.भवानी प्रसाद मिश्र:परिचय पाठ:सतपुड़ा के जंगल 2 उषा प्रियंवदा:परिचय पाठ:वापसी 3 विवेकानन्द पाठ :शिकागोव्याख्यान	**05**
इकाई 2	1 विद्यानिवास मिश्र :परिचय पाठ :आँगन का पंछी 2 महात्मागाँधी : पाठ :आत्मकथाकेअंश 3 विश्वकेप्रमुखधर्म	05
इकाई 3	1 वाक्य रचनाए वं sअशुद्धिशोधन । 2 अनुवाद :अर्थ एवं प्रकार | 3 बीजशब्द (कीवर्ड / अवधारणामूलकशब्द)लोकतन्त्र, समरसता, कला, साहित्य, अध्यात्म	05

अनुशंसितअध्ययनसंसाधनपाठ्यपुस्तकें, सन्दर्भपुस्तकें, अन्यसंसाधन

1महात्मागाँधी: सत्यकेसाथमेरेप्रयोग**,** प्रभातप्रकाशन**,** नईदिल्ली

2.विश्वकेप्रमुखधर्म :जी. आर. सिंह

वासुदेवनन्दनप्रसाद **:** आधुनिकहिन्दीव्याकरणऔररचना**,** भारतीभवन**,** पटना**,** बिहार

हिन्दीज्ञानकोष

उषाप्रियंवदा **:** वापसी

अनुशंसितडिजिटलप्लेटफार्म / वेबलिंक

अनुशंसितसमकक्षऑनलाईनपाठयक्रम

1 book.google.com>books

2 http://kavitakosh.org>भवानीप्रसादमिश्र

3भवानीप्रसादमिश्र **- Wikipedia**

4 http://m.youtuve.com>watch

5 http://nibandhbharti.com>vidya-nivas-mishar

6 http://onlinefreenotes.com>वापसी

Subject-English Language amd Communication Skill	
Course Type- Foundation Course	**Course Code-X3-FCHB1T**

Unit	Topic	No. of Lecture
Unit1	Reading, Writing and Interpretation Skills: (Text-Based) 1.The Express Stephen Spender 2. The World is Too Much with Us-William Wordsworth 3.My Financial Career-Stephen Leacock 4.Running for Governor-Mark Twain	**10**
Unit 2	Essay writing-Topical essays: Terrorism, Covid-19 Pandemic, India and the Modern World, The Role of Women in the New Era, The Global World.	**10**
Unit 3	(a) Communicative Skills: Words often Confused, Misused, Idiomatic Expressions and Proverbs, etc. (b) Essential Conversations: Introducing Your self, Introducing Other Persons, Meeting Someone First Time, At the Airport, Ordering Food in a Restaurant, Talking about a Movie, etc. (c) Filing an F.I.R., Writing a Resume, E-mail Writing. Blog Writing on a given topic.	**10**

Textbooks, Reference Books, Other Resources
Suggested Readings and Web Materials:

1- Essential English Grammar - Raymond Murphy, Cambridge University Press.

2- Practical English Grammar Exercises 1- A. J. Thomson & A. V. Martinet, Oxford India.

3- Practical English Usage - Michael Swan, Oxford

4- English Grammar in Use - Raymond Murphy, Cambridge University Press.

5- Essays for UPSC Exams New Delhi.

6- A Practical Course in Spoken English-J K Gangal, PHI, New Delhi Publications.

7- Speak and Write Effectively- PDF materials on the web-NET

8- www.englishclub.com

9- www.eslfast.com

10- Swayam Portal

Subject-Personality Devlopement	
Course Type- Foundation Course	**Course Code- X3-FCAC1T**

Unit	Topic	No. of Lecture
Unit 1	• Personality development (Physical, mental, intellectual and spiritual development) meaning, concept, factors of personality developments • Character building (personal and national character): Meaning, concept, factors of character and means of character building. • Panchkosha, Annamaya Kosha, Pranamaya Kosha, Manomaya Kosha, Vigyanmaya Kosha and Anandamaya Kosha general introduction meaning purpose and importance • Benefits of Panchkosh development and means of developing Panchkosh.	06 Theoretical 04 Experiential
Unit 2	• Physical and mental development • Meaning, concept of physical and mental development • Ideal daily routine, balanced diet, routine, subtle exercise • Ashtanga Yoga-Yama Niyam, Ishwar Pranidhan, self-study, contentment, patience, virtue, practice of discipline. • Past glory, social and citizenship awareness, equal respect to all sects and scientific outlook • Nation, Nationality, Democracy, Independence, Suraj, Vasudhaiva Kutumbakam, Coexistence.	06 Theoretical 04 Experiential
Unit 3	• Moral and mental development • Difference among happiness, joy and pleasure. • Ashtanga Yoga, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi. • Continuity of Karmayoga, Bhaktiyoga, Jnanayoga in life according to one's own will • Indian time calculation. • Self-respect and contemplation of mother tongue and Indian knowledge tradition. • Biographies of Legends. • Practice of service, tolerance, charity, dedication and self-examination. Self reliance	06 Theoretical 04 Experiential

Text Books, Reference Book, Other resources

Suggested Readings:-

1- उच्च शिक्षा भारतीय दृष्टि- श्री अतुल कोठारी

2- अदम्य साहस - डॉ. ए. पी. जे. अब्दुल कलाम

3- व्यक्तित्व विकास स्वामी विवेकानंद रामकृष्ण मिशन

4- आत्मतत्व का विस्तार श्रुतम प्रकाशन जोधपुर -

5- भारतीय मनोविज्ञान श्री लज्जाराम तोमर -

6- उपनिषद विशेषांक गीता प्रेस गोरखपुर -

7- भारतीय ज्ञान परम्परा वोध हिंदी ग्रंथ अकादमी म. प्र.

Subject – Disital Awareness- Cyber Security	
Course Type- Foundation	**Course Code-X3-FCBD1T**

Unit	Topic	No.Of Lecture
Unit-1	Overview of Computer and Web-technology, Architecture of cyberspace, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society. Use of Internet: Web browsers, search engines and Chat bots. Difference between Website & Portal, E-mail: Account opening, sending & receiving e-mails, managing Contacts & Folders. Computer Security: Issues & protection, firewall & antivirus, making secure online transactions. Internet safety and digital security. Ethical use of digital resources, Measures of Online Self Protection. Keywords: Browser, Search Engine, Website, Virus, Security, Firewall, Cyber	05
Unit-2	Digital Payments and e-Commerce: Internet Banking: National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), Immediate Payment Service (IMPS) Digital Financial Tools: Understanding OTP [One Time Password]. QR [Quick Response] Code, UPI [Unified Payment Interface], AEPS [Aadhaar Enabled Payment System]; USSD [Unstructured Supplementary Service Data], Card [Credit/Debit]. eWallet, PoS [Point of Sale] Definition of E-Commerce- Main components of E-Commerce, Elements of E- Commerce security, E-Commerce threats, E-Commerce security best practices, Online Bill Payment. Digital payments related common frauds and preventive measures. RBI guidelines and provisions of Payment Settlement Act, 2007. Keywords:Inetrnet Banking, Digital Financial Tools, eWallet, e-Commerce Security.	07
Unit-3	e-Governance Service Overview of e-Governance Services like Railway Reservation, passport, eHospital; Accessing various e-Governance Services on Mobile Using "UMANG APP". Exploring services and resources of Government of India Portal (https://www.mygov.in/). Digi-Locker: About digilocker, features and benefits of digilocker, Registering. accessing and getting various certificates and mark sheets on digilocker. Academic Bank of Credit (ABC): About ABC, features and benefits of ABC, Registering, accessing, getting and sharing academic credits. Exploring Online Learning resources: Online learning through SWAYAM Central, (https://swayam.gov.in/) and e-pathshala (https://cpathshala.nic.in/). Keywords: Internet Banking, NEFT, RTGS, IMPS, OTP, UPI, QR Code, AEPS, E- Governance, Umang.	06
Unit-4	Introduction to Cyber security- Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security. Definition of cyber crimes and offences, Cyber crime targeting computers and mobiles,	05

	Cyber crime against women and children, Cyber bullying. Financial frauds, Social engineering attacks, Malware and Ransomware attacks, zero day and zero click attacks. Cyber criminals modus-operandi, Reporting of cyber crimes. Remedial and mitigation measures, Legal perspective of cyber crime, IT Act 2000 and its amendments, Organisations dealing with Cyber crime and Cyber security in India, Case studies. Keywords: Cyber Space, Cyber Security, Cyber Offences, Zero Click Attack, Zero Day Attack, Ransomware, Reporting Cyber Crimes, Cyber Crimes Case Studies.	
Unit-5	Social Media Overview and Security- Introduction to Social Networks, Types of Social media, Social media platforms, Social media monitoring, Hashtag. Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate content, Best practices for the use of Social media, Case studies. Keywords: Social Media Platforms, Hashtagging, Social Media Marketing, flagging of contents in social media.	06

Text Books, Reference Books, Other resources

Suggested Readings:

- Praveen Kumar Shukla, Surya Prakash Tripathi, Ritendra Goel "Introduction to Information Security and Cyber Laws" Dreamtech Press.
- Vivek Sood, "Cyber law simplified", Tata McGraw Hill, Education (India).
- T. Bradley "Essential Computer Security: Everyone's Guide to Email, Internet, and Wireless Security".
- Cyber Crime Impact in the New Millennium, by R. C Mishra, Auther Press. Edition 2010.
- Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
- Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson, 13th November, 2001)
- Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
- Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
- Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
- Fundamentals of Network Security by E. Maiwald, McGraw Hill

Reference Books:

- M. Stamp, "Information Security: Principles and Practice", Wiley.
- David J. Loundy, "Computer Crime, Information Warfare, And Economic Espionage", Carolina Academic Press.

Subject Name-Computer Graphics(Theory)	
SubjectType-Discipline Specific Elective(DSE)	SubjectCode-**S3-BCAA1D**

Unit	Topic	Noof Lecture
Unit-1	**Introduction to Computer Graphics:** Application of Computer Graphics, Interactiv eand Passive Graphics. **Graphic Systems:** Display Processor. Cathode Ray Tube (CRT),Random Scan vs Raster Scan,Color CRT Monitors ,Direct View Storage Tubes ,Flat Panel Display. **Input-Output Devices :**Input Devices, Track ball, Light Pen ,Image Scanner,Output Devices, Plotters**.**	12
Unit-2	**Scan Conversion aline:**Scan Conversion Definition, Scan Converting a Point ,Scan Convertinga StraightLine, DDAA lgorithm. **Scan Conversion Circle:** Defining a Circle, Defining a Circle using Polynomial Method, Defining aCircleusingPolarCoordinatesMethod,Bresenham'sCircleAlgorithm,Midpoint Circle Algorithm. **Scan Converting Ellipse :**Scan converting aEllipse ,Polynomial Method, Trignometric Method ,Midpoint Ellipse sAlgorithm	12
Unit-3	**FilledAreaPrimitives:**BoundaryFillAlgorithm,FloodFillAlgorithm,ScanLinePolygonFillAlgorithm. **2DTransformations:**IntroductionofTransformation,Translation,Scaling,Rotation,Reflection, Shearing, Matrix Representation, Homogeneous Coordinates,CompositeTransformation,PivotPointRotation. **2D-Viewing:**Window,WindowtoViewportCo-ordinate Transformation,Zooming,Panning.	12
Unit-4	**Clipping Techniques:** Clipping, Point Clipping, Line Clipping, Midpoint SubdivisionAlgorithm,TextClipping,Polygon,Sutherland-HodgemanPolygonClipping,Weiler-AthertonPolygon Clipping. **Pointing&Positioning:**Pointing&PositioningTechniques,ElasticorRubberBandTechniques, **Dragging.Shading:**IntroductionofShading,ConstantIntensityShading,Gouraud Shading ,Phong Shading.	12
Unit-5	**Animation:**Animation,ApplicationAreasofAnimation,AnimationFunctions.**3D Computer Graphics:** Three Dimensional Graphics, Three Dimensional Transformations, Scaling, Rotation, Rotation about Arbitrary Axis, Inverse Transformations ,Reflection, **Shearing Hidden Surfaces:** Hidden Surface Removal, Back Face Removal Algorithm, Z-Buffer Algorithm, Painter's Algorithm, Scan Line Algorithm, Subdivision Algorithm.	12

SuggestedReadings:

1. Hearn: Computer Graphics CVersion,Pearson Education India;2ndedition,2002.
2. JohnHughes,And riesvan Dam,MorganMcGuire,DavidSklar,JamesFoley:ComputerGraphics:PrinciplesandPractice, Addison-WesleyProfessional,3rd edition, 2013.
3. ZhigangXiang, Roy Plastock:ComputerGraphics,McGrawHillEducation,2ndedition,2006.

ReferenceBook:

1. JamesD.Foley,Andriesvan Dam,StevenK.Feiner,JohnF.Hughes:IntroductiontoComputerGraphics,AddisonWesley, 1993.
2. ChopraDr.Rajiv:Computer Graphics ,SChand & CoLtd.
3. Desai:Computer Graphics ,PHI,2008.

SubjectName-PythonProgramming(Theory)	
SubjectType-DisciplineSpecificElective(DSE)	SubjectCode-S3-BCAA2D

Unit-1	Topic	Hrs.
Unit-1	What is Python? WHY PYTHON? History, Features Dynamic, Interpreted, Object oriented, Embeddable, Extensible, Large standardlibraries,Free and Open source Download & Python Installation Processin Windows,Unix, Linux and Mac,. Online Python IDLE, Python Real time IDEs like Spyder, JupyterNote Book , PyCharm, Rodeo, Visual Studio Code, ATOM, PyDevetc, Data Types andVariables, Numbers, Operators Comments in Python. Input output operation inpython.	12
Unit-2	**Control Statements:** Conditional control statements if, If else, If-elif-else, Loopcontrol statements- for, while, Data Structure &Collection:-String,List. Tuple, Set,Dictionary.ComparisonofList,TupleandSet,Functioninpython,typesoffunctioninpython, map, reduce,filterfunction .Lamda Function	12
Unit-3	Importance of modular programming. What is module? Types of Modules Predefined,Userdefined.Userdefinesmodulecreation,OS,Date-time,mathmodules,organizingpythonprojectintopackages,Typesofpackages-predefined,user defined.Packagev/sFolder,Fileand Directory handlingin Python.	12
Unit-4	Proceduralv/sObjectorientedprogramming,PrinciplesofOOPEncapsulation,Abstraction (DataHiding),Polymorphism,Inheritance.InnerClasses.Exceptionhandling and types of errors, try, except, finally, raise, and Need to Custom exceptions ,Casestudies, regular expression.	12
Unit-5	Multithreading and multiprocessing in python, Threading module, Creating threadinheritingThreadclass,Usingcallableobject,Lifecycleofthread,Singlethreadedapplication, Multithreaded application, Can we call run() directly? Need to start()method,Sleep() &Join(). SynchronizationLockclassacquire(),release()functions.Garbagecollection.PythonDataBase Communications(PDBC),Introduction ofNumpy,Pandas&MatPlotLib,Drawingplots.	12

SuggestedReadings:

1. MarkLutz,Learning Python

2. Tony Gaddis, Starting Out With Python

3. Kenneth A .Lambert, Fundamental sofPython

4. James Payne, Beginning Python using Python

Reference sBooks:

1. PythonCrashCourse:AHands-On,Project-

BasedIntroductiontoProgramming(2ndEdition)Author:EricMatthes.

2. ThePythonLanguageReferenceManual(version3.2),GuidovanRossum,andFredL.Drake,Jr.(Editor),ISBN:1 906966141,Network TheoryLtd,120pages(Revised November2006

Subject Name-Data Ware housing &Mining(Theory)	
Subject sType-Discipline Specific Elective(DSE)	**SubjectCode-S3-BCAA3D**

Unit-1	Topic	No.ofLecture
Unit-1	Data Warehouse Basic: Data ware housing Definition, usage andtrends, DBMS vs. data warehouse, statistical databases vs. datawarehouses.Datamarts,Metadata,Multidimensionaldatamodel,Datacubes,SchemasforMultidimensionalDatabase:stars,snowflakes andfactconstellations	12
Unit-2	Storage and Architecture of Data Warehouse: Datawarehouseprocess & architecture, OLTP vs. OLAP, ROLAP vs. MOLAP types ofOLAP,servers,3-Tierdatawarehousearchitecture,distributedandvirtual data warehouses, data warehouse consolidation, waremanager, data house internals, storage and indexing, Operations,materialized,onlineanalytical processing(OLAP)system.	12
Unit-3	Data Mining Basic: Data mining definition & task, KDDversusdatamining, tools and applications. Data mining query languages ,Preprocessing, pattern presentation & visualization specification ,data mining techniques, tools and applications. Data mining techniques: Statistical perspective, Regression, Bayes Theorem, Hypothetical testing.	12
Unit-4	ClassificationandClustering:Issues inclass ification,Statistical-BasedAlgorithms, Distance-Based Algorithms, Decision Tree-BasedAlgorithms, ID3, C4.5, Evaluating the performance. Clustering: Basicconcepts, Partition algorithms, Agglomerative Hierarchicalalgorithms, DBSCAN, BIRCH, CURE algorithm. Clustering withcategorical attributes,Comparison	12
Unit-5	AssociationRules:FrequentItemsetgeneration,AprioriAlgorithm.Rulegeneration,CompactrepresentationoffrequentItemset. Advanced Topics: Dimensionality Reduction, overview of Principle Component Analysis and SVD, Spatialmining, Webmining, Temporal mining.	12

SuggestedReadings:

1. DataMining: Concept sandTechniques,HanandKamber,MorganKaufmannPublications.
2. DataMiningTechniques,A.K.Pujari,UniversitiesPressPvt.Ltd
3. DataWarehousing"byAmiteshSinha
4. Data Warehousing inthereal world" by Sam Anahory & Dennis Murray
5. JiaweiHan&MichelineKambe: DataMining-Concepts&Techniques;6.MargaretH.Dunham,S.

Subject Name-Web Technologies(Theory)	
Subject Type –Discipline Specific Elective(DSE)	**SubjectCode-S3-BCAA4D**

Unit	Topic	No. Of. Lecture
Unit-1	The basic sof Internet, World Wide Web ,Webpage ,Home Page, Website, Static, Dynamic and Active web page, Overview of Protocols -Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Simple Network Management Protocol, Hyper Text Transfer Protocol, Client server computing concepts.	10
Keywords/Tags:	Internet, World Wide Web ,Active web Pages, Protocols	
Unit-2	**Web Client and Web Sever** WebBrowser,Browserse.g.,Netscapenavigator,InternetExplorer,MozillaFirefox, Client Side Scripting Languages- VB Script and Java Script, Active Xcontrol and Plug-ins; Web Server Architecture, Image maps, CGI, API webdatabase connectivity-DBC,ODBC	12
Keywords/Tags:	Web Browsers ,Active Xcontrol, plug-ins ,image maps CGI, Dat base sconnectivity.	
Unit-3	**Introduction to HTML:** Introduction to HTML, Essential Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR,DFN, HR, LISTING, Comment, IMG), Colour and Background of Web Pages, ListsandtheirTypes,AttributesofImageTag,Hypertext,HyperlinkandHypermedia,Links,Anchorsand URLS,LinkstoExternal Documents ,Different Sectionofa Pageand Graphics, Footnoteande-mailing, Creating Table, Frame, Form and Style Sheet.	14
Keywords/Tags:	HTML, Tags ,Attributes, Anchors ,URLS, sections of apage.	
Unit-4	**DHTML:** Dynamic HTML, Document Object Model, Features of DHTML, CSSP(CascadingStyleSheetPositioning)andJSSS(JavaScriptassistedStyleSheet) ,LayersofNetscape,TheIDAttribute,DHTML Events.	12
Keywords/Tags:	DHTML,CSSP,JSSS,IDattributes,DHTMLEvents	
Unit-5	**JavaScript:** Objects, Methods, Events and Functions, Tags, Operators, Data Types, LiteralsandTypeCastinginJavaScript,Programming Construct, Arrayand DialogBoxes,RelatingJavaScripttoDHTML,DynamicallyChangingText,Style,Content.	12
Keywords/Tags:	Objects,Events,Functions,Tags,Operators,Array,Dialogbox,Dynamicchanging texts.	

Textbooks:

1. WebTechnologies-BlackBook-DreamTechPress
2. BeginningPHP5.3(Wrox-WilleyPublishing)byMattDoyle
3. BeginningHTML,XHTML,CSSandJavascriptbyJohnDuckett

ReferenceBook:

1. HTML,XHTMLandCSSBible,5thedition,WilleyIndia-StevenM.Schafer
2. Struts:TheCompleteReference,2ndEditionbyJamesHolmes
3. J2EE:TheCompleteReferencebyJamesKeogh
4. JavaEEandHTML-5EnterpriseApplicationDevelopment(OraclePress)byJohnBrock,Wielenga.

SubjectName-CloudComputing	
SubjectType-MINOR	**SubjectCode-S3-BCAB2T**

Unit	Topic	No.of. Lecture
Unit-1	CloudComputingFundamental:CloudComputingdefinition,private,public and hybrid cloud. Cloud types; IaaS, PaaS, SaaS. Benefits andchallengesof cloud computing,publicvsprivateclouds	18
Unit-2	BasicsOfServiceManagementinCloudComputing,DataManagementinCloud Computing. Cloud Computing Architecture: Cloud ReferenceModel,Layerand Typesof Clouds,Architecturaldesignof ComputeandStorageClouds.	18
Unit-3	Overview Of cloud management & Virtualization: Fundamental concepts of compute ,storage, networking, desktop and application virtualization ,role of virtualization in enabling the cloud Virtualizationbenefits,servervirtualization,Blockandfilelevelstoragevirtualization	18
Unit-4	CloudSecurity:CloudInformation.securityfundamentals,Cloudsecurityservices, Design principles, Secure Cloud Software Requirements, PolicyImplementation, Cloud Computing Security Challenges, VirtualizationsecurityManagement,CloudComputingSecurityArchitecture	18
Unit-5	Market Based Management of Clouds Federated Clouds/Inter Cloud:Characterization&Definition,CloudFederationStack,ThirdPartyCloudServices.Casestudy:GoogleAppEngine,MicrosoftAzure,Hadoop, Amazon,Aneka	18

SuggestedReadings:

1. A.Srinivasan,J.Suresh,CloudComputingAPracticalapproachforlearningandimplementation,PearsonIndia,[ISBN-978131776513]
2. GautamShroff,EnterpriseCloudComputingTechnologyArchitectureApplications[ISBN:978-0521137355]
3. KumarSaurabh"CloudComputinginsightsintoNew-EraInfrastructureIndia,2011
4. DimitrisN.Chorafas,CloudComputingStrategies[ISBN:1439834539]
5. Buyya,Selvi,Mastering Cloud Computing, TMHPub
6. Krutz,Vnes,Cloud Security,WileyPub

Subject Name-ProgramminginC#	
Subject Type-Elective	**SubjectCode-S3-BCAC3G**

Unit	Topic	No.of. Lecture
Unit-1	Introduction to C#: What is C#, C++ vs C#, Java vs C#, History,Features,Variables,DataTypes,Operators,Keywords,Comments.C# Control Statements: if-else, switch, For Loop, While Loop, Do-While Loop, Break, Continue, Goto.	12
Unit-2	C#Functions:Function, CallByValue, CallBy Reference, Out Parameter. C#Arrays:ArraytoFunction,MultidimensionalArray,JaggedArrays,Params,Arrayclass,CommandLineArgs.C#ObjectsandClasses:Constructor, Destructor,this,static,static class, staticconstructor,Structs,Enum.	12
Unit-3	C#Properties.C#Inheritance :Inheritance,Aggregation. C#Polymorphism:MemberOverloading,MethodOverriding,Base,Polymorphism,Sealed. C#Abstraction:Abstract,Interface. C#Namespace:Namespaces,AccessModifiers,Encapsulation.	12
Unit-4	C# Strings. C# Exceptions: Exception Handling, try/catch, finally, CustomException, checked unchecked, System Exception. C# File I/O: FileStream,StreamWriter, StreamReader, TextWriter, TextReader, BinaryWriter,BinaryReader,StringWriter,StringReader,FileInfo,DirectoryInfo,Serialization,Deserialization,System.IO.	12
Unit-5	C#Generics,C#Delegates,C#Reflection. C# Multithreading: Multithreading, Thread Life Cycle, Thread class,MainThread,ThreadSleep,ThreadAbort,ThreadJoin,ThreadName,ThreadPriority. C#Synchronization,C#WebService.	12

Textbooks:

1. EBalagurusamy:ProgramminginC#,McGrawHillEducation,4thedition,2017.
2. JoydipKanjilal:MasteringC#8.0,BPBPublication,2019.
3. J.G.R.Sathiaseelan:ProgrammingWithCSharp.Net,PHILearning,2009.

ReferenceBook:

1. BillWagner:EffectiveC#,PearsonEducation,Thirdedition,2017.
2. DoyleB:C#ProgrammingFromProblemAnalysisToProgramDesign,Cengage,2014.
3. S.ThamaraiSelvi,R.Murugesan:ATextBookonC#,PearsonEducationIndia,2003.
4. MILES:Beginto CodewithC#,PHILearning