

G. VENKATASWAMY NAIDU COLLEGE, KOVILPATTI-628502
(AUTONOMOUS)
(Re-Accredited with “A” Grade by NAAC)

Department of Information Technology
(For those admitted from the academic year 2023-2024 and onwards)

VISION

To become a front-runner in preparing graduates to be efficient problem solvers, researchers, innovators and entrepreneurs, and making them competent professionals by enabling them to take up any kind of challenges in Information Technology industry or any organizations they serve.

MISSION

- To uplift rural students of our region through advanced quality education in Information Technology.
- Offer high-quality Postgraduate programs in order to prepare our graduates to become leaders in their profession.
- To provide technical solutions in the field of Information Technology to the local society.
- To provide need-based quality training in the field of Information Technology.
- To maintain state-of-the-art facilities and laboratories where students and faculty can enhance their understanding of technology.
- To provide students with the tools to become productive, participating global citizens and life-long learners.
- To provide an atmosphere for students and faculty for continuous learning to investigate, apply and transfer knowledge.

Programme Outcomes - (PO) (Aligned with Graduate Attributes)

At the completion of the Undergraduate Programme, the student will be able to accomplish the following outcomes:

Programme Outcomes

- PO1 :** Understand the fundamental concepts of Information Technology.
- PO2 :** Gain knowledge on programming language to construct applications and packages to solve real-world problems using Information Technology concepts
- PO3 :** Develop necessary skills to design digital system and acquire knowledge on computer hardware concepts and its functionality.
- PO4 :** Enhance problem solving techniques, analytical and communication skills, team work and potential to develop software and network management.
- PO5 :** Recognize the social and ethical responsibilities of a professional working in the discipline
- PO6 :** Create, select, and apply appropriate techniques, resources, and modern computing and IT tools including prediction and modelling to complex scientific activities with an understanding of the limitations.
- PO7 :** Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The objectives of this Programme is to equip/prepare the students

Programme Educational Objective

- PEOs 1 :** Effectively communicating computing concepts and solutions to bridge the gap between computing industry experts and business leaders to create and initiate innovation
- PEOs 2 :** Effectively utilizing their knowledge of computing principles and mathematical theory to develop sustainable solutions to current and future computing problems.
- PEOs 3 :** Exhibiting their computing expertise within the computing community through corporate leadership, entrepreneurship, and/or advanced graduate study

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- PSOs 1 :** Professionally skilled in the areas of programming, multimedia, web designing, and networking and to obtain knowledge in various domain-based electives.
- PSOs 2 :** Accomplish the skill to design and develop computer programs, evaluate and recognize potential risks and provide innovative solutions.
- PSOs 3 :** Explore technical knowledge in diverse areas of applications and experience an environment conducive in cultivating skills for successful career, entrepreneurship and higher studies. Effectively integrate IT-based solution into the user environment

GRADUATE ATTRIBUTES (GAs)

GA's Statements

- GA 1 :** **Knowledge of the discipline:** Attribute describes the capability of demonstrating comprehensive and considered knowledge of a discipline
- GA 2 :** **Creativity:** Creativity is a skill that underpins most activities, although this may be less obvious in some Disciplines. Students are required to apply imaginative and reflective thinking to their studies.
- GA 3 :** **Intellectual Rigour:** Intellectual Rigour is the commitment to excellence in all scholarly and intellectual activities, including critical judgment. The students are expected in having clarity in thinking.
- GA 4 :** **Problem Solving Skills:** Problem solving skills empower students not only within the context of their programme but also, in their personal and professional lives.
- GA 5 :** **Lifelong Learning:** The skill of being a lifelong learner means a graduate is open, curious, willing to investigate, and consider new knowledge and ways of thinking.
- GA 6 :** **Communication and Social Skill:** The ability to communicate clearly and to work well in a team setting is critical to sustained and successful employment.
- GA 7 :** **Self-Management:** Graduates must have capabilities for self-Organisation, self-review, personal development and life-long learning.

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI
Programme Structure for Information Technology
(For those admitted from the academic year 2023-24 and onwards)

Category	Course Type	Course Code	Course Title	Contact Hours	Exam Hours	Marks			Credit
						CIA	ESE	Total Marks	
Semester-1									
PART -I	Language	U23TA1L1	Tamil– I	6	3	25	75	100	3
PART -II	Language	U23EN1L1	English - I	6	3	25	75	100	3
PART -III	Core-1	U23IT101	Programming in C	5	3	25	75	100	5
	Core-2 (Core Lab 1)	U23IT1P1	C Programming Lab	5	3	40	60	100	5
	Elective Generic -1(Allied)	U23IT1A1	Digital Logic Fundamentals	4	3	25	75	100	3
PART -IV	Skill Enhancement Course-1 (Non-Major)	U23IT1S1	Office Automation	2	-	50	-	50	2
	Foundation Course	U23ITFC1	Fundamentals of Computers	2	-	50	-	50	2
TOTAL				30				600	23
Semester-II									
PART -I	Language	U23TA2L2	Tamil– II	6	3	25	75	100	3
PART -II	Language	U23EN2L2	English - II	6	3	25	75	100	3
PART -III	Core-3	U23IT202	JAVA Programming	5	3	25	75	100	5
	Core-4 (Core Lab 2)	U23IT2P2	JAVA Programming Lab	5	3	40	60	100	5
	Elective Generic-2 (Allied)	U23IT2A2	Data structures	4	3	25	75	100	3
	Comprehension -1 (Self Study Course- Online Exam)	U23IT2C1	Comprehension in Core Courses – I	0	1	0	50	50	1
PART -IV	Skill Enhancement Course-2 (Non-Major)	U23IT2S2	Basics of Internet	2	-	50	-	50	2
	Skill Enhancement Course-3	U23IT2SP	Introduction to Office Automation & HTML	2	3	-	50	50	2
TOTAL				30				650	24

SEMESTER – I
Part – III B.Sc, Information Technology / Semester – I/
CORE – 1: PROGRAMMING IN C
(U23IT101)

Lecture Hours	: 75	Tutorial Hours :
Practical Hours	: -	No. of Credit : 05
Contact Hours per Semester	: 75	
Contact hours per Week	: 05	
Internal Marks	: 25	
External Marks	: 75	
Total Marks	: 100	

OBJECTIVES OF THE COURSE:

- To familiarize the students with the understanding of code organization
- To improve the programming skills
- To Learning the basic programming constructs

COURSE LEARNING OUTCOMES (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's

Course Outcomes

CO1 : Outline the fundamental concepts of C programming languages, and its features

CO2 : Demonstrate the programming methodology.

CO3 : Identify suitable programming constructs for problem solving.

CO4 : Select the appropriate data representation, control structures, functions and concepts based on the problem requirement.

CO5 : Evaluate the program performance by fixing the errors.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	3	2	2	3	3	3	3
CO2	3	3	2	3	2	2	3	2	3	2
CO3	3	3	3	3	2	2	3	3	3	2
CO4	3	3	2	3	2	2	2	2	3	2
CO5	2	3	3	2	2	2	2	3	2	2
Total Contribution of COs to POs	14	14	12	14	10	10	13	13	14	11
Weighted Percentage of Cos contribution to POs contribute to each PSO	93.3	93.3	80	93.3	66.6	66.6	86.6	86.6	93.3	73.3

(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: STUDYING CONCEPTS OF PROGRAMMING LANGUAGES (L-15 Hours)

Studying Concepts of Programming Languages- Language Evaluation Criteria - Language design - Language Categories - Implementation Methods – Programming Environments - Overview of C: History of C- Importance of C- Basic Structure of C Programs-Executing a C Program- Constants, Variables and Data types - Operators and Expressions - Managing Input and Output Operations

UNIT II: DECISION MAKING AND BRANCHING (L-15 Hours)

Decision Making and Branching: Decision Making and Looping - Arrays - Character Arrays and Strings.

UNIT III: USER DEFINED FUNCTIONS (L-15 Hours)

User Defined Functions: Elements of User Defined Functions- Definition of Functions- Return Values and their Types- Function Call- Function Declaration- Categories of Functions- Nesting of Functions-Recursion.

UNIT IV: STRUCTURES AND UNIONS (L-15 Hours)

Structures and Unions: Introduction- Defining a Structure- Declaring Structure Variables Accessing Structure Members- Structure Initialization- Arrays of Structures- Arrays within Structures- Unions- Size of Structures.

UNIT V: POINTERS (L-15 Hours)

Pointers: Understanding Pointers- Accessing the Address of a Variable- Declaring Pointer Variables- Initializing of Pointer Variables- Accessing a Variable through its Pointer- Chain of Pointers- Pointer Expressions- Pointer and Scale Factor- Pointer and Arrays- Pointers and Character Strings- Array of Pointers- Pointer as Function Arguments- Functions Returning Pointers- Pointers to Functions- File Management in C

TEXT BOOKS:

1. Robert W. Sebesta, (2012), —Concepts of Programming Languages, Fourth Edition, Addison Wesley (Unit I : Chapter – 1)
2. E. Balaguruswamy, (2010), —Programming in ANSI C, Fifth Edition, Tata McGraw Hill Publications

REFERENCE BOOKS:

1. Ashok Kamthane, (2009), —Programming with ANSI & Turbo C, Pearson Education
2. Byron Gottfried, (2010), —Programming with C, Schaums Outline Series, Tata McGraw Hill Publications
3. Yashavant Kanetkar, “Let us C”, BPB Publications; 15th Revised and Updated edition, 2016.
4. Salim Y. Amdani, “C Programming” Laxmi Publications; First edition, 2016.
5. Brian W. Kernighan, Dennis M. Ritchie, ANSI C, “The C Programming Language”, 2nd Edition, Pearson Publication, 2012.

WEBSITE REFERENCES:

1. <http://www.tutorialspoint.com/cprogramming/>
2. <http://www.cprogramming.com/>
3. <http://www.programmingsimplified.com/c-program-examples>
4. <http://www.programiz.com/c-programming>
5. <http://www.cs.cf.ac.uk/Dave/C/CE.html>
6. <http://fresh2refresh.com/c-programming/c-function/>

Part – III B.Sc, Information Technology / Semester – I/
CORE LAB 1 – I: C PROGRAMMING LAB
(U23IT1P1)

Lecture Hours	:		Tutorial Hours	:	
Practical Hours	:	75	No. of Credit	:	05
Contact Hours per Semester	:	75			
Contact hours per Week	:	05			
Internal Marks	:	40			
External Marks	:	60			
Total Marks	:	100			

OBJECTIVES OF THE COURSE:

- To provide exposure to problem-solving through C programming
- To train the student to the basic concepts of the C -Programming language
- To Apply different concepts of C language to solve the problem

COURSE LEARNING OUTCOMES (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's

Course Outcomes

CO1 : Demonstrate the understanding of syntax and semantics of C programs.

CO2 : Identify the problem and solve using C programming techniques.

CO3 : Identify suitable programming constructs for problem solving.

CO4 : Analyses various concepts of C language to solve the problem in an efficient way.

CO5 : Develop a C program for a given problem and test for its correctness.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	2	3	3	3	3
CO2	3	3	2	3	2	2	3	2	3	2
CO3	3	3	3	2	2	2	3	3	3	2
CO4	3	3	2	3	3	2	2	2	3	2
CO5	2	3	2	3	3	3	2	3	2	2
Total Contribution of COs to POs	14	14	12	14	12	11	13	13	14	11
Weighted Percentage of Cos contribution to POs contribute to each PSO	93.3	93.3	80	93.3	80	73.3	86.6	86.6	93.3	73.3

(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

LIST OF PRACTICALS

1. Programs using Input/ Output functions
2. Programs on conditional structures
3. Command Line Arguments
4. Programs using Arrays
5. String Manipulations
6. Programs using Functions
7. Recursive Functions
8. Programs using Pointers
9. Files
10. Programs using Structures & Unions

TEXT BOOKS:

1. Robert W. Sebesta, (2012), —Concepts of Programming Languages, Fourth Edition, Addison Wesley (Unit I : Chapter – 1)
2. E. Balaguruswamy, (2010), —Programming in ANSI C, Fifth Edition, Tata McGraw Hill Publications

REFERENCE BOOKS:

1. Ashok Kamthane, (2009), —Programming with ANSI & Turbo C, Pearson Education
2. Byron Gottfried, (2010), —Programming with C, Schaums Outline Series, Tata McGraw Hill Publications
3. Yashavant Kanetkar, “Let us C”, BPB Publications; 15th Revised and Updated edition, 2016.
4. Salim Y. Amdani, “C Programming” Laxmi Publications; First edition, 2016.
5. Brian W. Kernighan, Dennis M. Ritchie, ANSI C, “The C Programming Language”, 2nd Edition, Pearson Publication, 2012.

WEBSITE REFERENCES:

1. <http://www.tutorialspoint.com/cprogramming/>
2. <http://www.cprogramming.com/>
3. <http://www.programmingsimplified.com/c-program-examples>
4. <http://www.programiz.com/c-programming>
5. <http://www.cs.cf.ac.uk/Dave/C/CE.html>
6. <http://fresh2refresh.com/c-programming/c-function/>

**Part – III B.Sc, Information Technology / Semester – I/
ELECTIVE GENERIC – 1: DIGITAL LOGIC FUNDAMENTALS
(U23IT1A1)**

Lecture Hours	: 60	Tutorial Hours :
Practical Hours	: -	No. of Credit : 03
Contact Hours per Semester	: 60	
Contact hours per Week	: 04	
Internal Marks	: 25	
External Marks	: 75	
Total Marks	: 100	

OBJECTIVES OF THE COURSE:

- To analyze a problem with appropriate problem solving techniques
- To understand the main principles of imperative, functional and logic oriented programming languages and
- To increase the ability to learn new programming languages.

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's

Course Outcomes

- CO1 :** Learn the concepts of number system, logical gates,Circuits, Flip flops and registers.
- CO2 :** Understand the digital logics, various combinational logical circuit, Multiplexers and registers.
- CO3 :** Apply the concepts of number system, code, Karnaugh Map, 2's Complement, : Binary Addition and Binary Subtraction , Serial in serial out, serial in parallel out, parallel in serial out and parallel in parallel out
- CO4 :** Analyze the types of logical gates ,Karnaugh Simplifications, Sign-Magnitude Numbers
- CO5 :** Evaluate Excess-3 Code, Gray Code and Flipflops.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	2	3	3	3	3
CO2	2	3	2	3	2	2	2	3	3	2
CO3	2	2	2	3	3	3	2	3	3	3
CO4	2	2	2	3	3	3	3	2	3	2
CO5	2	2	2	2	3	2	3	3	2	2
Total Contribution of COs to POs	11	12	10	14	14	12	13	14	14	12

Weighted Percentage of Cos contribution to POs contribute to each PSO	73.3	80	66.6	93.3	93.3	80	86.6	93.3	93.3	80
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(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: NUMBER SYSTEMS AND CODES & DIGITAL LOGIC (L-12 HOURS)

Number System: Binary Number System, Binary to Decimal Conversion, Decimal to Binary Conversion, Octal Numbers, Hexadecimal Numbers. Codes: The ASCII Code, the Excess-3 Code, The Gray Code, Complements, Signed Binary Numbers, Binary Storage and Registers. Digital Logic: The Basic gates NOT, OR, AND, Universal Logic Gates NOR, NAND.

UNIT II: COMBINATIONAL LOGIC CIRCUITS (L- 12 Hours)

Combinational Logic Circuits : Boolean Laws and Theorems , Sum of Products Method , Truth Table to Karnaugh Map , Pairs, Quads and Octets , Karnaugh Simplifications , Don't Care Conditions, Product of Sums Method, Product of Sums Simplification, HDL Implementation Models. Data Processing Circuits: Multiplexers , De-multiplexers , 1-of- 16 Decoders , BCD-to-Decimal Decoders , Seven Segment decoders , Encoders , Exclusive-OR gates.

Unit III: ARITHMETIC CIRCUITS (L-12 Hours)

Arithmetic Circuits: Binary Addition, Binary Subtraction, Unsigned Binary Numbers, Sign-Magnitude Numbers, 2's Complement Representation, 2's Complement Arithmetic, Arithmetic Building Blocks, The Adder-subtracted, Arithmetic Logic Unit, Binary Multiplication and Division, Arithmetic Circuits Using HDL. Clocks and Timing Circuits: Clock Waveforms, TTL Clock, 555 Timer, A stable.

UNIT IV: FLIP-FLOPS, REGISTERS AND COUNTERS (L-12 Hours)

Flip – Flops: RS Flip Flops, Edge Triggered RS Flip Flops, Edge Triggered D Flip Flops, Edge Triggered JK Flip Flops, JK Master Slave Flip Flops. Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Other Counters, HDL for Registers and Counters.

UNIT V: MEMORY AND PROGRAMMABLE LOGIC (L-12 Hours)

Memory and Programmable Logic: Introduction, Random Access Memory, Memory Decoding, Error Detection and Correction, Read Only Memory. Digital Integrated Circuits: Switching Circuits, 7400 TTL,TTL Parameters, TTL Overview. Applications: Multiplexing Displays, Frequency Counters, Time Measurement, Digital Voltmeter.

TEXT BOOK:

1. Digital Principles and Applications, by Albert Paul Malvino& Donald P.Leach, Seventh Edition, Tata McGraw Hill Education Private Limited, 2011.

REFERENCE BOOKS:

1. Fundamentals of Digital Circuits, A.Anand Kumar, Second Edition, PHI Learning Private Limited, 2012.

2. M.MorrisMano,"Digital Logic and Computer Design", Sixth Edition,Pearson Education, India, 2016.
3. John F.Wakerly,"Digital Design Principles and Practices",FifthEdition,Pearson publications.2017.
4. SonaliSingh,"Digital Logic Design", First Edition,BPB Publications, 2015.
5. Dr.S.Narendra, S.Jadhav,"Digital Logic Design", First Edition, NiraliPrakashan, 2018

WEBSITE REFERENCES:

1. <https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/>
2. <http://examradar.com/digital-electronics-digital-logic-short-study-notes/>
3. <https://www.gatevidyalay.com/digital-electronics/>
4. <https://www.smartworld.com/notes/digital-logic-design-and-computer-organization-notes-pdf-dldco-notes-pdf/>
5. <http://www.ee.surrey.ac.uk/Projects/CAL/digital-logic/gatesfunc/index.html>
6. https://faculty.kfupm.edu.sa/coe/ashraf/RichFilesTeaching/COE043_200/Chapter%205.html

**Part – IV B.Sc, Information Technology / Semester – I/
SKILL ENHANCEMENT COURSE-1: OFFICE AUTOMATION
(U23IT1S1)**

Lecture Hours	: 30	Tutorial Hours :	
Practical Hours	: -	No. of Credit	: 02
Contact Hours per Semester	: 30		
Contact hours per Week	: 02		
Internal Marks	: 50		
External Marks	: -		
Total Marks	: 50		

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's

Course Outcomes

- CO1 :** Understand the basics of computer systems and its components.
CO2 : Apply the basic concepts of a word processing package.
CO3 : Evaluate the basic concepts of electronic spreadsheet software.
CO4 : Analyse and apply the basic concepts of database management system.
CO5 : Create a presentation using PowerPoint tool.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	3	3	3	3	3
CO2	3	3	2	3	2	2	3	2	3	2
CO3	3	3	3	3	2	2	3	3	3	2
CO4	2	3	2	3	2	2	2	2	3	2
CO5	2	3	3	2	2	3	2	3	2	2
Total Contribution of COs to POs	13	14	12	14	11	12	13	13	14	11
Weighted Percentage of Cos contribution to POs contribute to each PSO	86.6	93.3	80	93.3	73.3	80	86.6	86.6	93.3	73.3

(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: INTRODUCTORY CONCEPTS (L-6 Hours)

Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: –Windows. Introduction to Programming Languages.

UNIT II: WORD PROCESSING (L-6 Hours)

Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing–Preview, options, merge.

UNIT III: SPREADSHEETS (L-6 Hours)

Spreadsheets : Excel–opening, entering text and data, formatting, navigating; Formulas–entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics.

UNIT IV: DATABASE CONCEPTS (L-6 Hours)

Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of datafiles; Understanding Programming environment in DBMS; Developing menu drive applications in query language (MS–Access).

UNIT V: POWER POINT (L-6 Hours)

Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition–Animation effects, audio inclusion, timers.

TEXT BOOK:

1. Peter Norton,“Introduction to Computers”–Tata McGraw-Hill.

REFERENCE BOOKS:

1. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, “Microsoft 2003”, Tata McGrawHill.
2. Introduction to Computers, Peter Norton, sixth edition, 2008, McGraw Hill Companies.
3. The Complete Reference Office 2000, Stephen L. Nelson, 1999, Tata McGraw – Hill Publishing Company Limited, New Delhi.
4. Computer Fundamentals and windows with Internet Technology –N. Krishnan, 2018, Scitech Publications (India) Pvt Ltd ,
5. HTML The Complete Reference, Thomas A.Powell, Second Edition, McGraw Hill Osborne Medi, 2003.

WEBSITE REFERENCES:

1. <https://www.udemy.com/course/office-automation-certificate-course/>
2. <https://www.javatpoint.com/automation-tools>

**Part – IV B.Sc, Information Technology / Semester – I/
FOUNDATION COURSE-I: FUNDAMENTALS OF COMPUTERS
(U23ITFC1)**

Lecture Hours	: 30	Tutorial Hours :
Practical Hours	: -	No. of Credit : 02
Contact Hours per Semester	: 30	
Contact hours per Week	: 02	
Internal Marks	: 50	
External Marks	: -	
Total Marks	: 50	

OBJECTIVES OF THE COURSE:

- To analyze a problem with appropriate problem solving techniques
- To understand the main principles of imperative, functional and logic oriented programming languages and
- To increase the ability to learn new programming languages.

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's **Course Outcomes**

CO1 : Remember the Computer fundamentals and various problem solving concepts in Computers

CO2 : Understand the basic computer organization, software, computer languages, software development life cycle and the need of structured programming in solving a computer problem

CO3 : Evaluate the types of computer languages, software, computer problems and examine how to set up expressions and equations to solve the problem.

CO4 : Apply the most appropriate programming languages, constructs and features to solve the problems in diversified domains.

CO5 : Analyze the design of modules and functions in structuring the solution and various Organizing tools in problem solving.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	3	3	3	3	3
CO2	3	2	2	2	3	2	3	2	3	3
CO3	3	3	3	3	2	2	3	3	3	2
CO4	3	2	2	2	2	3	2	2	3	2
CO5	2	3	2	2	3	2	2	3	2	2
Total Contribution of COs to POs	14	12	11	11	12	12	13	13	14	12

Weighted Percentage of Cos contribution to POs contribute to each PSO	93.3	80	73.3	73.3	80	80	86.6	86.6	93.3	80
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(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: INTRODUCTION

(L-6 Hours)

Introduction: Characteristics of Computers - Evolution of Computers Basic Computer Organization: I/O Unit - Storage Unit - Arithmetic Logic Unit - Control Unit - Central Processing Unit

UNIT II: COMPUTER SOFTWARE

(L-6 Hours)

Computer Software: Types of Software - System Architecture Computer Languages: Machine Language - Assembly Language - High Level Language - Object Oriented Languages

UNIT III: PROBLEM SOLVING CONCEPTS

(L-6 Hours)

Problem Solving Concepts: Problem Solving in Everyday life - Types of Problems - Problem solving with computers - Difficulties with Problem Solving

UNIT IV: PROBLEM SOLVING CONCEPTS FOR THE COMPUTER

(L-6 Hours)

Problem Solving concepts for the computer: Constant Variables - Data Types - Functions - Operators - Expressions and Equations - Organizing the Solution: Analyzing the problem - Algorithm - Flowchart - Pseudo code

UNIT V: PROGRAMMING STRUCTURE

(L-6 Hours)

Programming Structure: Structuring a solution - Modules and their function - Local and Global variables - Parameters - Return values - Sequential Logic Structure - Problem solving with Decision - Problem Solving with Loops

TEXT BOOK:

1. R.G. Dromey, (2007), —How to Solve it by Computer, Prentice Hall International Series in Computer Science.

REFERENCE BOOK:

1. C.S.V.Murthy, (2009),—Fundamentals of Computers, Third Edition, Himalaya Publishing House.
2. V.Rajaram, “ Fundamentals of Computers”, 5th Edition 2003, Prentice Hall India Learning (P) Ltd
3. Introduction to Computers, Peter Norton, 7/e, TMH
4. Introduction to Computer Science, ITL Education Solutions Limited, 2/e, Pearson
5. Pradeep K. Sinha & Priti Sinha “Computer Fundamentals”, BPB Publications, 2004

WEBSITE REFERENCES:

1. http://www.tutorialspoint.com/computer_fundamentals/
2. <http://www.comptechdoc.org/basic/basicitut/>
3. <http://www.homeandlearn.co.uk/>
4. <http://www.top-windows-tutorials.com/computer-basics/>
5. <https://www.programiz.com/article/flowchart-programming> (Algorithm and flow chart)

SEMESTER – II

Part – III B.Sc, Information Technology / Semester – II/

CORE – 3: JAVA PROGRAMMING

(U23IT202)

Lecture Hours	: 75	Tutorial Hours :	
Practical Hours	: -	No. of Credit	: 05
Contact Hours per Semester	: 75		
Contact hours per Week	: 05		
Internal Marks	: 25		
External Marks	: 75		
Total Marks	: 100		

OBJECTIVES OF THE COURSE:

- To provide knowledge on fundamentals of object-oriented programming
- To have the ability to use the SDK environment to create, debug and run servlet programs

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's	Course Outcomes
CO1 :	Outline the basic terminologies of OOP, programming language techniques, JDBC and Internet programming concepts
CO2 :	Solve problems using basic constructs, mechanisms, techniques and technologies of Java
CO3 :	Analyse and explain the behaviour of simple programs involving different techniques such as Inheritance, Packages, Interfaces, Exception Handling and Thread and technologies such as JDBC and Servlets
CO4 :	Assess various problem-solving strategies involved in Java to develop a high-level application.
CO5 :	Design GUI based JDBC applications and able to develop Servlets using suitable OOP concepts and techniques

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	2	3	3	3	3
CO2	2	3	2	2	2	2	3	2	3	2
CO3	2	3	3	3	2	2	3	3	3	2
CO4	2	3	2	2	2	2	2	2	3	2
CO5	3	3	2	2	2	2	2	2	2	2
Total Contribution of COs to POs	12	14	11	11	10	10	13	12	14	11

Weighted Percentage of Cos contribution to POs contribute to each PSO	80	93.3	73.3	73.3	66.6	66.6	86.6	80	93.3	73.3
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(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: FUNDAMENTALS OF OBJECT (L-15 Hours)

Fundamentals of Object-Oriented Programming: Introduction – Object Oriented Paradigm – Concepts of Object-Oriented Programming – Benefits of OOP – Evolution: Java History – Java Features – Differs from C and C++ – Overview of Java Language: Java Program – Structure – Tokens – Java Statements – Java Virtual Machine – Command Line Arguments

UNIT II: CONSTANTS, VARIABLES AND DATA TYPES (L-15 Hours)

Constants, Variables and Data Types – Operators and Expressions – Decision making and Branching – Looping – Arrays - Strings – Collection Interfaces and classes

UNIT III: CLASSES OBJECTS AND METHODS (L-15 Hours)

Classes objects and methods: Introduction – Defining a class – Method Declaration – Constructors - Method Overloading – Static Members – Nesting of methods – Inheritance – Overriding – Final variables and methods – Abstract methods and classes

UNIT IV: MULTIPLE INHERITANCE (L-15 Hours)

Multiple Inheritance: Defining Interfaces – Extending Interfaces – Implementing Interfaces – Packages: Creating Packages – Accessing Packages – Using a Package – Managing Errors and Exceptions – Multithreaded Programming

UNIT V LAYOUT MANAGERS (L15 Hours)

Layout Managers - JDBC – Java Servlet: - Servlet Environment Role – Servlet API – Servlet Life Cycle – Servlet Context – HTTP Support – HTML to Servlet Communication

TEXT BOOKS:

1. E Balagurusamy (2010), “Programming with Java”, Tata McGraw Hill Edition India Private Ltd, 4th Edition
2. C Xavier, “Java Programming – A Practical Approach”, Tata McGraw Hill Edition Private Ltd

REFERENCE BOOKS:

1. P. Naughton and H. Schildt (1999), “Java 2 The Complete Reference”, TMH, 3rd Edition
2. Jason Hunder & William Crawford (2002), “Java Servlet Programming”, O’Reilly
3. Jim Keogh (2002), “J2EE: The Complete Reference”, Tata McGraw Hill Edition.
4. Herbert Schildt (2002).” Java 2: The Complete Reference”, Fifth Edition, McGraw-Hill Education.
5. Mukesh Prasad (2013), “Java Server Side Programming”, The Conceptual Foundation.

WEBSITE REFERENCES:

1. <http://javabeginnerstutorial.com/core-java/>
2. <http://www.tutorialspoint.com/java/>
3. <http://beginnersbook.com/java-tutorial-for-beginners-with-examples/>
4. <http://www.homeandlearn.co.uk/java/java.html>
5. [http://www.journaldev.com/1877/servlet-tutorial-java\(UnitV:ServletAPI\)](http://www.journaldev.com/1877/servlet-tutorial-java(UnitV:ServletAPI))

Part – III B.Sc, Information Technology / Semester – II/
CORE LAB – 2: JAVA PROGRAMMING LAB
(U23IT2P2)

Lecture Hours	: -	Tutorial Hours :
Practical Hours	: 75	No. of Credit : 05
Contact Hours per Semester	: 75	
Contact hours per Week	: 05	
Internal Marks	: 40	
External Marks	: 60	
Total Marks	: 100	

OBJECTIVES OF THE COURSE:

- To design and develop applications using different Java programming language techniques, JDBC & Servlets
- To organize and manipulate the data with the help of fundamental data structures

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's	Course Outcomes
CO1	Remember and explain the way of solving the simple problems
CO2	Understand the appropriate software development environment to write, compile and execute object-oriented Java programs
CO3	Analyses and identify necessary mechanisms of Java needed to solve real-world problem
CO4	Create test for defects and validate a Java program with different inputs
CO5	Evaluate Design, develop and compile Core Java , GUI , JDBC and servlet applications that utilize OOP and data structure concepts

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	2	3	3	3	3
CO2	2	3	3	3	2	2	3	2	3	2
CO3	3	3	3	2	2	3	2	3	3	2
CO4	3	3	3	3	3	2	2	2	3	2
CO5	3	3	2	3	2	2	2	3	2	2
Total Contribution of COs to POs	14	14	14	14	11	11	12	13	14	11

Weighted Percentage of Contribution to POs contribute to each PSO	93.3	93.3	93.3	93.3	73.3	73.3	80	80	93.3	73.3
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(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

LIST OF PRACTICALS

1. Basic Programs
2. Arrays
3. Strings
4. ArrayList, HashSet and Vector collection classes
5. Classes and Objects
6. Interfaces
7. Inheritance
8. Packages
9. Exception Handling
10. Threads
11. Linked List
12. Stacks
13. Queue
14. Sorting
15. Binary Tree Representation
16. Working with Database using JDBC
17. Web application using Servlet

TEXT BOOKS:

1. E Balagurusamy(2010), “ProgrammingwithJava”, TataMcGrawHill EditionIndia PrivateLtd, 4th Editic
2. C Xavier,”JavaProgramming – A Practical Approach”, Tata McGrawHill Edition Private Ltd

REFERENCE BOOKS:

1. P.Naughton andH.Schildt(1999), “Java2 TheComplete Reference”, TMH, 3rdEdition
2. JaisonHunder&WilliamCrawford(2002),”JavaServlet Programming”,O’Reilly
3. Jim Keogh (2002), “J2EE: TheComplete Reference”, Tata McGraw HillEdition.
4. Herbert Schildt(2002).” Java 2: The Complete Reference”, Fifth Edition, McGraw-Hill Education.
5. Mukesh Prasad(2013),”Java Server Side Programming”, The Conceptual Foundation.

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1. <http://javabeginnerstutorial.com/core-java/>
2. <http://www.tutorialspoint.com/java/>
3. <http://beginnersbook.com/java-tutorial-for-beginners-with-examples/>
4. <http://www.homeandlearn.co.uk/java/java.html>
5. [http://www.journaldev.com/1877/servlet-tutorial-java\(UnitV:ServletAPI\)](http://www.journaldev.com/1877/servlet-tutorial-java(UnitV:ServletAPI))

Part – III B.Sc, Information Technology / Semester – II/
ELECTIVE GENERIC – II: DATA STRUCTURES
(U23IT2A2)

Lecture Hours	: 60	Tutorial Hours :
Practical Hours	: -	No. of Credit : 03
Contact Hours per Semester	: 60	
Contact hours per Week	: 04	
Internal Marks	: 25	
External Marks	: 75	
Total Marks	: 100	

OBJECTIVES OF THE COURSE:

- To design and develop applications using different Java programming language techniques, JDBC & Servlets
- To organize and manipulate the data with the help of fundamental data structures

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's	Course Outcomes
CO1	Remember the different fundamental concepts of data structures
CO2	Understand the use of different memory representation for data storage and apply various operations
CO3	Create an algorithm for different data structure operations.
CO4	Analyse the data structures applications.
CO5	Evaluate suitable techniques to provide solution for solving the problems.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	2	3	3	2
CO3	3	3	3	3	2	2	2	2	3	2
CO4	3	3	2	2	3	3	3	2	2	2
CO5	2	3	2	3	3	2	3	3	2	2
Total Contribution of COs to POs	14	14	11	14	14	13	13	13	13	11
Weighted Percentage of Cos contribution to POs contribute to each PSO	93.3	93.3	73.3	93.3	93.3	86.6	86.6	86.6	86.6	73.3

(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: INTRODUCTION AND OVERVIEW

(L-12 Hours)

Introduction and overview: Basic Terminology – Data Structures – Operations - Algorithms: Complexity – Time Space – Algorithmic Notation – Control Structures – Complexity of Algorithms – Notations Arrays: Representation – Operations - Linear Search – Binary Search

UNIT II: STACK & QUEUE

(L- 12 Hours)

Stack: Representation – Arithmetic expressions: Polish Notation – Recursion: Towers of Hanoi- Queue – Priority Queue - Linked Lists: Introduction – Representation of Linked Lists – Traversing a Linked Lists – Searching a Linked List

UNIT III: INSERTION INTO A LINKED LIST

(L-12 Hours)

Insertion into a Linked List – Deletion into Linked List – Header Linked Lists – Two-way Lists –Doubly Linked List - Trees : Binary Trees – Representation – Traversal using Recursion – Binary Search Trees

UNIT IV: SORTING

(L-12 Hours)

Sorting : Bubble Sort Insertion Sort, Selection Sort, Merge Sort, Quick Sort, Heap Sort

UNIT V: GRAPHS

(L-12 Hours)

Graph – Graph Theory Terminology –Sequential Representation – Warshalls Algorithm – Shortest Path – Linked Representation - Traversals – Dynamic Programming – All Pairs Shortest Path - Greedy – Knapsack – Back Tracking – 8 Queens

TEXT BOOK:

1. Seymour Lipschutz (1986), —Theory and Problems of Data StructuresI, Tata McGraw- Hill Edition

REFERENCE BOOKS:

1. E.Horowitz, S.Sahni, S.Rajasekaran (1998), —Computer AlgorithmsI, Galgotia Publications.
2. Robert Kruse, C.L.Tondo, Bruce Leung, —Data Structures and Program Design in CII, Second Edition, Prentice Hall Publications
3. Shi-kuo Chang(2003),” Data Structures And Algorithms”,vol 13, World Scientific.
4. Roger S. Pressman, “Software Engineering A Practitioner Approach”, McGraw – Hill Higher Education.
5. Timothy C. Lethbridge and Robert Laganriere, “Object – Oriented Software Engineering”, Tata McGraw – Hill Publishing Company Limited, New Delhi.

WEBSITE REFERENCES:

1. <http://www.cs.sunysb.edu/~skiena/214/lectures/>
2. <http://datastructures.itgo.com/graphs/dfsdfs.htm>
3. <http://oopweb.com/Algorithms/Documents/PLDS210/VolumeFrames.html>
4. <http://discuss.codechef.com/questions/48877/data-structures-and-algorithms>
5. <http://code.tutsplus.com/tutorials/algorithms-and-data-structures--cms-20437>
6. https://www.tutorialspoint.com/data_structures_algorithms/insertion_sort_algorithm.htm (Unit IV : Insertion Sorting)

**Part – IV B.Sc, Information Technology / Semester – II/
SKILL ENHANCEMENT COURSE-2: BASICS OF INTERNET
(U23IT2S2)**

Lecture Hours	: 30	Tutorial Hours :
Practical Hours	: -	No. of Credit : 02
Contact Hours per Semester	: 30	
Contact hours per Week	: 02	
Internal Marks	: 50	
External Marks	: -	
Total Marks	: 50	

OBJECTIVES OF THE COURSE:

- To obtain the Knowledge of Internet medium
- To use Internet as a mass medium
- To use the Features of Internet Technology,
- To Utilize Internet as source of infotainment
- To Study of internet audiences and about cyber crime

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSO)s)

On successful completion of the course the students should be able to

CO's	Course Outcomes
CO1	Remember the basic concept in HTML
CO2	Understand the Basic Design concept, Concept of Meta Data, concept of save the files.
CO3	Apply the page formatting Concept of list
CO4	Creating Links Know the concept of creating link to email address
CO5	Evaluate concept of adding images and table creation.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	3	3	3	3	3
CO2	3	3	2	3	2	2	3	2	3	2
CO3	2	3	3	3	2	2	3	3	3	2
CO4	3	3	2	3	2	2	2	2	3	2
CO5	2	3	3	2	2	3	2	3	2	2
Total Contribution of COs to POs	13	14	12	14	11	12	13	13	14	11
Weighted Percentage of Cos contribution to POs	86.6	93.3	80	93.3	73.3	80	86.6	86.6	93.3	73.3

contribute to each PSO										
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(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

COURSE CONTENT

UNIT I: **(L-6 Hours)**

The emergence of internet as a mass medium—the world of ‘world wide web’.

UNIT II: **(L-6 Hours)**

Features of internet as a technology.

UNIT III: **(L-6 Hours)**

Internet as a source of infotainment – classification based on content and style.

UNIT IV: **(L-6 Hours)**

Demographic and psychographic descriptions of internet ‘audiences’ – effect of internet on the values and life-styles.

UNIT V: **(L-6 Hours)**

Present issues such as cybercrime and future possibilities.

TEXT BOOKS:

1. “Mastering HTML5 and CSS3 Made Easy”, TeachUComp Inc., 2014.
2. Thomas Michaud, “Foundations of Web Design: Introduction to HTML & CSS”
3. The Internet Book: Everything You Need to Know about Computer Networking and How the Internet Works., 2006 by Douglas E Comer
4. Computer Networks & Internets: With Internet Applications Comer, D. E/ Narayanan, M. S. 4th ed Pearson
5. Computer Networks: Systems Approach Peterson, L/ Davie, B. 4th ed Morgan

REFERENCE BOOKS:

1. HTML for beginners, FiruzaAibara, 2nd Edition, 2010, Shrott Publishers and Distributors Pvt.Ltd.,
2. HTML & Web Design Tips & Techniques Tips and Techniques, Jamsa Kris, Andy Anderson,Konrad King, McGraw Hill, India, 2002.
3. HTML The Complete Reference, Thomas A.Powell, Second Edition, McGraw Hill Osborne Medi, 2003.

WEBSITE REFERENCES:

1. <https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf>
2. <https://www.w3schools.com/html/default.asp>

**Part – III B.Sc, Information Technology / Semester – II/
SKILL ENHANCEMENT COURSE-3:INTRODUCTION TO OFFICE
AUTOMATION& HTML(U23IT2S3)**

Lecture Hours	: 30	Tutorial Hours :	
Practical Hours	: -	No. of Credit	: 02
Contact Hours per Semester	: 30		
Contact hours per Week	: 02		
Internal Marks	: 50		
External Marks	: -		
Total Marks	: 50		

OBJECTIVES OF THE COURSE:

- To use a graphic within a web page.
- To Create a link within a web page.
- To Create a table within a web page.
- To Insert heading levels within a web page.
- To Insert ordered and unordered lists within a web page. Create a web page.

COURSE LEARNING OUTCOME (FOR MAPPING WITH POs AND PSOs)

On successful completion of the course the students should be able to

CO's	Course Outcomes
CO1	Remember the basics of computer systems and its components.
CO2	Understand the basic concepts of a word processing package.
CO3	Apply the basic concepts of electronic spreadsheet software.
CO4	Analyse the basic concepts of database management system.
CO5	Create a presentation using PowerPoint tool.

CO-PO Mapping (Course Articulation Matrix)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	3	3	3	3	3
CO2	3	3	2	3	2	2	3	2	3	2
CO3	2	3	3	3	2	2	3	3	3	2
CO4	3	3	2	3	2	2	2	2	3	2
CO5	2	3	3	2	2	3	2	3	2	2
Total Contribution of COs to POs	13	14	12	14	11	12	13	13	14	11

Weighted Percentage of Cos contribution to POs contribute to each PSO	86.6	93.3	80	93.3	73.3	80	86.6	86.6	93.3	73.3
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(0-No Correlation; 1-Weak; 2-Moderate; 3-Strong)

LIST OF PRACTICALS

MS-WORD:

1. Prepare a word document and Insert Header and Footer
2. Preparer a Bio-Data and insert the contents of qualification within the table.
3. Mail Merge

MS – EXCEL:

1. Apply formulas and functions
2. Prepare a chart for population growth.

MS – POWERPOINT:

1. Create a power point presentation with animation.
2. Create a power point presentation with 4 slides. Set slide transition time of 3 seconds and display your presentation.

MS – ACCESS:

1. Create a student database. Set a field to primary key.
2. Create a salary bill preparation with report.

HTML:

1. Develop a HTML document for your profile. Design the page with background color, text color, and suitable headings in different formats.
2. Develop a HTML document for our college course details. Design the page with nested
3. Ordered and unordered lists.
4. Design your class timetable using table tags.
5. Develop a HTML document for your department with the list of items shown in a frame. When you click an item, the details of the item must appear in another frame.
6. Develop a HTML document using form attributes.
7. Design our college website.

TEXT BOOKS:

1. Comdex Computer Course Kit, Vikas Gupta, (XP Edition), 2009, Dreamtech Press, New Delhi.
2. HTML for beginners, FiruzaAibara , 2nd Edition, 2010, Shrott Publishers and Distributors Pvt. Ltd.,

REFERENCE BOOKS:

1. Introduction to Computers, Peter Norton, sixth edition, 2008, McGraw Hill Companies.
2. The Complete Reference Office 2000, Stephen L. Nelson, 1999, Tata McGraw – Hill Publishing Company Limited, New Delhi.

3. Computer Fundamentals and windows with Internet Technology N.Krishnan, 2018, Scitech Publications (India) Pvt Ltd.
4. HTML The Complete Reference, Thomas A. Powell, Second Edition, McGraw Hill Osborne Media, 2003.
5. HTML & Web Design Tips & Techniques Tips and Techniques, Jamsa Kris, Andy Anderson, Konrad King, McGraw Hill, India, 2002.

WEBSITE REFERENCE:

1. <https://www.docsity.com/en/office-automation-computer-fundamentals-lecture-slides/286724/>
2. <https://khpditweebly.weebly.com/office-automation-notes.html>
3. <https://codescracker.com/bca/bca-computer-fundamental-and-office-automation.html>
4. <https://html.com/>
5. <https://www.kullabs.com/classes/subjects/units/lessons/notes/note-detail/1191>
6. https://www.cs.uct.ac.za/mit_notes/web_programming.html
7. <https://www.geeksforgeeks.org/html-basics/>
8. <https://www.yourhtmlsource.com/starthere/whatishtml.html>.