Theory Paper

Part A Introduction			
Program: Degree	**Class : UG**	**Year: III**	**Session:**
Subject: BCA			
1	**Course Code**	**UWEBTCA601**	
2	**Course Title**	**Web Technologies** (Theory) (Group B .PaperII)	
3	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/)**	**Discipline Specific Elective (DSE)**	
4	**Pre-requisite (if any)**		
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, the students will be able to:** 1. Understand basics of Internet, World Wide Web(WWW), Client server Computing and have information of various Protocols 2. Have Knowledge of various web browsers, familiarize with Java scripting, Client side scripting language, Web server Architecture, Database connectivity(DBC) and ODBC 3. Have knowledge of HTML, it's essential tags, Attributes, Text styles, Links to External Documents and different sections of a HTML page. 4. Develop skills to generate HTML and DHTML page and have knowledge of Java Script assisted style sheets (JSSS) 5. Have knowledge of Objects, Methods, Events and Functions and various types of text, styles and be able to relate JavaScript to DHTML	
6	**Credit Value**	**4**	
7	**Total Marks**	Max. Marks: 40 + 60 Min. Passing Marks: 16+24	

Part B- Content of the Course

Total No. of Lectures =60 (3 hours/ lecture per week)

Unit	**Topics**	**No. of Lectures (1 Hour Each)**
UnitI	**Topics Basics of Internet and Web:** The basics of Internet, World Wide Web, Web page, Home Page, Web site, Static, Dynamic and Active web page, Overview of Protocols — Simple Mail Transfer Protocol, Gopher, Telnet, Ernails, TFTP. Simple Network Management Protocol, Hyper Text Transfer Protocol, Client server computing concepts.	**10**
Keywords/Tags:	Internet, World Wide Web, Active web Pages, Protocols,	

	HTTP,Client server computing	
Unit -II	**Web Client and Web Sever** Web Browser, Browsers e.g., Netscape navigator, Internet Explorer, Mozilla Firefox, Client Side Scripting Languages-VB Script and Java Script, Active X control and Plug-ins; Web Server Architecture, Image maps, CGI, API web database connectivity-DBC, ODBC	**12**
Keywords/Tags:	Web Browsers, Active X control, plug- ins, image maps CGI, database connectivity.	
Unit -III	**: 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, 1MG), Colour and Background of Web Pages, Lists and their Types, Attributes of Image Tag, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Footnote and e-mailing, Creating Table, Frame, Form and Style Sheet.	**14**
Keywords/Tags:	HTMLTags, Attributes, Anchors, URLs, sections of a page.	
Unit **-IV**	**DHTML** Dynamic HTML, Document Object Model, Features of DHTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute, DHTML Events.	**12**
Keywords/Tags:	DHTML, CSS, JSSS, ID attributes, DHTML Events	
Unit 5:	Java Script Objects, Methods, Events and Functions, Tags, Operators, Data Types, Literals and Type Casting in JavaScript, Programming Construct, Array and Dialog Boxes, Relating JavaScript to DHTML, Dynamically Changing Text, Style, Content.	12 -
Keywords/Tags: Objects, Events, Functions, Tags, Operators, Array, Dialog box, Dynamic changing texts.		
Part C-Learning Resources		
Text Books, Reference Books, Other resources		
Suggested Readings:		

Textbooks:

1. Web Technologies — Black Book — DreamTech Press
2. Beginning PHP 5.3 (Wrox-Willey Publishing) by Matt Doyle
3. Beginning HTML, XHTML, CSS and Javascript by John Duckett

Reference Book:

1. HTML, XHTML and CSS Bible, 5th edition, Willey India-Steven M. Schafer
2. Struts: The Complete Reference, 2nd Edition by James Holmes
3. J2EE: The Complete Reference by James Keogh
4. Java EE and HTML-5 Enterprise Application Development (Oracle Press) by John Brock, Arun Gupta, Geertjan Wielenga.

Suggested equivalent online courses:

Internet technology course by NPTEL nptel.ac.in>courses, www.udemy,com,

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 Marks Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		External Assessment: University Exam (UE) : 60 Marks Time : 03.00 Hours	
Assessment and presentation of assignment	10 Marks	Section (A) : Five Very Short Questions (50 Words Each) OR MCQ Questions	05 x 02 = 10 Marks OR 10 x 01 = 10 Marks
Class Test I (Objective Questions)	10 Marks		
Class Test II (Descriptive Questions)	10 Marks	Section (B) : Five Short Questions (200 Words Each)	05 x 06 = 30 Marks
Class Test III	10 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 10 = 20 Marks
Total	40 Marks	Total	60 Marks
Any remarks/suggestions:			

Part A Introduction

Program: Degree	***Class : UG***	***Year: III*** ***Session: ……..***
	Subject: BCA	
I	***Course Code***	**UDATACA602**
2	*Course* ***Title***	***Data Warehousing & Mining*** (Theory) (Group B - PaperI)
3	***Course Type (Core Course/ Discipline Specific Elective/Elective/Generic Elective/Vocational/……)***	Discipline Specific Elective (DSE)
4	***Pre-requisite (if any)***	
5	***Course Learning outcomes (CLO)***	***On successful completion of this*** *course,* ***the students will be able to:*** *1 Understand the basics of data warehouse, it's storage fundamentals and knowledge discovery in databases* *2 Apply data mining techniques over different datasets.* *3 Implement clustering algorithms andbuild classification models* *4 Select appropriate DM tools and apply the concepts of Data Warehouse and DM techniques for clustering, association, and classification* *5 Explore recent trends in data mining such as web mining, spatial-temporal mining.*
6	***Credit Value***	***Theory 4***
7	***Total*** *Marks*	*Max. Marks: 40 + 60 Min. Passing Marks:16+24*

Part B- Content of the Course

Total No. of Lectures =60 (3 hours/ lecture per week)

Unit	***Topics***	***No. of Lectures*** *(**1** Hour Each)*
I	*Data Warehouse Basic: Data ware housing Definition, usage and trends, DBMS vs. data warehouse, statistical databases vs. data warehouses. Data marts, Metadata, Multidimensional data model, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations*	***12***
II	*Storage and Architecture of Data Warehouse: Data warehouse process & architecture, OLTP vs. OLAP, ROLAP vs. MOLAP types of OLAP, servers, 3 — Tier data warehouse architecture, distributed and virtual data warehouses, data warehouse manager, data consolidation, ware house internals, storage and indexing, Operations, materialized, online analytical processing(CLAP) system.*	***12***

III	*Data Mining Basic: Data mining definition & task, KDD versus data mining, 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*
IV	*Classification and Clustering: Issues in classification, Statistical —Based Algorithms, Distance—Based Algorithms, Decision Tree—Based Algorithms, ID3, C4.5, Evaluating the performance.* *Clustering: Basic concepts, Partition algorithms, Agglomerative Hierarchical algorithms, DBSCAN, BIRCH, CURE algorithm. Clustering with categorical attributes, Comparison*	*12*
V	*Association Rules: Frequent Rennet generation, Apriori Algorithm. Rule generation, Compact representation of frequent Itemset.* *Advanced Topics: Dimensionality Reduction, overview of Principle Component Analysis and SVD, Spatial mining, Web mining, Temporal mining.*	*12*

Keywords/Tags:

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. *Data Mining: Concepts and Techniques. Han and Kamber, Morgan Kaufmann Publications.*
2. *Data Mining Techniques, A. K. Pujari, Universities Press Pvt. Ltd*
3. *Data Warehousing" by Amitesh Sinha*
4. *Data Warehousing in the real world " by Sam Anahory & Dennis Murray*
5. *Jiowei Han & Micheline Kambe :Data Mining — Concepts & Techniques;*
6. *Margaret H. Dunham, S. Sridhar:Data Mining Introductory and Advanced Topics*
7. *Pang-King Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining*
8. *Kimball R, Reeves L , Ross M etc — Data Warehouse life cycle tool kit, John Wiley.*
9. *Anahory: Data Warehousing in Real World, Addision Wesley*
10. *Adriaans: Data Mining, Addision Wesley.*
11. *Jayee Bischoff & Ted Alexender : Data Warehouse: Practical advice from the Expert, Prentice Hall, New jersey.*

Suggestive digital platforms/ web links

nptel.ac.in/courses/106105174

https ://onlinecourses.swayam 2.ac.in

3. https://www.tutorialspoint.com
4. https://www.javatpoint.com
Suggested equivalent online courses: *1.https:www.udemy.com*
2. https://www.coursera.org

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 Marks Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		External Assessment: University Exam (UE) : 60 Marks Time : 03.00 Hours	
Assessment and presentation of assignment	10 Marks	Section (A) : Five Very Short Questions (50 Words Each) OR MCQ Questions	05 x 02 = 10 Marks OR 10 x 01 = 10 Marks
Class Test I (Objective Questions)	10 Marks		
Class Test II (Descriptive Questions)	10 Marks	Section (B) : Five Short Questions (200 Words Each)	05 x 06 = 30 Marks
Class Test III	10 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 10 = 20 Marks
Total	40 Marks	Total	60 Marks
Any remarks/suggestions:			

Part A Introduction		
Program: Degree	**Class : UG**	**Year: III** **Session: …….**
Subject: BCA		
1	**Course Code**	**UPROGCA603**
2	**Course Title**	**Programming in C# (Theory)**
3	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/)**	**Elective**
4	**Pre-requisite (if any)**	
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, the students will be able to:** 1. Knowledge of the structure and model of the programming language C #. 2. Determine logical alternatives with C# decision structures utilizing iteration, class methods, fields, and properties. 3. Using the programming language C # for various programming technologies (understanding) 4. Develop software in C #. 5. Evaluate user requirements for software functionality required to decide whether the programming language C # can meet user requirements. 6. Use of certain technologies by implementing them in the C # programming language to solve the given problem.
6	**Credit Value**	**4**
7	**Total Marks**	Max. Marks: 40 + 60 Min. Passing Marks: 16+24

Part B- Content of the Course

No. of Lectures (in hours per week): **3 Hrs. per week**
Total No. of Lectures: **60 Hrs.**

Module	Topics	No. of Lectures
Unit-1	Introduction to C#: What is C#, C++ vs C#, Java vs C#, History, Features, Variables, Data Types, Operators, Keywords, Comments. C# Control Statements: if-else, switch, For Loop, While Loop, Do-While Loop, Break, Continue, Goto.	12
Unit -II	C# Functions: Function, Call By Value, Call By Reference, Out Parameter. C# Arrays: Array to Function, Multidimensional Array, Jagged Arrays, Params, Array class, Command Line Args. C# Objects and Classes: Constructor, Destructor, this, static, static class, static constructor, Structs, Enum.	12

Unit -III	C# Properties. C# Inheritance: Inheritance, Aggregation. C# Polymorphism: Member Overloading, Method Overriding, Base, Polymorphism, Sealed. C# Abstraction: Abstract, Interface. C# Namespace: Namespaces, Access Modifiers, Encapsulation.	12
Unit -IV	C# Strings. C# Exceptions: Exception Handling, try/catch, finally, Custom Exception, checked unchecked, System Exception. C# File I/O: File Stream, Stream Writer, Stream Reader, Text Writer, Text Reader, Binary Writer, Binary Reader, String Writer, String Reader, File lnfo, Directorylnfo, Serialization, Deserialization, System.10.	12
Unit V:	C# Generics, C# Delegates, C# Reflection. C# Multithreading: Multithreading, Thread Life Cycle, Thread class, Main Thread, Thread Sleep, Thread Abort, Thread Join, Thread Name, Thread Priority. C# Synchronization, C# Web Service.	12

Keywords/Tags:
Introduction to C#, C# Control Statements, C# Functions, C# Arrays, C# Objects and Classes, C# Inheritance, C# Polymorphism, C# Abstraction, C# Namespace, C# Strings, C# Multithreading, C# Synchronization, C# Web Service.

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

Textbooks:

1. E Balagurusamy: Programming in C#, McGrah Hill Education, 4th edition, 2017.
2. Joydip Kanjilal: Mastering C# 8.0, BPB Publication, 2019.
3. J.G.R. Sathiaseelan: Programming With C Sharp .Net, PHI Learning, 2009.

Reference Book:

1. Bill Wagner: Effective C#, Pearson Education, Third edition, 2017.
2. Doyle B: C# Programming From Problem Analysis To Program Design, Cengage, 2014.
3. S. Thamarai Selvi, R. Murugesan: A TextBook on C#, Pearson Education India, 2003.
4. MILES: Begin to Code with C#, PHI Learning.

Suggested Digital Platforms Web links:

Suggested equivalent online courses:

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 Marks Shall be based on allotted assignments and Class Tests. The marks shall be as follows:		External Assessment: University Exam (UE) : 60 Marks Time : 03.00 Hours	
Assessment and presentation of assignment	10 Marks	Section (A) : Five Very Short Questions (50 Words Each) OR MCQ Questions	05 x 02 = 10 Marks OR 10 x 01 = 10 Marks
Class Test I (Objective Questions)	10 Marks		
Class Test II (Descriptive Questions)	10 Marks	Section (B) : Five Short Questions (200 Words Each)	05 x 06 = 30 Marks
Class Test III	10 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 10 = 20 Marks
Total	40 Marks	Total	60 Marks
Any remarks/suggestions:			

Part A Introduction			
Program: Degree		**Class :UG**	**Year: III** **Session:**
Subject: BCA			
1	**Course Code**	**UPROJCA604**	
2	**Course Title**	**Project (Major) /Internship**	
3	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/)**	Project	
4	**Pre-requisite (if any)**		
5	**Course Learning outcomes (CLO)**		
6	**Credit Value**	**6**	
7	**Total**	**Max Marks 100**	**Min Marks 40**

Practical Paper

Part A Introduction			
Program: Degree	**Class :UG**	**Year: III**	**Session:**
Subject: BCA			
1	**Course Code**	**UWEBTCA605**	
2	**Course Title**	**Web Technologies (Practical)** **(Group B . Paper II)**	
3	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/)**	**Discipline Specific Elective (DSE)**	
4	**Pre-requisite (if any)**		
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, the students will be able to:** 1 Perform HTML programming with use of elements and tags... 2 Perform basic and advanced text formatting 3 Able to use image video and sound in HTML documents	
6	**Credit Value**	**2**	
7	**Total**	**Max Marks 40+60**	**Min Marks 16+24**

Part B- Content of the Course

Total No. of Lectures =30 (2 hours/ lecture per week)

Topics	No. of Lectures (2 Hour Each)

List of Practicals :

1. Acquaintance with elements, tags and basic structure of HTML files.
2. Practicing basic and advanced text for formatting.
3. Practice use of image, video and sound in HTML documents.
4. Designing of web pages- Document layout, list, tables.
5. Practicing Hyperlink of web pages, working with frames.
6. Working with forms and controls.
7. Acquaintance with creating style sheet, CSS properties and styling.
8. Working with background, text, font, list properties.
9. Working with HTML elements box properties in CSS.
10. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
11. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
12. Create HTML page that contains form with fields name, Email, mobile number, gender, favourite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
13. Write.a PHP program to check if number is prime or not.
14. Write a PHP program to print first ten Fibonacci numbers.
15. Create a MySQL data base and connect with PHP.
16. Write PHP script for storing and retrieving user information from my SQL table.
    a. Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
    b. Store this data in MySQL data base.
    c. Next page displays all user in HTML table using PHP (display **PHP).**
17. Using HTML, CSS, JavaScript, PHP, MySQL, design and authentication module of a web page.

Keywords/Tags:
Part C-Learning Resources
Text Books, Reference Books, Other resources
Suggested Readings: Textbooks: 1, Web Technologies — Black Book — DreamTech Press 2. Beginning PHP 5.3 (Wrox-Willey Publishing) by Matt Doyle 3, Beginning HTML, XHTML, CSS and Javascript by John Duckett

Reference Book: 1. HTML, XHTML and CSS Bible, 5thedition, Willey India-Steven M. Schafer 2. Struts: The Complete Reference, 2nd Edition by James Holmes 3. J2EE: The Complete Reference by James Keogh 4. Java EE and HTML-5 Enterprise Application Development (Oracle Press) by John Brock, Arun Gupta, Geertjan Wielenga. **Suggestive digital platforms/ web links**
Suggested equivalent online courses:

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 Marks		External Assessment: University Exam (UE) : 60 Marks Time **03.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	10 Marks	Practical record file	10 Marks
Viva	10 Marks	Viva voce practical	10 Marks
Lab Test from practical list	10 Marks	Table works/ Exercise Assigned (02) in practical exam	30 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	10 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total *Excursion/ Lab visits/ Industrial* *Training is compulsory*	40 Marks	Total	60 Marks

Practical Paper

Part A Introduction			
Program: Degree	**Class :UG**	**Year: III**	**Session: ……..**
Subject: BCA			
1	**Course Code**	**UDATACA606**	
2	**Course Title**	**Data Warehousing & Mining (Practical)** (Group B - Paper-I)	
3	**Course Type (Core Course/ Discipline Specific Elective/Elective/Generic Elective/Vocational/ .....)**	Discipline Specific Elective (DSE)	
4	**Pre-requisite (if any)**		
5	**Course Learning outcomes (CLO)**	***On successful completion of this*** *course,* ***the students will be able to:*** *1. Understand the basics of data warehouse, it's storage fundamentals and knowledge discovery in databases 2. Apply data mining techniques over different datasets. 3. Implement clustering algorithms and build classification models 4. Select appropriate DM tools and apply the concepts of Data Warehouse and DM techniques for clustering, association, and classification 5. Explore recent trends in data mining such as web mining, spatial-temporal mining*	
6	Credit Value	2	
7	Total **Marks**	Max. Marks: 40+60	Min. Passing Marks:16+24

Part B- Content of the Course

Total No. of Lectures =30 (2 hours/ lecture per week)

	Topics	*No. of Lectures (2 Hour Each)*
1.	Installing Weka and understanding Weka environment using inbuilt functions.	
2.	Loading and importing different types of datasets in Weka.	
3.	Implement attribute selection and visualization in Weka	
4.	Perform ETL operation over data set.	
5.	Apply various data pre-processing techniques over the data sets.	
6.	Create a data mart from a data warehouse and apply data cleaning operations.	
7.	Build a classification model to classify data using Naive Bayes algorithm	
8.	Build a classification Model using different decision tree algorithm.	
9.	Apply regression to make marketing forecasts over sales data	
10.	Implement clustering algorithm over different data sets.	
11	Apply Apriori algorithm to find out association rules in data set.	
12.	Evaluate the performance of different classifier .	
13.	Analyze the performance of various clustering algorithms.	
14.	Build a classifier to identify diabetic and non diabetic patients	
15.	Analyze the IRIS dataset in Weka and apply suitable data mining technique .	

Keywords/Tags:

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Data Mining: Concepts and Techniques, Han and Kamber, Morgan Kaufmann Publications.
2. Data Mining Techniques, A. K. Pujari, Universities Press Pvt. Ltd
3. Data Warehousing" by Amitesh Sinha
4. Data Warehousing in the real world " by Sam Anahory & Dennis Murray
5. Jiawei Han & Micheline Kambe :Data Mining — Concepts & Techniques;
6. Margaret H. Dunham, S. Sridhar:Data Mining Introductory and Advanced Topics
7. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining
8. Kimball R, Reeves L , Ross M etc — Data Warehouse life cycle tool kit, John Wiley.
9. Anahory: Data Warehousing in Real World, Addision Wesley
10. Adriaans: Data Mining, Addision Wesley.
11. Jayee Bischaff & Ted Alexender : Data Warehouse: Practical advice from the Expert, Prentice I Hall, New jursey.

Suggestive digital platforms/ web links

1. https://nptel.ac. in/courses/106105174
2. https://onlinecourses.swayam2.ac.in
3. https://www.tutorialspoint.com/data_mining/index.htm
4. https://www.javatpoint.com/data-warehouse

Suggested equivalent online courses:

1. **https://www.udemy.com/**
2. https://www.coursera.org/specializations/data-mining
3. https://www.edx.org/learn/data-mining
4. https://www.classcentral.com/subject/data-mining

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 Marks		External Assessment: University Exam (UE) : 60 Marks Time **03.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	10 Marks	Practical record file	10 Marks
Viva	10 Marks	Viva voce practical	10 Marks
Lab Test from practical list	10 Marks	Table works/ Exercise Assigned (02) in practical exam	30 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	10 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	10 Marks
Total *Excursion/ Lab visits/ Industrial* *Training is compulsory*	40 Marks	Total	60 Marks

Part A Introduction

Program: Degree	Class :UG	Year: III	Session: …….

Subject: BCA

1	**Course Code**	**UPROGCA607**
2	**Course Title**	**Programming in C# (Practical)**
3	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/)**	**Elective**
4	**Pre-requisite (if any)**	
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, the students will be able to:** 1. Knowledge of the structure and model of the programming language C #. 2. Determine logical alternatives with C# decision structures utilizing iteration, class methods, fields, and properties. 3. Using the programming language C # for various programming technologies (understanding) 4. Develop software in C #. 5. Evaluate user requirements for software functionality required to decide whether the programming language C # can meet user requirements. 6. Use of certain technologies by implementing them in the C # programming language to solve the given problem.
6	**Credit Value**	**2**
7	**Total Marks**	Max. Marks: 40+60 Min. Passing Marks:16+24

Part B- Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 0-0-1

Topics	No. of Lectures -30 (2 Hours Each)

List of Practicals:

1. Write a c# program to print Fibonacci series without using recursion and using recursion.
2. Write a c# program to check prime number.
3. Write a c# program to check palindrome number.
4. Write a c# program to print factorial of a number.
5. Write a c# program to check Armstrong number.
6. Write a c# program to print sum of digits.
7. Write a c# program to reverse given number.
8. Write a c# program to swap two numbers without using third variable.
9. Write a c# program to convert decimal number to binary.
10. Write a c# program to print alphabet triangle.
11. Write a c# program to print number triangle.
12. Write a c# program to generate Fibonacci triangle.
13. Write a c# program to convert number in characters.

Keywords/Tags:

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested **Readings:**

1. E Balagurusamy: Programming in C#, McGraw Hill Education, 4th edition, 2017.
2. Joydip Kanjilal: Mastering C# 8.0, BPB Publication, 2019.
3. J.G.R. Sathiaseelan: Programming With C Sharp .Net, PHI Learning, 2009.
4. Bill Wagner: Effective C#, Pearson Education, Third edition, 2017.
5. Doyle B: C# Programming From Problem Analysis To Program Design, Cengage, 2014.
6. S. Thamarai Selvi, R. Murugesan: A TextBook on C#, Pearson Education India, 2003.
7. MILES: Begin to Code with C#, PHI Learning.

Suggestive digital platforms/ web links:

Suggested equivalent online courses:

Best Online Product Management, Advanced AI & ML, Digital Marketing, IOT Courses by E&ICT Academy, IIT Kanpur

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 Marks		External Assessment: University Exam (UE) : 60 Marks Time **03.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	10 Marks	Practical record file	10 Marks
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Lab Test from practical list	10 Marks	Table works/ Exercise Assigned (02) in practical exam	30 Marks
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Total *Excursion/ Lab visits/ Industrial* *Training is compulsory*	40 Marks	Total	60 Marks