



HSNC University Mumbai

(2024-2025)

Ordinances and Regulations

With Respect to

For the Programme Under

Bachelor of Vocational Studies in Web Technologies

**Curriculum – First Year B.Voc Programme
Semester-I and Semester -II**

2024-2025



HSNC UNIVERSITY, MUMBAI

Board of Studies in BVOC

In the subject of Web Technologies, KC College.

1. Name of Chairperson: -

a. Dr. Rakhi Gupta, Assistant Professor, Dept. of Information Technology, KC College, HSNC University, rakhi.gupta@kccollege.edu.in, 9619914191

2. Name of Co-chairperson: -

a. Ms. Geeta N. Brijwani, Assistant Professor, Dept. of Comp. Sci., KC College, HSNC University, geeta.brijwani@kccollege.edu.in, 9890857969

3. Two to five teachers each having minimum five years teaching experience amongst the full time teachers of the Departments, in the relevant subject.

- a. Mrs. Neha Patel**, Assistant Professor, Dept. of Information Technology, KC College, HSNC University, neha.patel@kccollege.edu.in, 9820609142
- b. Mrs. Nashrah Gowalker**, Assistant Professor, Dept. of Information Technology, KC College, HSNC University, nashrah.gowalker@kccollege.edu.in, 9664774108
- c. Mr. Naveen Pahuja**, Assistant Professor, Dept. of Comp. Sci., KC College, HSNC University, naveenpahuja94@gmail.com, 8856881398

4. One Professor / Associate Professor from other Universities or professor / Associate Professor from colleges managed by Parent Body; nominated by Parent Body;-

- a. Dr. Sushil Kulkarni**, Associate Professor, Head, Dept. of Mathematics, Jai Hind College Autonomous, Mumbai, sushiltry@gmail.com, 9967770658

5. Four external experts from Industry / Research / eminent scholar in the field relevant to the subject nominated by the Parent Body.

- a. Mr. Ravi Gupta**, Director, Frameboxx 2.0, ravi@frameboxx.in, 9820711434
- b. Mr. Harish Chandar**, Director, India Tech International Pvt. Ltd., Mumbai, harishchandarb@gmail.com, 9821528022
- c. Ms. Reshma Desai**, Assistant Professor, Dept. of Comp. Sci., Thakur College of Science and Commerce, Kandivili, reshma09desai@gmail.com, 9820080427
- d. Mr. Wilson Rao**, Co-ordinator, Dept. of Information Technology & BVOC, Jai Hind College, Autonomous, wilsonrao@gmail.com, 9821354297
- e. Mr. Maunash A. Jani**, Software Developer, Genius Lynx, Mumbai, maunash08@gmail.com, 9022155698
- f. Mr. Ajit Vishwakarma**, Corporate Master Trainer, Managing Director, Vinayavish LLP, Mumbai, ajit@vinayavish.com, 9987230297

6. Top rankers of the Final Year Graduate and Final Year Post Graduate examination of previous year of the concerned subject as invitee members for discussions on framing or revision of syllabus of that subject or group of subjects for one year.

- a. Bende Vaishnavi Vijay**, vaishnavibende5@gmail.com, 7738479980

B.VOC Web Technologies Program Outcomes

PO 01	Web Technology Mastery: Master web technologies for designing and managing websites and applications.
PO 02	Analytical Problem-Solving: Apply analytical skills to solve web development challenges.
PO 03	Clear Communication Skills: Clearly convey technical concepts in writing and speech.
PO 04	User-Centered Design: Integrate user experience and design principles for functional web applications.
PO 05	Industry-Ready Skills: Gain expertise in AI, Machine Learning, Search Engine Optimization, and Digital Marketing.
PO 06	Web Security Practices: Implement security practices and testing for reliable applications.
PO 07	Ethics and Professionalism: Demonstrate ethical practices in web development and business.
PO 8	Teamwork & Leadership: Develop teamwork and leadership skills for solving web development problems.
PO 09	Innovative Web Solutions: Engage in research and create innovative web applications.
PO 10	Entrepreneurial Mind-set and Employability: Use entrepreneurial principles to start and manage tech Businesses. Apply skills to enhance career opportunities or start a business.

SEMESTER I

	Subject	Lecture Hours	Practical Hours	No. of Credits
Major 1	Programming with C	45H	30H	4(3+1)
Major 2	Introduction to Web Designing & Application -I	45H	30H	4(3+1)
Minor	Discrete Mathematics	45H	30H	4(3+1)
VOC	Digital Art and Illustration		30H	1
IKS	Introduction to Indian Knowledge Systems - I	15H		1
VAC	Contemporary India: Values and Issues -I	30H		2
AEC	Communication Skills in English - I	30H		2
GE		30H		2
Cocurricular				2
	Total			22

SEMESTER II

	Subject	Lecture Hours	Practical Hours	No. of Credits
Major 1	Object Oriented Programming with C++	45H	30H	4(3+1)
Major 2	Introduction to Web Designing & Application -II	45H	30H	4(3+1)
Minor	Statistics	45H	30H	4(3+1)
VOC	Design and Web Layout		30H	1
IKS	Introduction to Indian Knowledge Systems - II	15H		1
VAC	Contemporary India: Values and Issues -II	30H		2
AEC	Communication Skills in English - II	30H		2
GE		30H		2
Cocurricular				2
	Total			22

**The Scheme of Teaching and Examination is as under NEP
Summary**

Major/Minor

Year	Sem.	Papers	Paper Code	Course Title	No of Credits	No of Lectures Hours	Total Credits
1	I	M1	VWT101B	Programming with C	4(3+1)	75	Major =8 Minor=4
		M2	VWT102B	Introduction to Web Designing & Application -I	4(3+1)	75	
		Mi3	VWT103B	Discrete Mathematics	4(3+1)	75	
	II	M1	VWT104B	Object Oriented Programming with C++	4(3+1)	75	Major =8 Minor=4
		M2	VWT105B	Introduction to Web Designing & Application -II	4(3+1)	75	
		Mi3	VWT106B	Statistics	4(3+1)	75	

Vocational Courses Linked to Major/Minor

Year	Sem.	Papers	Paper Code	Course Title	No of Credits	No of Lectures Hours	Total Credits
1	I	V1	VWT107D	Digital Art and Illustration	1	30	1
	II	V2	VWT108D	Design and Web Layout	1	30	1

Indian Knowledge Systems

Year	Sem.	Papers	Paper Code	Course Title	No of Credits	No of Lectures Hours	Total Credits
1	I	IKS1	IKS101D	Introduction To Indian Knowledge Systems - I	1	15	1
	II	IKS2	IKS102D	Introduction To Indian Knowledge Systems - II	1	15	1

Value Added Course

Year	Sem.	Papers	Paper Code	Course Title	No of Credits	No of Lectures Hours	Total Credits
1	I	VAC1	GBX101C	Contemporary India: Values and Issues -I	2	30	2
	II	VAC2	GBX103C	Contemporary India: Values and Issues -II	2	30	2

Ability Enhancement Course

Year	Sem.	Papers	Paper Code	Course Title	No of Credits	No of Lectures Hours	Total Credits
1	I	AEC1	ENG107C	Communication Skills in English - I	2	30	2
	II	AEC2	ENG108C	Communication Skills in English - II	2	30	2

Detailed Scheme Theory Semester I

MAJOR SUBJECT 1

Programming with C

Course Objectives

- To grasp the basics of program logic and development cycle.
- To learn about character sets, identifiers, keywords, data types, constants, variables, and arrays.
- To understand arithmetic, unary, relational, logical, assignment operators, and the conditional operator.
- To explore different types of loops such as while, do-while, for loops.
- To comprehend structures, their initialization, assignment, and usage with functions and arrays.

Course Outcomes

- Understand the flowchart and design an algorithm for a given problem to develop a C program using operators.
- Defining the structure of a program and explain the processes of compilation and execution.
- Understanding Operators and Expressions in C and interactive programming.
- Illustration of conditional and iterative statements to write C programs.
- Develop user defined functions to solve real time problems.
- Implement user defined data types including structures and unions to solve problems.
- Implementation of conditional statements, functions, variables, recursion and loops.
- Implementation of arrays, pointers, structures and unions

Unit	Content	No. of Lectures
1	<p>1.1 Introduction: Types of Programming languages, History, features and application. Simple program logic, program development cycle, pseudocode statements and flowchart symbols, sentinel value to end a program, programming and user environments, evolution of programming models., desirable program characteristics.</p> <p>1.2 Fundamentals: Structure of a program. Compilation and Execution of a Program, Character Set, identifiers and keywords, data types, constants, variables and arrays, declarations, expressions, statements, Variable definition, symbolic constants.</p> <p>1.3 Operators and Expressions: Arithmetic operators, unary operators, relational and logical operators, assignment operators, assignment operators, the conditional operator, library functions.</p>	15

2	<p>2.1 Data Input and output: Single character input and output, entering input data, scanf function, printf function, gets and puts functions, interactive programming.</p> <p>2.2 Conditional Statements and Loops: Decision Making Within A Program, Conditions, Relational Operators, Logical Connectives, If Statement, If-Else Statement, Loops: While Loop, Do While, For Loop. Nested Loops, Infinite Loops, Switch Statement</p> <p>2.3 Functions: Overview, defining a function, accessing a function, passing arguments to a function, specifying argument data types, function prototypes, recursion, modular programming and functions, standard library of c functions, prototype of a function: parameter list, return type, function call, block structure, passing arguments to a function: call by reference, call by value.</p>	15
3	<p>3.1 Arrays: Definition, processing, passing arrays to functions, multidimensional arrays, arrays and strings.</p> <p>3.2 Pointers: Fundamentals, declarations, Pointers Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions and Pointers, Arrays And Pointers, Pointer Arrays, passing functions to other functions</p> <p>3.3 Structures and Unions: Structure Variables, Initialization, Structure Assignment, Nested Structure, Structures and Functions, Structures and Arrays: Arrays of Structures, Structures Containing Arrays, Unions, Structures and pointers.</p>	15

SLE Topics

Fundamentals, declarations, Pointers Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions and Pointers, Arrays And Pointers, Pointer Arrays, passing functions to other functions.

Online Resources

<https://www.javatpoint.com/c-programming-language-tutorial>
<https://www.w3schools.com/c/>

Reference Books

1. https://portal.abuad.edu.ng/lecturer/documents/1586487187cprogramming_tutorial.pdf Programming with C, Byron Gottfried, Tata McGRAW-Hill, 2nd, 1996.
2. Programming Logic and Design, Joyce Farrell, Cengage Learning, 8th, 2014.
3. Let us C, Yashwant P.Kanetkar, BPB publication.
4. C for beginners, Madhusudan Mothe, X-Team Series, 1st, 2008.

PRACTICALS: Programming with C

Practical No.	Practical
1.	Basic Programs: a. Write a program to display the message HELLO WORLD. b. Write a program to declare some variables of type int, float and double. Assign some values to these variables and display these values.
2.	Programs on variables: a. Write a program to swap two numbers without using a third variable. b. Write a program to find the area of rectangle, square and circle. c. Write a program to find the volume of a cube, sphere, and cylinder.
3.	Programs on Conditional statements and loops(basic)
4.	Programs on Conditional statements and loops(advanced)
5.	Programs on patterns
6.	Programs on Functions.
7.	Programs on Recursive functions a. Write a program to find the factorial of a number using recursive function. b. Write a program to find the sum of natural numbers using a recursive function.
8.	Programs on Arrays
9.	Pointers: a. Write a program to demonstrate the use of pointers. b. Write a program to perform addition and subtraction of two pointer variables.
10.	Structures and Unions: a. Programs on structures. b. Programs on unions.

MAJOR SUBJECT 2

Introduction to Web Designing & Application-I

Course Objectives

- Understand the fundamentals of the Internet, including key applications and protocols.
- Master HTML5 for structuring web content and creating effective hyperlinks and anchors.
- Apply CSS3 for styling web pages and implementing responsive design principles.
- Create navigational aids, tables, forms, and integrate multimedia using HTML5.
- Gain familiarity with web browsers, servers, and their roles in web development.

Course Outcomes:-

- Understand Internet fundamentals and its applications
- Understanding the concepts of World Wide Web and HTTP.
- Develop structured web pages with proper navigation and multimedia integration in HTML5
- Construct style sheets elements according to CSS3 standards.

- Construct tables, forms, and multimedia elements, using HTML5.
- Apply best practices for user-friendly and accessible web development.
- Implementation of tags, web pages, hyperlinks, style sheets.
- Implementation of multimedia elements, tables and forms.

Unit	Content	No. of Lectures
1	1.1 Introduction to the Web: What is the Internet? Introduction to the internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, ebusiness, Internet service providers. 1.2 Introduction to Word Wide Web(WWW) and its evolution, domain name server, internet address, uniform resource locator (URL), browsers- internet explorer, Netscape Navigator, Open Firefox, chrome, Mozilla. Search engine, web server-apache, Internet Information Services (IIS), proxy servers, HTTP protocol: Request and Response.	15
2	2.1 Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using stylesheets. 2.2 Creating navigational aids: Planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 2.3 Introduction to CSS3 : Power of CSS, Anatomy of CSS Rule, Element Class and ID Selector, Style Placement, Box Model, Background Property, Responsive Design, Media Queries, Relative and Absolute Element Positioning.	15
3	3.1 HTML5 Tables, Forms and Media: Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment 3.2 Creating user forms: Creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page	15

SLE Topics

- Creating a personal portfolio website with HTML, CSS, and optional JavaScript.
- Building a responsive landing page using media queries and flexible grids.
- Designing a blog template with HTML for structure and CSS for styling.
- Implementing an image gallery with a lightbox effect using HTML, CSS, and JavaScript.
- Developing a to-do list web app with HTML forms, CSS styling, and JavaScript functionality.
- Building a countdown timer using JavaScript for countdown logic and CSS for styling.
- Designing a contact form with HTML structure, CSS styling, and JavaScript validation.
- Developing a simple quiz game with HTML questions, CSS styling, and JavaScript logic.
- ☐ Building a responsive image slider with HTML, CSS for design, and JavaScript for transitions.

Online Resources

https://www.w3schools.com/html/html_css.asp
<https://www.javatpoint.com/html-with-css>
<https://developer.mozilla.org/en-US/docs/Web/HTML>

Reference Books

1. Web Design The Complete Reference by Thomas Powell, Tata McGraw
2. HTML5 Step by Step by Faithe Wempen, Microsoft Press, 2011.
3. HTML & CSS: Design and Build Websites Book by Jon Duckett

Practicals: Introduction to Web Designing & Application-I

Practical No.	Practical
1.	Demonstrate the use of List Tags.
2.	Demonstrate the use of block formatting Tags.
3.	Design web pages for your college containing a description of the courses, departments, teaching staff members. Use hyperlinks, list tags and image tags wherever necessary.
4.	Program to create text based and graphic based navigation bars.
5.	Create hyperlinks and anchors in web documents.
6.	Insert an image on the webpage and link another page to it.
7.	Create image maps with at least 2 hotspots of different shapes.
8.	Demonstrate checkboxes, radio buttons, and various types of buttons in HTML5.
9.	Insert an audio file to a web document.
10.	Insert a video file to a web document.
11.	Program on Stylesheets.

MINOR SUBJECT

Discrete Mathematics

Course Objectives

- Understand the fundamental concepts and language used in sets, relations, functions, and logic.
- Learn counting principles such as the sum and product rules, permutations, combinations, and the binomial theorem.
- Solve systems of linear equations using matrices and understand the concepts of rank, echelon form, and normal form.
- Learn algorithms for operations on graphs such as searching, insertion, deletion, and traversal using BFS and DFS.

Course Outcomes

- Understanding Set Theory, Functions, Relations.
- Understanding the Logic of Compound Statements.
- Verifying Logical Form and Logical Equivalence, Graphs and Trees.
- Understanding Elementary Number Theory and Methods of Proof.
- Illustration of Matrices, Counting and Probability.
- Solve problems involving graph isomorphism and apply graph algorithms to optimize network paths and connectivity.
- Implementation of sets, functions and matrices.
- Implementation of graphs, probability and Boolean algebra

Unit	Content	No. of Lectures
1	1.1 Introduction: The Language of Sets, Definitions, Properties of Sets, The language of Relations and Functions. 1.2 Relations: Relations on Sets, Reflexivity, Symmetry and Transitivity, Equivalence Relation, Partial Order Relation. 1.3 Functions: Functions Defined on General Sets, One-to-One, Onto and Inverse Functions, Composition of Functions. 1.4 Logic: Propositional Logic, Applications of Propositional Logic, Propositional Equivalences, Predicates and Quantifiers.	15
2	2.1 Matrices: Introduction, Matrix Arithmetic, Properties of Matrices, Elementary Transformations, Inverse of a matrix, Rank of a matrix, Echelon form, Normal form, System of Linear Equations, Linear dependence and linear independence of vectors, Eigenvalues and Eigenvectors. 2.2 Combinatorics: Counting Principles - Sum and Product Rules, Tree diagram for solving counting problems. Permutations, Combinations, Binomial theorem, Solving combinatorial problems recursively, Applications of combinatorics in graph theory, number theory and optimization problems.	15
3	3.1 Graphs: Definition and elementary results, Representing graphs, Graph Isomorphism, Operations on graph with algorithms - searching in a graph, Insertion in a graph, Deleting from a graph, Traversing a graph- Breadth-First search and Depth-First search, Spanning trees and shortest path algorithm. 3.2 Trees: Definition and elementary results, Ordered rooted tree, Binary trees, Complete and extended binary trees, representing binary trees in memory, traversing binary trees, binary search tree, Algorithms for searching and inserting in binary search trees, Algorithms for deleting in a binary search tree.	15

SLE Topics

Operations on Sets, Cardinality of Sets, Graph Theory, Injective, Surjective, Bijective Functions, Advanced Permutation and Combination Problems, Number Theory Applications.

Online Resources

<https://archive.nptel.ac.in/courses/111/106/111106086/>

<https://www.khanacademy.org/math/linear-algebra>
<https://www.coursera.org/learn/algorithms-part2>

Reference Books

1. Discrete Mathematics and Its Applications, Seventh Edition by Kenneth H. Rosen, McGraw Hill Education (India) Private Limited. (2011)
2. Discrete Mathematics with Applications, fourth edition by Sussana S. Epp, Cengage Learning (2010).
3. Higher Engineering Mathematics, Dr. B. S. Grewal, Khanna Publications.
4. Applied Combinatorics, Mitchel T. Keller and William T. Trotter, 2016, <http://www.rellek.net/appcomb>.
5. Coding the Matrix Linear Algebra through Applications to Computer Science Edition 1, PHILIP N. KLEIN, Newtonian Press (2013)
6. Linear Algebra and Its Applications, Gilbert Strang, fourth addition.

Practicals: Discrete Mathematics

Practical No.	Practical
1	Practical based on Set Theory
2	Practical based on Functions and Algorithms
3	Practical based on Matrices
4	Practical based on Probability Theory
5	Practical based on Graph Theory
6	Practical based on Directed Graphs
7	Practical based on Algebraic Systems
8	Practical based on Boolean Algebra

Detailed Scheme Theory Semester -II

MAJOR SUBJECT 1

Object Oriented Programming with C++

Course Objectives

- To explain the fundamental OOP paradigm and its components: Objects, Classes, Data Abstraction, Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, and Message Passing.
- To explore advanced concepts such as friend classes, pointers to objects, and arrays of pointers to objects.
- To explain derived class declaration, constructors in derived classes, class hierarchies, multiple inheritance, and hybrid inheritance.
- To demonstrate the overloading of unary and binary operators, comparison operators, and arithmetic assignment operators.

Course Outcomes

- Understand the difference between procedure oriented and object- oriented approach.
- Describe the object-oriented programming using classes and objects.
- Implement various types of constructors. Apply the concepts of Inheritance and its types.
- Understanding the concepts of Polymorphism. Apply virtual and pure virtual function and implement the concept of late and early binding.
- Apply the concepts of Encapsulation, Data Abstraction and data hiding
- Understand the concepts of operator overloading.
- Illustration of Classes and objects in C++, friend functions, inheritance, abstract classes
- Illustration of arrays, constructor, operator and function overloading using C++.

Unit	Content	No. of Lectures
1	1.1 Object Oriented Methodology: Introduction, Advantages and Disadvantages of Procedure Oriented Languages, what is Object Oriented? What is Object Oriented Development? Object Oriented Themes, Benefits and Application of OOPS. 1.2 Principles of OOPS: OOPS Paradigm, Basic Concepts of OOPS: Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. 1.3 Classes and Objects: Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes, Pointer to object, Array of pointer to object.	15

2	<p>2.1 Use of arrays to represent textual data. Multidimensional arrays. Design of medium size programs. A miniature program for marks and ranks display. Command line arguments.</p> <p>2.2 Constructors and Destructors: Introduction, Default Constructor, Parameterized Constructor and examples, Destructors</p> <p>2.3 Program development using Inheritance: Introduction understanding inheritance, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, containership, hybrid inheritance.</p>	15
3	<p>3.1 Virtual Functions: Introduction and need, Pure Virtual Functions, Static Functions, this Pointer, abstract classes, virtual destructors.</p> <p>3.2 Polymorphism: Introduction to polymorphism, need of polymorphism.</p> <p>3.3 Operator Overloading In C++: Concept of function overloading, overloaded operators, Overloading unary and binary operators, overloading comparison operator, overloading arithmetic assignment operator, data conversion between objects and basic types</p>	15

SLE Topics

Working with Files: Introduction, Various File Modes, File Pointer and their Manipulation, File Operations

Templates: Introduction, Function Template And Examples, Class Template And Examples.

Exception Handling: Introduction, Exception Handling Mechanism, Concept of throw & catch with example.

Online Resources

<https://www.w3schools.com/cpp/>
<https://www.geeksforgeeks.org/cpp-tutorial/>
https://www.youtube.com/watch?v=e7sAf4SbS_g

Reference Books

1. Object Oriented Programming with C++ E. Balagurusamy, Tata McGraw Hill 4th, 2012.
2. Object Oriented Analysis and Design Timothy Budd TMH 3rd Edition, 2012
3. The C++ Programming Language by Bjarne Stroustrup
4. Programming in C++, Ashok N Kamthane, and Pearson 2nd Edition.

PRACTICALS: Object-Oriented Programming C++

Practical No.	Practical
1.	Programs based on Classes and methods.
2.	Programs based on friend functions.
3	Programs on arrays
4	Programs based on Constructors, Destructors.
5	Programs based on Inheritance.
6	Programs based on method overloading.
7	Programs based on Virtual functions and abstract classes.
8	Programs on Operator Overloading.

MAJOR SUBJECT 2

Introduction to Web Designing & Application-II

Course Objectives

- Learn how to design a website by considering the medium, the entire site, user needs, and screen specifications.
- Learn the differences between fixed, fluid, and responsive layouts and apply them to web design
- Develop navigation that enhances user experience and site usability.
- Learn about file formats, computer color basics, and choosing appropriate graphics tools.
- Students will demonstrate advanced skills in drawing, image editing, and design using CorelDRAW and PHOTO-PAINT.

Course Outcomes

- Apply web design principles and responsive layouts to create user-friendly and visually appealing websites.
- Develop intuitive navigation, optimize graphics, and maintain websites for functionality and audience engagement.
- Master advanced design techniques in CorelDRAW and PHOTO-PAINT, including perspective drawing, image editing, and creating professional-grade assets like t-shirt mockups and vehicle wraps.
- Enhance collaboration and productivity by utilizing cloud features, annotations, and web-based reviews while effectively applying bitmap and vector effects for high-quality designs.
- Gain foundational and intermediate skills in Figma, including interface navigation, creating reusable components, and designing interactive prototypes with animations.
- Master advanced techniques such as auto-layout, responsive design, and design systems to ensure consistency and seamless developer handoff in large projects.
- Develop skills to create structured and visually appealing web pages using HTML, CSS, and navigation components.

- Gain hands-on experience in designing and prototyping digital graphics, newsletters, and interactive interfaces using tools like CorelDRAW and Figma.

Unit	Content	No. of Lecture hours
1	<p>1.1 Web Site Design Principles – Design for the Medium, Design for the Whole Site, Design for the User, Design for the Screen, Planning the Site – Create a Site Specification, Identify the Content Goal, Analyze your Audience, Build a Web Site Development Team, Filenames and URLs, Directory Structure, Diagram the Site</p> <p>1.2 Web Page Anatomy - Grid Theory - The Rule of Thirds, 960 Grid System, Resizing: Fixed, Fluid, or Responsive Layouts - Fixed Width, Fluid Width, An Alternative: Responsive Layouts</p> <p>1.3 Planning Site Navigation – Creating Usable Navigation, Using Text - Based Navigation, Using Graphics- Based Navigation</p> <p>1.4 Graphics and Color – File Format Basics, Computer Color Basic, Choosing a Graphics Tool, Using the Element, Working with Hexadecimal Colors</p> <p>1.5 Publishing and Maintaining Your Web Site – Publishing Your Web Site, Testing Your Web Site, Refining and Updating Your Content, Attracting Notice to Your Web Site</p>	15
2	<p>2.1 CorelDRAW Graphics Suite: How to Draw in Perspective, How to use the Replace Colors filter for precise image editing, Making the most of the Adjustments docker, Learn how to use Multipage View to your advantage, How to export multiple assets at the same time, Managing cloud files and collaboration in CorelDRAW</p> <p>2.2 How to import a font database: Creating a Duotone and Monochrome Images in CorelDRAW and PHOTO-PAINT, Removing the background from images with CorelDRAW and PHOTO-PAINT, Creating a Certificate with Print Merge in CorelDRAW, Creating a Realistic Objects with Mesh Fill, Printing color separations, Get top 10 prints for screen printers, Creating a t-shirt design & mockup, Design a vehicle wrap with free templates, Apply AI based effects to bitmaps and vectors, Get impressive bitma-to-vector trace results, Fine-tune type responsively with variable fonts, Add depth with shadows</p> <p>2.3 Collaborate to get more done in less time: Work with comments and annotations in CorelDRAW, Review and approve designs in a web browser, Improve the size and quality of images, Apply effects in Corel PHOTO-PAINT, Using masks in Corel PHOTO-PAINT, Apply bitmap effects as lenses, Vector art vs. raster art, Understanding color palettes.</p>	15
3	<p>3.1: Getting Started with Figma: Introduction to Figma, What is Figma?, Advantages of Figma over other tools, Figma Interface Overview, Workspace, toolbar, and layers panel. File management and collaboration. Basic Tools and Features. Shapes, text, and colors. Alignment, spacing, and grouping elements</p> <p>3.2: Intermediate Design Skills: Components and Variants. Creating reusable components. Working with variants for responsive design. Prototyping. Adding interactions and animations. Linking screens for user flow. Collaboration Features. Sharing designs. Real-time collaboration and comments</p>	15

	3.3: Advanced Techniques and Best Practices: Advanced Features. Auto-layout and responsive design. Plugins and integrations. Design Systems. Setting up styles and libraries. Managing consistency in large projects. Exporting and Handoff. Exporting assets. Developer handoff using inspect tools	
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SLE Topics

Web Typography – Type Design Principles, Controlling Typography with Cascading Style Sheet, Styling with CSS, Web Fonts with @font-face - Self hosted Web Fonts, Web Font Services - Google Fonts, Adobe Fonts
Design with CoreIDRAW.app

Online Resources

https://onlinecourses.nptel.ac.in/noc21_me128/preview
https://onlinecourses.swayam2.ac.in/ntr20_ed15/preview
<https://www.coreldraw.com/en/learn/tutorials/>

Reference Books

1. Principles of Web Design by Joel Sklar, 6th Edition, Cengage, 2015.
2. The Principles of Beautiful Web Design, 3rd Edition, By Jason Beaird, James George (SitePoint)
3. <https://www.coreldraw.com/en/learn/tutorials/?topNav=en>
4. <https://helpx.adobe.com/photoshop/tutorials.html>
5. <https://helpx.adobe.com/in/illustrator/tutorials.html>

Practicals: Introduction to Web Designing & Application-II

Sr. no	Practical
1	Demonstrate practical of HTML and CSS.
2	Demonstrate practical to add hyperlinks and buttons.
3	Demonstrate creation of navigation tabs and footer with insertion of icons
4	Drawing and editing objects/Creating a greeting card using corel draw
5	Using a template to create a two-page newsletter corel draw
6	Creating a three-panel brochure for a student business corel draw
7	Create a wireframe for a mobile app login screen using figma
8	Design and prototype a two-screen flow for an e-commerce app using figma
9	Design a various web component with variants using figma
10	Design landing page with using figma using figma

MINOR SUBJECT

Statistics

Course Objectives

- To introduce and define measures of central tendency including mean, median, mode, geometric mean, harmonic mean, and others.
- To define and discuss measures of variation including range, mean deviation, semi-interquartile range, percentile ranges, standard deviation, and variance.
- To establish the relationship between raw and central moments.
- To discuss the interpretation and significance of skewness and kurtosis in distribution analysis.

Course Outcomes

- Understand and evaluate the concept of measures of central tendency, including mean, median, and mode.
- Explore measures of variation, such as range, variance, and standard deviation, along with the distribution of data.
- Understand the concept of moments, distinguishing between raw moments and central moments.
- Analyze skewness and kurtosis using moment-based measures and quartiles to interpret data distributions
- Interpret results from regression analysis to understand the relationships between variables.
- Apply probability concepts to solve real-world problems, interpret scatter plots, and quantify relationships using Karl Pearson's coefficient of correlation.
- Implementation of Mean, Standard Deviation, Range, raw and central moments
- Implementation of Correlation and Regression, Probability and Bayes Theorem

Unit	Content	No. of Lectures
1	1.1 Mean, Median, Mode and Other Measures of Central Tendency: Index, or Subscript, Notation, Summation Notation, Averages, or Measures of Central Tendency, The Arithmetic Mean, The Weighted Arithmetic Mean ,Properties of the Arithmetic Mean, The Arithmetic Mean Computed from Grouped Data ,The Median, The Mode, The Empirical Relation Between the Mean, Median, and Mode, The Geometric Mean G, The Harmonic Mean H ,The Relation Between the Arithmetic, Geometric, and Harmonic Means, The Root Mean Square, Quartiles, Deciles, and Percentiles. 1.2 Measures of variation: Dispersion, or Variation, The Range, The Mean Deviation, The Semi-Interquartile Range, The 10–90 Percentile Range, The Standard Deviation, The Variance, Short Methods for Computing the Standard Deviation, Properties of the Standard Deviation.	15

	d. Mode
2	Practical to calculate a. Harmonic Mean b. Geometric Mean
3	Practical to calculate a. Standard Deviation b. Range
4	Practical to calculate Raw and Central Moments
5	Practical on Fitting a straight line
6	Practical on Correlation and Regression a. Scatter Plot Creation b. Calculating Pearson's Correlation Coefficient c. Linear Regression
7	Practical on Probability a. Simple Probability b. Conditional Probability
8	Practical on Bayes Theorem

Evaluation Pattern for Major and Minor Subjects

60 Marks External + 40 Marks Internal = 100 Marks

a. 40 Marks Internal

15 Marks Internal -----10M Self Learning Evaluation + 5M Class Participation

25 Marks Practical -----25M Practical exam (50M will be converted to 25)

b. 60 Marks External---Semester End Examination

Question Paper Pattern

Q1. 1M Questions based on all 3 units for 15M

Q2. Unit 1 15 Marks (Each Question of 5m) (Attempt any 3 from 6)

Q3. Unit 2 15 Marks (Each Question of 5m) (Attempt any 3 from 6)

Q4. Unit 3 15 Marks (Each Question of 5m) (Attempt any 3 from 6)

SYLLABUS FOR VOCATIONAL COURSE

Semester I Digital Art and Illustration

Course Objectives:

- To understand the basic tools in Adobe Photoshop and Illustrator.
- Equip students to start making professional web graphics.

Learning outcome:

- Efficiently manage web graphics
- Edit and enhance images using advanced Photoshop tools effectively.
- Create and manipulate vector graphics using Illustrator design tools.

Practical List (Teacher can teach any 10 practicals from the list mentioned below)

Practical	Content
1	Illustration of Painting tools in Photoshop
2	Illustration of Rulers, Guides and Grids in Photoshop
3	Illustration of Multiple Images Manipulation in Photoshop
4	Illustration of Layers Manipulation in Photoshop
5	Illustration of Blending Modes in Photoshop
6	Illustration of Filling and Stroking in Photoshop
7	Illustration of Masking in Photoshop
8	Illustration of Photo repairing in Photoshop
9	Illustration of Special effects in Photoshop
10	Illustration of Groups Manipulation in Illustrator
11	Illustration of Shapes in Illustrator
12	Illustration of Objects manipulation in Illustrator
13	Illustration of Objects Transformation in Illustrator
14	Illustration of Pen and pencil tools in Illustrator
15	Illustration of Colors and Painting Manipulation in Illustrator
16	Illustration of Type and Text in Illustrator
17	Illustration of Special Effects in Illustrator
18	Illustration of Symbols Manipulation in Illustrator
19	Illustration of Automating tasks in Illustrator
20	Illustration of Web Graphics in Illustrator

References:

https://helpx.adobe.com/pdf/photoshop_reference.pdf

SYLLABUS FOR VOCATIONAL COURSE

Semester II

Design and Web Layout

Course Outcomes:

- Students will design and build visually appealing and functional web pages using Dreamweaver's design and code views, applying best practices in HTML and CSS.
- Students will create responsive web designs that adapt to various devices and screen sizes using Dreamweaver's responsive design tools and media queries.
- Students will effectively organize site files and folders, set up site configurations, and manage local and remote connections using Dreamweaver's site management features.
- Students will integrate multimedia components (images, videos) and interactive elements (forms, buttons) into web pages, optimizing them for performance and usability.

Practical List

Sr.No.	Content
1	From Dreamweaver document window, create a blank HTML page.
2	Save the file as DW_Exercises.html
3	Add the page title and change the background color of your document
4	Insert a Header to your page. (write your name as header)
5	Insert a Paragraph to your web page and save it
6	Below your paragraph, create a bulleted list and a numbered list.
7	Preview your document in Google Chrome or Firefox
8	Work with images(resize,rotate etc)
9	Create Hyperlinks for a Word document
10	Create Email links

References:

<https://www.winthrop.edu/uploadedFiles/technology/DreamweaverSetup.pdf>

Evaluation Pattern for VOC for both the semesters (1 Credit)

Practical Exam will be taken of 50Marks which will be converted to 25

50 M Practical Exam Pattern

Q1	20M
Q2	20M
Journal	5M
Viva	5M

SYLLABUS FOR INDIAN KNOWLEDGE SYSTEM

Semester I

Introduction to Indian Knowledge Systems - I

Learning Objectives

- To understand the concept and relevance of knowledge systems.
- To get familiar with the elements of India's rich culture and heritage.
- To explore opportunities for resolving modern day issues by gaining an insight in our history.

Learning Outcomes

At the end of the course the student would be able to develop

- Improved understanding of India's socio-cultural past and its varied traditions.
- Respect for the tradition of coexistence built into the Indian culture since time immemorial.
- High regard for the diversity in the Indian culture and society.

Unit	Content	No. of Lecture Hours
1	Unit 1: Indian Knowledge Systems: a. Concept, relevance and methodology b. Darshanas of the Hindu Philosophy, questioning set paradigms through Buddhism and Jainism c. Transmission of knowledge - oral, guru-shishya Parampara, ancient centres of higher education, experiential learning (Bhakti and Sufi movement) d. Contribution of women scholars in early India.	09
2	Unit 2: Indian Knowledge system: An aesthetic approach	06

	<p>a. Natyashastra</p> <p>b. Indian music tradition</p> <p>c. culinary traditions</p> <p>paintings and textiles</p>	
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- Chattopadhyaya, Deviprasad (1977), Science and Society in Ancient India, Research India Publications
- Jha, Amit (2009), Traditional Knowledge System in India, Atlantic Publishers, New Delhi.
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- Jha, D. N. (1993), Economy and Society in Early India: Issues and Paradigms, Munshiram Manoharlal Publishers
- Singh, Sahana (2022), Revisiting the Educational Heritage of India, Global Collective Publishers.
- Sen, Amartya (2005), Argumentative Indian, Allan Lane.
- Singh, Upinder (2008), A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century, Pearson Education India.
- Thapar, Romila (2018), Indian Cultures as Heritage: Contemporary Pasts, Aleph Book Company.
- Thapar, Romila (2014), The Past as Present: Forging Contemporary Identities Through History, Aleph Book Company.

SYLLABUS FOR INDIAN KNOWLEDGE SYSTEM

Semester II

Introduction to Indian Knowledge Systems – II

Learning Objectives:

- To understand the growth of science and technology in India.
- To familiarize students with the philosophical and spiritual elements rooted in India's rich scientific heritage.
- To examine and analyse the evolution of the art of storytelling in India.

Learning Outcomes

At the end of the course the student would be able to develop

- Understanding of scientific progress in ancient India.
- Appreciation for the relevance of Indian scientific developments today.
- Understanding of the significance of folk lore and folk tales in Indian culture.

Unit	Content	No. of Lecture Hours
1	Unit 1: Overview of Indian scientific thought a. Mathematics, Geometry, Astronomy, Chemistry, b. Health sciences c. Yoga.	09
2	Unit 2: ‘Katha’ a. Tales, stories and storytelling tradition of India- Indian Folk tales b. Buddhist Jataka stories, Gatha Saptasahati, Hitopadesha, Panchatantra c. Folklore from North East India.	06

READINGS

- Basham, A. L. (1987), The Wonder that was India, Sidgwick & Jackson Ltd., London
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- Thapar, Romila (2018), Indian Cultures as Heritage: Contemporary Pasts, Aleph Book Company.
- Thapar, Romila (2014), The Past as Present: Forging Contemporary Identities Through History, Aleph Book Company.

Evaluation Criteria for Both the Semesters:

25 Marks: Internal assessment

10 marks- Debate/SLE/ group discussion/ presentation and online learning from Swayam portal
 10 marks-Assignment
 05 marks- class participation.

SYLLABUS FOR VALUE ADDED COURSE

Semester I

Contemporary India: Values and Issues –I

Learning Objectives:

- To gain an understanding about the Indian state, its values and diversity of Indian society.
- To learn about environmental ethics and movements.
- To have key understanding of digital space and its usage.

Learning Outcomes

- An improved understanding of values and social aspects of Indian society.
- Awareness of environmental ethics and Indian environmental movements.
- Mindfulness of engagement with digital space.

Unit	Content	No. of Lecture Hours
1	A. Understanding India 1.1. Society and State- Religion, caste, rural, urban and tribal, gender and sex ratio 1.2. Appreciating values of pluralism/ diversity and challenges to pluralism- regionalism, linguism and ethnic conflicts. B. Environment: Ethical concerns 1.3. Environmental Ethics - Deep Ecology, Eco-Feminism, 1.4. Eco-Tourism, Environmental Movements in independent India.	15

2	A. Ethics in Digital Technology 2.1. Artificial Intelligence (AI)- Case Study on ChatGPT. 2.2. Cyber Security- hacking, malware, phishing, internet shopping/ banking. B. Ethical concerns in social media 2.3. Issues in social media- cyber bullying, trolling, identity theft, 2.4. Abuse of social media accounts- Facebook, Twitter and other.	15

READINGS

- Ahuja Ram (2014), Social Problems in India, Jaipur: Rawat Publication.
- Chandra Bipan (1984), Communalism in Modern India, Delhi: Vikas Publishing House.
- Dubey S.C. (2018), 'Indian Society', National Book Trust.
- Furer Christoph Von-Haimendorf (1992), Tribes of India, the Struggle for Survival, Berkely: University of California Press.
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- Harvey Carol P and Allard June M (2005), Understanding and managing Diversity Readings Cases, and Exercises; New Delhi: Prentice Hall of India.
- Managi and Kumar (2009), The Economics of Sustainable Development: The Case of India, New York: Springer.
- Patra, A.D. (2010), Infrastructure, Development and Regional Disparity: An interstate analysis, Indian Economics Association, Deep and Deep Publications.
- Roy, Gaurav K. (2020), Cyber Security and Digital Privacy a universal approach, Highbrow Scribes Publications.
- Suresh Jayshree, Raghavan, B.S (2003), Human Values and Professional Ethics. New Delhi: S. Chand
- Shinde, Anand (2021), Introduction to Cyber Security Guide to the world of Cyber Security.

II Journals and Magazines

- AIDWA

- Economic and Political Weekly of India
- Frontline
- India Today
- Man and Development

SYLLABUS FOR VALUE ADDED COURSE

Semester II

CONTEMPORARY INDIA: VALUES AND ISSUES –II

Learning Objectives:

- To gain an understanding about Indian constitutional values.
- To understand significance of disaster management and responsibility towards sustainable approach to business.
- To learn about Yoga for health and wellness.

Learning Outcomes

- An improved understanding of Indian constitutional values.
- Awareness of India's environmental issues and commitments.
- Developed knowledge about Yoga and its significance for health and wellbeing.

Unit	Content	No. of Lecture Hours
1	A. Constitution of India -I 1.1. Introduction to Constitution – Basic structure. 1.2. Constitutional Values-secularism, equality, liberty, fraternity, federalism, unity and integrity, sovereignty. B. Constitution of India -II 1.3. Fundamental Rights 1.4. Directive Principles of State Policy	15
2	A. Environmental commitments. 2.1. Disaster Management- natural and human-made disasters, mitigation measures. 2.2. Green Business and Green consumerism. B. Yoga 2.3. Basics of Yoga - Definition, goal and purpose, benefits and limitations of Yoga. Patanjali's Ashtanga Yoga. 2.4. Yoga for wellness and health- WHO definition of health, classification for health, diet for health, management of stress through yoga.	15

READINGS

- Baruah, A. (2007). Preamble of the constitution of India: An Insight and comparison with other constitutions. Deep & Deep.
- Basu, D. D., & Lakshmanan, A. (2009). Shorter constitution of India. LexisNexis Butterworth Wadhwa Nagpur.
- Bhargava, R. (2010). Politics and ethics of the Indian Constitution. Oxford University Press.
- Bhogal, R. S., Yoga and mental health, published by Kaivalyadhama.
- Chandoke, Neera (1999), Beyond secularism: The rights of religious minorities. Delhi: Oxford University Press.
- Choudhry, S., Khosla, M., & Mehta, P. B. (2016). The Oxford Handbook of the Indian constitution. Oxford University Press.
- DE, R. (2018). A people's constitution. Princeton University Press.
- Furer Christoph Von-Haimendorf (1992), Tribes of India, the Struggle for Survival, Berkely: University of California Press.
- Gadgil Madhav & Guha Ramchandra (1995), Ecology and Equity: The Use and Abuse of Nature in Contemporary India, Penguin Books India.
- Jahanbegloo, R., & Thapar, R. (2008). India revisited: Conversations on contemporary India. Oxford University Press.
- Kashyap, S. C. (2011a). Our Constitution: An introduction to India's constitution and Constitutional Law. National Book Trust, India.
- Kashyap, S. C. (2011b). Our Parliament: An introduction to the Parliament of India. National Book Trust, India.
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- Rathore, A. S. (2022), Ambedkar's Preamble: A secret history of the constitution of India. Vintage Books.
- Nagratna, R. Dr. & Nagendra, H. R. Dr Positive Health, published by SVYASA, Bangaluru.

Evaluation Criteria and Question Paper Pattern for both the Semesters:

Part A) Semester End exam –Time: One hour

30 Marks

Q. 1 A OR Q.1 B

10 Marks

Q. 2 A OR Q. 2 B

10 Marks

Q.3. Short notes: Any two from four (5 marks each)

10 Marks

**Part B) Internal assessment – 20 marks - 15m – MCQ/Class Test/ Projects/SLE
+ 5m (class participation)**

SYLLABUS FOR ABILITY ENHANCEMENT COURSE

Semester - I

Communication Skills in English – I

(2 Credits)

15 lectures + 15 tutorials

Learning Objectives:

The main objectives of the course are:

- To strengthen language proficiency by providing adequate exposure to reading, speaking, listening and writing skills
- To complete various communication tasks effectively
- To develop a comprehensive understanding of the oral aspects of communication
- To develop skills in communication like writing letters, emails, essays and reports
- To enhance the range of lexical resources of the learners through a variety of exercises

Learning Outcomes:

On successful completion of the course learners are expected

- To become proficient in reading, writing, speaking and listening skills
- To efficiently perform various communication tasks
- To be competent in the various aspects of oral communication
- To be able to write letters, emails, essays and reports effectively
- To broaden their language proficiency and the range of their lexical resources

Unit	Content	No. of Lecture Hours
1	Letters 1. Job Application Letter with Resume 2. Statement of Purpose 3. Letters to the Editor 4. Sales/Promotion Letters	5

2	Data Interpretation Students will learn to read and interpret maps, pie charts, tables, line and bar graphs, and flow charts and express the same in a paragraph form. (Note: Other important forms of visual communication may also be introduced to students. However, they will be tested only on the above forms in the examination.)	5
3	Essay 1. Reflective 2. Analytical 3. Persuasive/Argumentative	5

SYLLABUS FOR ABILITY ENHANCEMENT COURSE

Semester - II

Communication Skills in English – II

(2 Credits)

15 lectures + 15 tutorials

Unit	Content	No. of Lecture Hours
1	Emails 1. Enquiry 2. Invitation 3. Thank You 4. Permission	5
2	Report Writing 1. Eyewitness Report 2. Activity Report 3. Newspaper Report	5
3	Creative Writing 1. Story Writing 2. Dialogue Writing 3. Blog Writing	5

Suggested Topics for Tutorials: (for both semesters)

1. Fundamentals of Grammar
2. Vocabulary Building and Language Games

3. Editing Sentences and longer passages
4. Summarization
5. Stress Marking
6. Phonology
7. Reading Skills
8. Listening Skills
9. Speaking Skills and Pronunciation
10. Debates / Speeches
11. Book / Film Reviews

Formative Assessment: (for both semesters) (20 marks per semester)

Any one of the following methods of assessment may be undertaken:

1. Class Test
2. Online Exam
3. Assignment/Project
4. Presentation

Summative Assessment:

Semester I

Part A) QUESTION PAPER PATTERN

Semester I (Sem-end Exam)

Communication Skills in English - I

Duration: 1 hour

Marks: 30

- Q.1 Letters (1 out of 2) [Unit I] (10 marks)
- Q.2 Data Interpretation (150 words) [Unit II] (10 marks)
(Students will present a summary of the visual data given)
- Q.3 Essay (1 out of 2) (200-250 words) [Unit III] (10 marks)

**Part B) Internal assessment – 20 marks - 15m – MCQ/Class Test/ Projects/SLE
+ 5m (class participation)**

Semester II

Part A) QUESTION PAPER PATTERN

Semester II (Sem-end Exam)

Communication Skills in English - II

Duration: 1 hour

Marks: 30

Q.1 Emails (1 out of 2) [Unit I] (10 marks)

Q.2 Reports (1 out of 2) [Unit II] (10 marks)

Q.3 Creative Writing (1 out of 2) (200-250 words) [Unit III] (10 marks)

**Part B) Internal assessment – 20 marks - 15m – MCQ/Class Test/ Projects/SLE
+ 5m (class participation)**

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8. Cambridge: CUP, 2004.
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13. Reading Skills for Academic Purposes. Cambridge: CUP, 2004
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Reading & Thinking in English, Four volumes The British Council Oxford University Press, 1979-1981.
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3. <http://www.teachingenglish.org.uk>
4. <http://www.usingenglish.com/>
5. Technical writing PDF (David McMurrey)
6. <http://www.bbc.co.uk/>
7. <http://www.pearsoned.co.uk/AboutUs/ELT/>
8. <http://www.howisay.com/>
9. <http://www.thefreedictionary.com/>
10. <https://www.merriam-webster.com/games>
11. <https://www.nytimes.com/puzzles/letter-boxed>
12. Jon Ingold - Sparkling Dialogue: A Masterclass.” YouTube, 1 Dec. 2018, www.youtube.com/watch?v=_vRfNtvFVRo.