

**MARIS STELLA COLLEGE (AUTONOMOUS),VIJAYAWADA-8**

**(Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

Subject: Computer Science

Semester: I

Course Title: Essentials and Applications  
of Mathematical, Physical  
& Chemical Sciences

Course Code: 23SCCCEA14

No. of Hours: 75

LTP: 401

Credits: 4

**Objectives**

- To provide students with a comprehensive understanding of the essential concepts and applications of mathematical, physical, and chemical sciences.
- To develop students' critical thinking, problem-solving, and analytical skills in these areas.
- To apply scientific principles to real-world situations.

**Course Outcomes**

After successful completion of this course, the student will be able to

CO1: Apply critical thinking skills to solve complex problems involving complex numbers, trigonometric ratios, vectors, and statistical measures.

CO2: Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations

CO3: Explain the basic principles and concepts underlying a broad range of fundamental areas of chemistry and to Connect their knowledge of chemistry to daily life.

CO4: Understand the interplay and connections between mathematics, physics, and chemistry in various applications. Recognize how mathematical models and physical and chemical

CO5: To explore the history and evolution of the Internet and to gain an understanding of network security concepts, including threats, vulnerabilities, and countermeasures.

**UNIT-I: (9 Hrs.)**

ESSENTIALS OF MATHEMATICS

Complex Numbers: Introduction of the new symbol  $i$  – General form of a complex number – Modulus- Amplitude form and conversions Trigonometric Ratios: Trigonometric Ratios and their relations – Problems on calculation of angles Vectors: Definition of vector addition – Cartesian form – Scalar and vector product and problems Statistical Measures: Mean, Median, Mode of a data and problems

### **UNIT-II: (9 Hrs.)**

#### **ESSENTIALS OF PHYSICS**

Definition and Scope of Physics- Measurements and Units - Motion of objects: Newtonian Mechanics and relativistic mechanics perspective - Laws of Thermodynamics and Significance Acoustic waves and electromagnetic waves- Electric and Magnetic fields and their interactions Behaviour of atomic and nuclear particles- Wave-particle duality, the uncertainty principle Theories and understanding of universe

### **UNIT-III: (9 Hrs.)**

#### **ESSENTIALS OF CHEMISTRY**

Definition and Scope of Chemistry- Importance of Chemistry in daily life - Branches of chemistry and significance- Periodic Table- Electronic Configuration, chemical changes, classification of matter, Biomolecules- carbohydrates, proteins, fats and vitamins.

### **UNIT-IV: (9 Hrs.)**

#### **APPLICATIONS OF MATHEMATICS, PHYSICS & CHEMISTRY:**

Applications of Mathematics in Physics & Chemistry: Calculus , Differential Equations & Complex Analysis Application of Physics in Industry and Technology: Electronics and Semiconductor Industry, Robotics and Automation, Automotive and Aerospace Industries, Quality Control and Instrumentation, Environmental Monitoring and Sustainable Technologies. Application of Chemistry in Industry and Technology: Chemical Manufacturing, Pharmaceuticals and Drug Discovery, Materials Science, Food and Beverage Industry.

## **UNIT– V: (9 Hrs.)**

### **ESSENTIALS OF COMPUTER SCIENCE:**

Milestones of computer evolution - Internet, history, Internet Service Providers, Types of Networks, IP, Domain Name Services, applications.

Ethical and social implications: Network and security concepts- Information Assurance Fundamentals, Cryptography-Symmetric and Asymmetric, Malware, Firewalls, Fraud Techniques- Privacy and Data Protection

## **CO-CURRICULAR ACTIVITIES & EVALUATION METHODS: (30 Hrs.)**

Unit 1: Activity: Quiz on computer hardware and software concepts

Evaluation Method: Objective-based quiz assessing knowledge and understanding

Unit 2: Activity: Problem-solving using Decision-Making Statements

Evaluation Method: Correctness of decision-making logic

Unit 3: Activity: Array and String Program Debugging

Evaluation Method: Identification and correction of errors in code

Unit 4: Activity: Pair Programming Exercise on Functions

Evaluation Method: Collaboration and Code Quality

Unit 5: Activity: Structured Programming Assignment

Evaluation Method: Appropriate use of structures and nested structures

## **Prescribed Text Books**

1. Functions of one complex variable by John.B.Conway, Springer- Verlag.
2. Elementary Trigonometry by H.S.Hall and S.R.Knight
3. Vector Algebra by A.R.Vasishtha, Krishna Prakashan Media(P)Ltd.
4. Basic Statistics by B.L.Agarwal, New age international Publishers
4. University Physics with Modern Physics by Hugh D. Young and Roger A. Freedman
5. Fundamentals of Physics by David Halliday, Robert Resnick, and Jearl Walker
6. Physics for Scientists and Engineers with Modern Physics" by Raymond A. Serway and John W. Jewett Jr.

## **Reference Books**

1. "Physics for Technology and Engineering" by John Bird
2. "Chemistry in daily life" by Kirpal Singh
3. "Chemistry of bio molecules" by S. P. Bhutan
4. "Fundamentals of Computers" by V. Raja Raman
5. "Cyber Security Essentials" by James Graham, Richard Howard, Ryan Olson

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**SYLLABUS**

Subject: Computer Science

Semester: I

Course Title: Advances in Mathematical,  
Physical & Chemical Sciences

Course Code: 23SCCCAS14

No. of Hours: 75

LTP: 401

Credits: 4

**Objectives**

- To provide students with a comprehensive understanding of the essential concepts and applications of mathematical, physical, and chemical sciences.
- To develop students' critical thinking, problem-solving, and analytical skills in these areas.
- To apply scientific principles to real-world situations.

**Course Outcomes**

After successful completion of this course, the student will be able to

CO1: Apply critical thinking skills to solve complex problems involving complex numbers, trigonometric ratios, vectors, and statistical measures.

CO2: Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations

CO3: Explain the basic principles and concepts underlying a broad range of fundamental areas of chemistry and to Connect their knowledge of chemistry to daily life.

CO4: Understand the interplay and connections between mathematics, physics, and chemistry in various applications. Recognize how mathematical models and physical and chemical

CO5: To explore the history and evolution of the Internet and to gain an understanding of network security concepts, including threats, vulnerabilities, and countermeasures.

**UNIT-I: (9 Hrs.)**

ADVANCES IN BASICS MATHEMATICS:

Straight Lines: Different forms – Reduction of general equation into various

forms –Point of intersection of two straight lines Limits and Differentiation: Standard limits – Derivative of a function –Problems on product rule and quotient rule Integration: Integration as a reverse process of differentiation – Basic methods of integration Matrices: Types of matrices – Scalar multiple of a matrix – Multiplication of matrices – Transpose of a matrix and determinants

#### **UNIT-II: (9 Hrs.)**

##### **ADVANCES IN PHYSICS:**

Renewable energy: Generation, energy storage, and energy-efficient materials and devices. Recent advances in the field of nanotechnology: Quantum dots, Quantum Communication- recent advances in biophysics- recent advances in medical physics- Shape Memory Materials.

#### **UNIT-III: (9 Hrs.)**

##### **ADVANCES IN CHEMISTRY:**

Computer aided drug design and delivery, nano sensors, Chemical Biology, impact of chemical pollutants on ecosystems and human health, Dye removal - Catalysis method

#### **UNIT-IV: (9 Hrs.)**

##### **ADVANCED APPLICATIONS OF MATHEMATICS, PHYSICS & CHEMISTRY**

Mathematical Modelling applications in physics and chemistry Application of Renewable energy: Grid Integration and Smart Grids, Application of nanotechnology: Nanomedicine, Application of biophysics: Biophysical Imaging, Biomechanics, Neurophysics, Application of medical physics: Radiation Therapy, Nuclear medicine, Solid waste management, Environmental remediation- Green Technology, Water treatment.

#### **UNIT- V: (9 Hrs.)**

##### **ADVANCED APPLICATIONS OF COMPUTER SCIENCE**

Number System-Binary, Octal, decimal, and Hexadecimal, Signals-Analog, Digital, Modem, Codec, Multiplexing, Transmission media, error detection and correction- Parity check and CRC, Networking devices Repeater, hub, bridge, switch, router, gateway

## **CO-CURRICULAR ACTIVITIES & EVALUATION METHODS: (30 Hrs.)**

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Evaluation Method: Correctness of decision-making logic

Unit 3: Activity: Array and String Program Debugging

Evaluation Method: Identification and correction of errors in code

Unit 4: Activity: Pair Programming Exercise on Functions

Evaluation Method: Collaboration and Code Quality

Unit 5: Activity: Structured Programming Assignment

Evaluation Method: Appropriate use of structures and nested structures

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2. Elementary Trigonometry by H.S.Hall and S.R.Knight
3. Vector Algebra by A.R.Vasishtha, Krishna Prakashan Media(P)Ltd.
4. Basic Statistics by B.L.Agarwal, New age international Publishers
4. University Physics with Modern Physics by Hugh D. Young and Roger A. Freedman
5. Fundamentals of Physics by David Halliday, Robert Resnick, and Jearl Walker
6. Physics for Scientists and Engineers with Modern Physics" by Raymond A. Serway and John W. Jewett Jr.

### **Reference Books**

1. Physics for Technology and Engineering" by John Bird
8. Chemistry in daily life by Kirpal Singh
2. Chemistry of bio molecules by S. P. Bhutan
3. Fundamentals of Computers by V. Raja Raman
4. Cyber Security Essentials by James Graham, Richard Howard, Ryan Olson

**MARIS STELLA COLLEGE (AUTONOMOUS),VIJAYAWADA-8**  
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**SYLLABUS**

Subject: Computer Science

Semester: II

Course Title: Problem Solving Using C

Course Code: 23CSCCPC23

No. of Hours: 45

LTP: 300

Credits: 3

**Objectives**

- To explore basic knowledge on computers.
- To familiarize the fundamentals and datatypes of C.
- To develop C programs using different concepts in C.

**Course Outcomes**

After successful completion of this course, the student will be able to

**CO1:** Understand the working of a digital computer and fundamental constructs of programming.

**CO2:** Analyze and develop a solution to a given problem with suitable control structures.

**CO3:** Apply the derived data types in program solutions.

**CO4:** Use the 'C' language constructs in the right way.

**CO5:** Apply the Dynamic Memory Management for effective memory utilization.

**UNIT-I: (8 Hrs.)**

**Introduction to computer and programming:** Introduction, Basic block diagram and functions of various components of computer, Concepts of Hardware and software, Types of software, Compiler and interpreter, Concepts of Machine level, Assembly level and high-level programming, Flowcharts and Algorithms

**Fundamentals of C:** History of C, Features of C, C Tokens-variables and keywords and identifiers, constants and Data types, Rules for constructing variable names, Operators, Structure of C program, Input /output statements in C-Formatted and Unformatted I/O

**UNIT-II: (8 Hrs.)**

**Control statements:** Decision making statements: if, if else, else if ladder, switch statements. Loop control statements: while loop, for loop and do-while loop. Jump Control statements: break, continue and goto



**UNIT-III: (8 Hrs.)**

**Derived data types in C: Arrays:** One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation

**Strings:** Declaring & Initializing string variables; String handling functions, Character handling functions

**UNIT-IV: (8 Hrs.)**

**Functions:** Function Prototype, definition and calling. Return statement. Nesting of functions. Categories of functions. Recursion, Parameter Passing by address & by value. Local and Global variables

**Storage classes:** automatic, external, static and register

**Pointers:** Pointer data type, Pointer declaration, initialization, accessing values using pointers. Pointer arithmetic. Pointers and arrays, pointers and functions

**UNIT- V: (8 Hrs.)**

**Dynamic Memory Management:** Introduction, Functions-malloc, calloc, realloc, free

**Structures:** Basics of structure, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers

**Unions** - Union definition; difference between Structures and Unions.

**CO-CURRICULAR ACTIVITIES & EVALUATION METHODS: (5 Hrs.)**

**Unit 1: Activity:** Quiz on computer hardware and software concepts

**Evaluation Method:** Objective-based quiz assessing knowledge and understanding

**Unit 2: Activity:** Problem-solving using Decision-Making Statements

**Evaluation Method:** Correctness of decision-making logic

**Unit 3: Activity:** Array and String Program Debugging

**Evaluation Method:** Identification and correction of errors in code

**Unit 4: Activity:** Pair Programming Exercise on Functions

**Evaluation Method:** Collaboration and Code Quality

**Unit 5: Activity:** Structured Programming Assignment

**Evaluation Method:** Appropriate use of structures and nested structures

### **Prescribed Text Books**

1. E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, 6th Edn, ISBN-13: 978- 1- 25- 90046-2.
2. Herbert Schildt, —Complete Reference with C, Tata McGraw Hill, 4th Edn., ISBN- 13: 9780070411838, 2000.
3. Computer fundamentals and programming in C, REEMA THAREJA, OXFORD UNIVERSITY PRESS.

### **Reference Books**

1. E Balagurusamy, COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
2. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
3. Henry Mullish&Huubert L.Cooper: The Spirit of C An Introduction to modern Programming, Jaico Pub. House,1996.
4. Y kanithkar, let us C BPB, 13 th edition-2013, ISBN:978-8183331630,656 pages.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8**  
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**Subject: Computer Science**

**Semester: II**

**Course Title: Problem Solving Using C**

**Course Code: 23CSCCPC23**

**Time: 3 Hrs.**

**Max. Marks: 100**

**BLUEPRINT**

**SECTION – A**

Answer **FIVE** questions

**5 x 8 = 40 M**

<b>Q. No.</b>	<b>UNIT</b>	<b>Marks Weightage</b>	<b>RBT LEVEL</b>
1	I	8	RBT1 – 3Q RBT2 – 3Q RBT3 – 4Q
2	I	8	
3	II	8	
4	II	8	
5	III	8	
6	III	8	
7	IV	8	
8	IV	8	
9	V	8	
10	V	8	

**SECTION – B**

Answer any **ALL** questions

**5 x 12 = 60 M**

<b>Q. No.</b>	<b>UNIT</b>	<b>Marks Weightage</b>	<b>RBT LEVEL</b>
11(a) OR 11(b)	I	12	RBT1 – 2Q RBT2 – 2Q RBT3 – 1Q
12(a) OR 12(b)	II	12	
13(a) OR 13(b)	III	12	
14(a) OR 14(b)	IV	12	
15(a) OR 15(b)	V	12	

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**Subject: Computer Science**

**Semester: II**

**Course Title: Problem Solving Using C**

**Course Code: 23CSCPC23**

**Time: 3 Hrs.**

**Max. Marks: 100 M**

**SECTION – A**

Answer **FIVE** questions

**5 x 8 = 40 M**

1. Differentiate the concepts of hardware and software with examples.
2. Write a C program to print 'Hello World !!!' with a flowchart and respective algorithm.
3. Simplify about Jump Control statements with examples.
4. Write a C program to find the given in odd or even with output.
5. Discuss about declaration, initialization and Memory representation of arrays in C with example.
6. Relate declaration and initialization of string variables in C with example.
7. Discuss about recursion in C with example.
8. How does the pointers access values in C program?
9. Discuss about the declaration and initialization of structures in C with example.
10. Construct a C program using unions in C with output.

**SECTION – B**

Answer any **ALL** questions

**5 x 12 = 60 M**

11. (a) Draw a neat sketch of the basic block diagram and functions of various components of computer.

OR

(b) Explain about the Operators used in C with examples.

12. (a) Discuss decision making statements in C with examples.

OR

(b) Explain about loop control statements in C with examples.

13. (a) Construct a C program to perform 2\*2 matrices with output.

OR

(b) Built a C program using the string handling functions in C with output.

14. (a) Write a C program for call by value and call by reference with output.

OR

(b) Illustrate a C program using pointers using functions in C with output

15. (a) Discuss dynamic memory management in C with example.

OR

(b) Demonstrate a C program read data of 10 employees with a structure in C with output

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA –8**  
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**SYLLABUS**

Subject: Computer Science	Semester: IV	
Course Title: Problem Solving Using C - Practical	Course Code: 23CSP1PC21	
No. of Hrs.:30	LTP: 002	Credits:1

**Objectives**

- To learn how to solve common types of computing problems in C.
- To gain knowledge introducing the concepts in C with respective logic.

**Course Outcomes**

After successful completion of this course, the student will be able to

**CO1:** Apply the derived data types in program solutions in C.

**CO2:** Use the 'C' language syntaxes in the right way.

**CO3:** Analyze and develop a solution to a given problem with suitable control structures in C.

**List of Experiments:**

1. A. Write a program to calculate simple & compound interest  
B. Write a C program to interchange two numbers.
2. Find the biggest of three numbers using C.
3. Write a c program to find the sum of individual digits of a positive integer.
4. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
5. Write a c program to check whether a number is Armstrong or not.
6. Write a c program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a c program that implements searching of given item in given list
8. Write a c program that uses functions to perform the following: Addition of two matrices. Multiplication of two matrices.

9. Write a program for concatenation of two strings.
10. Write a program for length of a string with and without String Handling functions
11. Write a program to demonstrate Call by Value and Call by Reference mechanism
12. Write a Program to find GCD of Two numbers using Recursion
13. Write a c program to perform various operations using pointers.
14. Write a c program to read data of 10 employees with a structure of 1.employee id 2.aadar no, 3.title, 4.joined date, 5.salary, 6.date of birth, 7.gender, 8.department.
15. Write a Program to demonstrate dynamic arrays using Dynamic Memory Management functions.

**Prescribed Text Book**

1. Herbert Schildt, —Complete Reference with C, Tata McGraw Hill, 4th Edn., ISBN- 13: 9780070411838, 2000

**Reference Text Book**

1. Y kanithkar, let us C BPB, 13 th edition-2013, ISBN:978-8183331630,656 pages.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**Practical-Scheme of Valuation**

**Time: 3 Hrs.**

**Max. Marks: 50**

<b>Practical</b>	<b>Marks</b>
Program Writing	15 M
Program Execution	15 M
Viva	10 M
Practical Record	10 M
<b>Total</b>	<b>50 M</b>



**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8**  
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**SYLLABUS**

Subject: Computer Science

Semester: II

Course Title: Digital Logic Design

Course Code: 23CSCCDL23

No. of Hrs.: 45

LTP:300

Credits:3

**Objectives**

- To explore the foundational principles of number systems, negative number representation, binary arithmetic, Boolean algebra theory, and the map method for minimizing switching functions.
- To introduce fundamental tools for designing both combinational and sequential digital logic circuits.
- To utilize simulation tools to simulate and validate digital circuits, ensuring accuracy and functionality before hardware implementation.

**Course Outcomes**

After successful completion of this course, a student will be able to

**CO1:** Understand how to convert numbers from one radix to another radix and perform arithmetic operations.

**CO2:** Simplify Boolean functions using Boolean algebra and k-maps Design adders and subtractors circuits.

**CO3:** Analyze, design, and implement both basic arithmetic circuits and integrated ripple adder/subtractor circuits.

**CO4:** Design combinational logic circuits such as decoders, encoders, multiplexers and demultiplexers.

**CO5:** create truth tables and excitation tables for various flip-flops including RS, JK, T, and D flip-flops.

**Unit- I (8 Hrs.)**

Number Systems: Binary, octal, decimal, hexadecimal number systems, conversion of numbers from one radix to another radix,  $r$ 's,  $(r-1)$ 's complements, signed binary numbers, addition and subtraction of unsigned and signed numbers, weighted and unweighted codes.

**Unit - II (8 Hrs.)**

Logic Gates and Boolean Algebra: NOT, AND, OR, universal gates, X OR and X-NOR gates, Boolean laws and theorems, complement and dual of a logic

function, canonical and standard forms, two-level realization of logic functions using universal gates, minimizations of logic functions (POS and SOP) using Boolean theorems, K-map (up to four variables), don't care conditions.

### **Unit-III (8 Hrs.)**

Combinational Logic Circuits – 1: Design of half adder, full adder, half subtractor, full subtractor, ripple adders, and subtractors ripple adder/subtractor.

### **Unit- IV (8 Hrs.)**

Combinational Logic Circuits – 2: Design of decoders, encoders, priority encoder, multiplexers, demultiplexers, higher order decoders, demultiplexers and multiplexers, realization of Boolean functions using decoders, multiplexers.

### **Unit- V (8 Hrs.)**

Sequential Logic Circuits: Classification of sequential circuits, latch, and flip-flop, RS- latch using NAND and NOR Gates, truth tables, RS, JK, T and D flip-flops, truth and excitation tables, conversion of flip-flops, flip-flops with asynchronous inputs (preset and clear).

Design of registers, shift registers, bidirectional shift registers, universal shift registers, design of ripple counters, synchronous counters, and variable modulus counters.

### **CO-CURRICULAR ACTIVITIES & EVALUATION METHODS: (5 Hrs.)**

#### **Unit 1:**

- **Activity:** JAM (Just a Minute) Session: Explaining Radix Conversion.
- **Evaluation Method:** Communication Skills and Knowledge Presentation

#### **Unit 2:**

- **Activity:** Boolean Algebra Assignment
- **Evaluation Method:** Assignment Completion and Correctness

#### **Unit 3:**

- **Activity:** Hands-on Lab Activity: Building Adder and Subtractor Circuits
- **Evaluation Method:** Lab Performance and Correctness of Circuit Implementation

**Unit 4:**

- **Activity:** Group Discussion: Applications of Decoders, Encoders, Multiplexers
- **Evaluation Method:** Participation and Critical Thinking

**Unit 5:**

- **Activity:** Quiz on Flip-Flops and Register-Counter Design
- **Evaluation Method:** Quiz Performance and Knowledge Retention

**Prescribed Text Book**

M. Morris Mano, Michael D Ciletti, "Digital Design", 5th edition, PEA

**Reference Books**

1. Data 1. Kohavi, Jha, "Switching and Finite Automata Theory", 3rd edition, Cambridge.
2. Leach, Malvino, Saha, "Digital Principles and Applications", 7th edition, TMH.
3. Roth, "Fundamentals of Logic Design", 5th edition, Cengage.

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**BLUEPRINT**

Subject: Computer Science

Semester: II

Course Title: Digital Logic Design

Course Code: 23CSCCDL23

Time: 3 Hrs.

Max. Marks: 100

**Section - A**

Answer any **FIVE** questions

**5×8 = 40M**

QuestionNo.	Unit	MarksWeightage	RBTLevel
1	I	8	RBT1-3Q RBT2-3Q RBT3- 4Q
2	I	8	
3	II	8	
4	II	8	
5	III	8	
6	III	8	
7	IV	8	
8	IV	8	
9	V	8	
10	V	8	

**Section - B**

Answer **ALL** questions

**5×12 =60M**

Question No.	Unit	Marks Weightage	RBT Level
11(a) OR 11(b)	I	12	RBT1-2Q
12(a) OR 12(b)	II	12	RBT2-2Q
13(a) OR 13(b)	III	12	RBT3-1Q
14(a) OR 14(b)	IV	12	<b>Every question's (a) and (b) must be at the same RBT level.</b>
15(a) OR 15(b)	V	12	

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**Model Question Paper**

Subject: Computer Science  
Course Title: Digital Logic Design  
Time: 3 Hrs.

Semester: II  
Course Code: 23CSCCDL23  
Max. Marks: 100

**Section – A**

Answer any **FIVE** questions

**5×8 = 40M**

1. a). Convert  $(8B7.A4)_{16}$  to its binary equivalent.  
b). Convert  $(714.36)_8$  to its hexadecimal equivalent.
2. Illustrate the concept of r's complement and  $(r-1)$ 's complement in the context of number systems.
3. Discuss the significance of universal gates in digital circuit design
4. Explain the concept of canonical and standard forms in Boolean algebra.
5. Design a full adder by using two half-adders
6. Implement a 4-bit binary to BCD code converter
7. What is a multiplexer? Construct a 8:1 multiplexer with two 4:1 multiplexers.
8. Design a 4 to 2 priority encoder.
9. What is a Flip flop? Explain the SR flip flop with the help of logic diagram, truth table, and excitation table
10. Convert SR flip-flop to JK flip-flop

**Section – B**

Answer **ALL** questions

**5×12 =60M**

11. a) Compare and contrast the advantages and disadvantages of weighted and unweighted codes in digital systems with examples.

OR

- b) List examples to demonstrate r's complement and  $(r-1)$ 's complement application in digital arithmetic operations.
12. a) Simplify the following function using K-Map:  
$$F(A,B,C,D)=\sum(0,2,3,8,10,11,12,14)$$

OR

- b) i) Convert the given SOP to POS  $XY+X'Z+YZ$   
ii) Reduce the following boolean expression:  $A(A+B)$
13. a) Implement Carry look a-head adder circuit and explain its operation briefly

OR

- b) Design a 4-bit adder-subtractor circuit and explain its operation.
14. a) Implement the following Boolean function using :1 Mux:  
 $F(A,B,C,D)=\pi(1,5,8,9,12,15)$

OR

- b) What is a decoder? Construct a 4:16 decoder with two 3:8 decoders
15. a) What is a register? Explain the operation of the universal Shift register.

OR

- b) Design a 3-bit synchronous and asynchronous counter.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA –8**  
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**SYLLABUS**

Subject: Computer Science	Semester: III	
Course Title: Digital Logic Design – Practical	Course Code: 23CSP2DL21	
No. of Hrs.:30	LTP: 002	Credits:1

**Objectives**

- To design, implement, and test digital logic circuits utilizing software tools effectively.
- To utilize simulation tools to simulate and validate digital circuits, ensuring accuracy and functionality before hardware implementation.

**Course Outcomes**

After successful completion of this course, a student will be able to

**CO1:** Demonstrate proficiency in designing, constructing, and testing digital logic circuits using simulation software.

**CO2:** Apply theoretical knowledge of digital logic design concepts, to practical circuit implementations.

**CO3:** Investigate the behavior and functionality of flip-flops within sequential circuits to analyze their operation and performance.

**List of Experiments**

**Simulators:** <https://sourceforge.net/projects/gatesim/> or <https://circuitverse.org/> or any free open-source simulator

1. Introduction to digital electronics lab- nomenclature of digital ICs, specifications, study of the data sheet, concept of Vcc and ground, verification of the truth tables of logic gates using TTL ICs.
2. Implementation of the given Boolean functions using logic gates in both SOP and POS forms.
3. Realization of basic gates using universal gates.
4. Design and implementation of half and full adder circuits using logic gates.

5. Design and implementation of half and full subtractor circuits using logic gates.
6. Verification of stable tables of RS, JK, T and D flip-flops using NAND gates.
7. Verification of stable tables of RS, JK, T and D flip-flops using NOR gates.
8. Implementation and verification of Decoder and encoder using logic gates.
9. Implementation of 4X1 MUX and DeMUX using logic gates.
10. Implementation of 8X1 MUX using suitable lower order MUX.
11. Implementation of 7-segment decoder circuit.
12. Implementation of 4-bit parallel adder.
13. Design and verification of 4-bit synchronous counter.
14. Design and verification of 4-bit asynchronous counter.

### **Prescribed Text Book**

M. Morris Mano, Michael D Ciletti, "Digital Design", 5th edition, PEA

### **Reference Book**

Data 1. Kohavi, Jha, "Switching and Finite Automata Theory", 3rd edition, Cambridge.



**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
(Affiliated to Krishna University, Machilipatnam)

**Practical-Scheme of Valuation**

**Time: 3 Hrs.**

**Max. Marks: 50**

<b>Practical</b>	<b>Marks</b>
Program Writing	15M
Program Execution	15M
Viva	10M
Practical Record	10M
<b>Total</b>	<b>50M</b>

**MARIS STELLA COLLEGE (AUTONOMOUS),VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**  
**SYLLABUS**

Subject: Computer Science

Semester: II

Course Title: Digital Literacy

Course Code:23SECDL22

No. of Hours: 30

LTP: 200

Credits: 2

**Objectives**

- To explore basic knowledge on computer operations and internet security.
- To familiarize e-bill payments and other applications using Internet.

**Course Outcomes**

After successful completion of this course, the student will be able to

CO1: Understand the operations of the computer.

CO2: Apply the registration steps for an E-mail account and its operations.

CO3: Analyze the working of making bill payments and use other applications of internet.

**UNIT–I: (9 Hrs.)**

**Operate the elements of a computer and performing operations on the computer**

Operate the elements of a computer including power cord, power switch, network connecting cable, USB ports, Mouse operations, Keyboard operations, interface icons, GUI elements, Editing options, perform operations including switching on the computer, logging in, locating a file, opening a file, printing a document, storing a file with proper extension, creating a folder/ sub folder in a volume on hard disk and desktop, shifting files from one folder to another, shutting off the computer

**UNIT–II: (9 Hrs.)**

**Access the Internet to browse information and E-mail operation**

Access the Internet, use a search engine, find information on the topic of interest, register for a web-based E-mail account, access E-mail with attachments, reply to an E-mail, forward an E-mail and delete an E-mail message

### **UNIT–III: (9 Hrs.)**

#### **Make bill payments, other applications using Internet and word processing**

Make utility bill payments, booking bus/train tickets, bank transactions, personal transactions, job search through employment portals, mobile/DTH recharge, word processing basics, creating, editing and formatting of text, saving and printing of word document.

### **CO-CURRICULAR ACTIVITIES: (3 Hrs.)**

**Unit 1: Activity:** switching on the computer, logging in, locating a file, opening a file, printing a document, file and its extension, creating a folder/sub folder on hard disk and desktop, shifting files from one folder to another, shutting off the computer

**Unit 2: Activity:** Access the Internet, find information on the topic , register for E-mail account, access E-mail with attachments, reply to an E-mail, forward an E-mail and delete an E-mail message

**Unit 3: Activity:** bill payments, booking bus/train tickets, employment portals, mobile/DTH recharge.

### **Prescribed Text Book**

1. Appreciation of Digital Literacy Handbook published by Department of Electronics & Information Technology, Ministry of Communications & Information Technology, Government of India

### **Reference Links**

1. [https://youtu.be/b2X\\_j5Bz-VM](https://youtu.be/b2X_j5Bz-VM)
2. <https://youtu.be/jln3-P6L2ro>
3. <https://youtu.be/cfDisqUMIvw>
4. [https://youtu.be/3h\\_PyURcdrc](https://youtu.be/3h_PyURcdrc)
5. <https://youtu.be/EqN0LBcydBg>

**MARIS STELLA COLLEGE ( AUTONOMOUS), VIJAYAWADA- 8**  
**( Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

**Subject: Computer Science**

**Semester: III**

**Course Title: Database Management  
Systems**

**Course Code: 20CSCCDB33**

**No. of Hours: 60**

**LTP: 400**

**Credits: 3**

**Objectives**

- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- To analyse the relational database design principles.

**Course Outcomes**

**CO1:** Explain the basic concepts and various data models used in database design.

**CO2:** Analyse and apply the concept of entity- relationship model.

**CO3:** Apply relational database theory to create a database.

**CO4:** Convert the ER-model to relational tables and formulate SQL queries.

**CO5:** Discuss PL/SQL concepts

**UNIT – I**

**(12 Hrs.)**

**Overview of Database Management System:** Introduction to data, information, database, database management systems, file -based system, Drawbacks of file - Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, Three schema architecture of data base, costs and risks of database approach.

**UNIT – II**

**(12 Hrs.)**

**Entity- Relationship Model:** Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity- relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modelling.

**The Client server database environment:** Client server architecture, 3 tier architectures.

**Data and database administration:** Role of data and DBA, managing data security, repositories.

**UNIT – III****(12 Hrs.)**

**Relational Model:** Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra. Functional dependencies and normal forms upto 3<sup>rd</sup> normal form.

**UNIT – IV****(12 Hrs.)**

**Structured Query Language:** Introduction, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query - Programming Exercises

**UNIT – V****(12 Hrs.)**

**PL/SQL:** Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control Procedure, Function, Database Triggers, Types of Triggers - Programming Exercises.

**Co-Curricular Activities**

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

**Prescribed Books**

- Principles of Database Systems by J. D. Ullman
- Fundamentals of Database Systems by R. Elmasri and S. Navathe

**Reference Books**

- Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
- Database Management Systems by Raghu Ramakrishnan, McGrawhill
- SQL: The Ultimate Beginners Guide by Steve Tale.

**MARIS STELLA COLLEGE ( AUTONOMOUS), VIJAYAWADA- 8**  
**( Affiliated to Krishna University, Machilipatnam)**  
**SYLLABUS**

**Subject: Computer Science**

**Semester: III**

**Course Title: Database Management  
Systems - Practical**

**Course Code: 20CSP3DB32**

**No of hours: 30**

**LTP: 002**

**Credits: 2**

**Objectives**

- To master the basics of SQL and construct queries using SQL.
- To analyze the relational database design principles.

**Course Outcomes**

**CO1:** Understand the basics of SQL and create database tables and to establish relationships between tables.

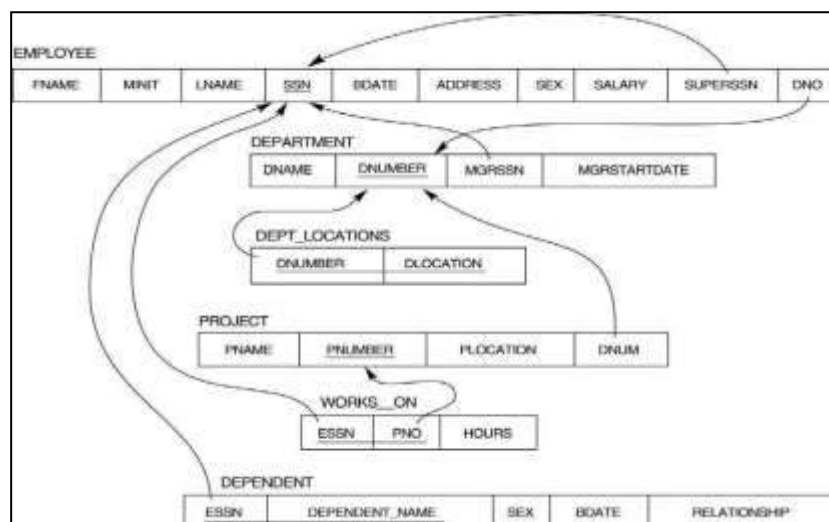
**CO2:** Design and create relational database systems.

**CO3:** Formulate queries using SQL DML/DDDL/DCL commands.

**List of practicals**

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.

Relational Database Schema - COMPANY



## Questions to be performed on above schema

1. Create above tables with relevant *Primary Key, Foreign Key and other constraints*
2. Populate the tables with data
3. Display all the details of all employees working in the company.
4. Display *ssn, lname, fname, address* of employees who work in department no 7.
5. Retrieve the *Birthdate and Address* of the employee whose name is 'Franklin T. Wong'
6. Retrieve the name and salary of every employee
7. Retrieve all distinct salary values
8. Retrieve all employee names whose address is in 'Bellaire'
9. Retrieve all employees who were born during the 1950s
10. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000( inclusive)
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager' s last name, address, and birth date.
15. For each employee, retrieve the employee' s name, and the name of his or her immediate supervisor.
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project.
18. Increase the salary of all employees working on the 'Product X' project by 15%. Retrieve employee name and increased salary of these employees.
19. Retrieve a list of employees and the project name each works in, ordered by the employee' s department, and within each department ordered alphabetically by employee first name.
20. Select the names of employees whose salary does not match with salary of any employee in department 10.

21. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
22. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.
23. Find the sum of the salaries and number of employees of all employees of the ' Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this department.
24. Select the names of employees whose salary is greater than the average salary of all employees in department 10.
25. Delete all dependents of employee whose *ssn* is '123456789' .
26. Perform a query using alter command to drop/add field and a constraint in Employee table.





## **UNIT – II** **(12 Hrs.)**

**Arrays:** Types of Arrays, arrayname.length, Command Line Arguments

**Strings:** Creating Strings, String Class Methods: Comparision, reverse, length, Concatination

**Classes and Objects:** Object Creation, Initializing the Instance Variables, Access Specifiers in Java, Constructors

**Methods in Java:** Static Methods, The keyword 'this', Passing Primitive Data Types to Methods, Passing Objects to Methods, Passing Arrays to Methods, Recursion, Finalizer Methods

**Inheritance:** Inheritance, The keyword 'super', The Protected Specifier, Types of Inheritance: Single Inheritance, Multi - level Inheritance, Hierarchical Inheritance, Hybrid Inheritance - Programming Exercises

## **UNIT – III** **(12 Hrs.)**

**Polymorphism:** Polymorphism with Variables, Polymorphism using Methods, final Class

**Type Casting:** Types of Data Types: Widening and narrowing typecasting

**Abstract Classes:** Abstract Method and Abstract Class

**Interfaces:** Interface, Multiple Inheritance using Interfaces

**Packages:** Package, Different Types of Packages

**Exception Handling:** Errors in Java Program, Exceptions, throw and throws Clause, Types of Exceptions-Programming Exercises

## **UNIT – IV** **(12 Hrs.)**

**Streams:** Stream, Creating a File using FileOutputStream, Reading Data from a File using FileInputStream, Creating a File using FileWriter, Reading a File using FileReader, Counting Number of Characters in a File, File Copy, File Class

**Threads:** Thread Life Cycle, Single Tasking, Multi Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Thread Priorities, thread Group-Programming Exercises

## **UNIT – V** **(12 Hrs.)**

**Applets:** Applet Life Cycle , Creating an Applet, Uses of Applets, <APPLET> tag, A Simple Applet, Animation in Applets, A Simple Game with an Applet

**Java Database Connectivity:** Introduction to JDBC , JDBC Drivers, Working with Oracle Database, Working with MySQL Database, Connecting to a Database: Registering the Driver, Preparing SQL Statements, Using jdbc-odbc Bridge Driver to Connect to Oracle Database, Retrieving Data from MySQL Database-Programming Exercises

**Co-Curricular Activities**

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

**Prescribed Book**

1. Deitel & Deitel. Java TM: How to Program, PHI (2007)

**Reference Books**

1. Core Java: An Integrated Approach, Authored by Dr. R. NageswaraRao&Kogent Learning Solutions Inc.
2. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA Mc Graw- Hill Company.
3. John R. Hubbard, Programming with Java, Second Edition , Schaum's outline Series, TMH.

**MARIS STELLA COLLEGE ( AUTONOMOUS), VIJAYAWADA- 8**  
**( Affiliated to Krishna University, Machilipatnam)**  
**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: IV</b>
<b>Course Title: Object oriented programming through Java - Practical</b>	<b>Course Code: 20CSP4PJ42</b>
<b>No of hours: 30</b>	<b>LTP: 002</b>
	<b>Credits: 2</b>

**Objectives**

- To learn basic Java language syntax and semantics to write Java programs.
- To design and implement object oriented programming concepts in Java.

**Course Outcomes**

**CO1:** Write Java application programs using OOP principles

**CO2:** Develop Java programs to solve real world problems

**CO3:** Develop skills in internet programming using applets

**List of practicals**

1. Write a program to read ***Student Name, Reg. No, Marks[ 5]*** and calculate ***Total , Percentage, Result*** . Display all the details of students
2. Write a program to perform the following String Operations
  - a. Read a string
  - b. Find out whether there is a given substring or not
  - c. Compare existing string by another string and display status
  - d. Replace existing string character with another character
  - e. Count number of words in a string
3. Java program to implements Addition and Multiplication of two N X N matrices.
4. Java program to demonstrate the use of Constructor.
5. Calculate area of the following shapes using method overloading.
  - a. Triangle
  - b. Rectangle
  - c. Circle
  - d. Square
6. Implement inheritance between ***Person ( Aadhar, Surname, Name, DOB, and Age)*** and ***Student ( Admission Number, College, Course, Year)*** classes where ReadData(), DisplayData() are overriding methods.

7. Java program for implementing Interfaces
8. Java program on Multiple Inheritance.
9. Java program for to display ***Serial Number from 1 to N*** by creating two Threads
10. Java program to demonstrate the following exception handlings
  - a. Divided by Zero
  - b. Array Index Out of Bound
  - c. File Not Found
  - d. Arithmetic Exception
  - e. User Defined Exception
11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square and Triangle.
12. Write a program for counting number of characters in a file

**MARIS STELLA COLLEGE ( AUTONOMOUS), VIJAYAWADA- 8**  
**( Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

**Subject: Computer Science**

**Semester: IV**

**Course Title: Operating Systems**

**Course Code: 20CSCCOS43**

**No. of Hours: 60**

**LTP: 400**

**Credits: 3**

**Objectives**

- To understand the basic components of a computer operating system, and the interactions among the various components.
- To emphasize various functions of an operating system like memory management, process management, device management, etc.
- To introduce Shell scripting and Android Development Framework.

**Course Outcomes**

**CO1:** Relate the basic functions and types of operating system.

**CO2:** Describe different services of the operating system.

**CO3:** Analyse process management and scheduling algorithms.

**CO4:** Correlate various memory concepts.

**CO5:** Compile LINUX commands on UNIX/LINUX Operating System.

**UNIT- I**

**(12 Hrs.)**

**Introduction to Operating Systems:**

What is an Operating System? History and Evolution of OS, Objectives and functions, Computer system architecture, Types of Operating Systems- Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real-time Systems.

**UNIT- II**

**(12 Hrs.)**

**Operating System organization:**

Processor and User Modes, Kernels, System Calls and System Programs Process, Process models, Process states, Process creation, process termination, Threads, Threading Issues

Process Scheduling Algorithms-Non-Preemptive and Preemptive Scheduling Algorithms.

**UNIT III**

**(12 Hrs.)**

**Process Management:** Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery.

Concurrent and Dependent Processes, Semaphores, Inter-process Communication; Process Synchronization

**UNIT - IV** **(12 Hrs.)**

**Memory Management:** Physical and Virtual Address Space; Memory Allocation Strategies- Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.

**File Management** : Directory Structure, File Operations, File Allocation Methods.

**UNIT - V** **(12 Hrs.)**

**Introduction to Shell Scripting:**

What is Shell and various types of Shell, various editors present in Linux, Different modes of operations in vi editor, What is Shell Script, Writing and Executing the Shell script, Shell Variables (user defined and System variables), Pipes and Filters, Decision making in shell scripts( If else, Switch), Loops in Shell, Functions, Utility Programs (cut, paste, join, tr, uniq utilities), Pattern matching Utility( grep) - Programming Exercises.

**Co-Curricular Activities**

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

**Prescribed Book**

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)

**Reference Books**

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne (7<sup>th</sup> Edition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)
3. Online Resources for UNIT V.

**MARIS STELLA COLLEGE ( AUTONOMOUS), VIJAYAWADA- 8  
( Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: IV</b>	
<b>Course Title: Operating Systems using Linux -Practical</b>	<b>Course Code: 20CSP5OS42</b>	
<b>No of hours: 30</b>	<b>LTP: 002</b>	<b>Credits: 2</b>

**Objectives**

- To provide necessary skills for developing and debugging programs in UNIX environment.
- To Introduce basic Unix commands, system call interface for process management, inter-process communication and I/O in Unix

**Course Outcomes**

**CO1:** Apply various Linux commands on a standard UNIX/LINUX Operating system.

**CO2:** Apply shell programming on UNIX/LINUX OS.

**CO3:** Develop skills in shell programming.

**List of practicals**

Following exercises can be performed using Linux or UNIX

1. Usage of following commands:  
ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd, cal, cat(append), cat(concatenate), mv, cp, man, date, chmod, grep, tput (clear, highlight), bc.
2. Write a shell script to check if the number entered at the command line is prime or not.
3. Write a shell script to modify the “cal” command to display calendars of the specified months.
4. Write a shell script to accept a login name. If not a valid login name display message – “Entered login name is invalid”.
5. Write a shell script to display date in the mm/dd/yy format.
6. Write a shell script to display on the screen sorted output of “who” command along with the total number of users.
7. Write a shell script to display the multiplication table any number,
8. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
9. Write a shell script to find the sum of digits of a given number.
10. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
11. Write a shell script to find the LCD (least common divisor) of two numbers.
12. Write a shell script to perform the tasks of a basic calculator.
13. Write a shell script to find the power of a given number.
14. Write a shell script to find the factorial of a given number.
15. Write a shell script to check whether the number is Armstrong or not.
16. Write a shell script to check whether the file has all the permissions or not.



17. Program to show the pyramid of special character “\*”.
18. Simulate Indexed file allocation strategies
19. Write a program to Priority CPU Scheduling algorithm
20. Simulate Paging Techniques of memory management.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Web Interface  
Designing**

**Course Code: 20CSSEC11WI 3**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To describe the fundamental hardware components that make up a computer hardware and the role of each of these components.
- To analyze system development, word processing, spreadsheet and presentation software to solve basic information system problems.
- To apply standard statistical inference procedures to draw conclusions from data.

**Course Outcomes**

**CO1:** Understand and appreciate the web architecture and services

**CO2:** Gain knowledge about various components of a website.

**CO3:** Demonstrate skills regarding creation of a static website and an interface to dynamic website.

**CO4:** Learn how to install and configure word press.

**CO5:** Apply knowledge of installing various plugins to use in their websites.

**UNIT-I**

**(9 Hrs.)**

**Introduction to web designing**

HTML: Introduction to web designing, difference between web applications and desktop applications, introduction to HTML, HTML structure, elements, attributes, headings, paragraphs, styles, colours, HTML formatting, Quotations, Comments, images, tables, lists, links, HTML CSS, HTML frames, file paths, layout, symbols, HTML responsive – Programming Exercises.

**UNIT-II**

**(9 Hrs.)**

**HTML**

HTML forms: HTML form elements, input types, input attributes, HTML 5, HTML graphics, HTML media – video, audio, plug INS, you tube.

HTML API'S: Geo location, Drag/drop, local storage, HTML SSE.

CSS: CSS home, introduction, syntax, colours, back ground, borders, margins, padding, height/ width, text, fonts, icons, tables, lists, position, overflow, float, CSS combinators, pseudo class, opacity, tool tips, image gallery, drop down, CSS forms, CSS responsive – Programming Exercises.

### **UNIT-III**

**(9 Hrs.)**

#### **Client-side programming**

Introduction to JavaScript - What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript - Data and objects in JavaScript, regular expressions, exception handling. DHTML with JavaScript - Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images – Programming Exercises.

### **UNIT-IV**

**(9 Hrs.)**

#### **Word press**

Introduction to word press, servers like wamp, bitnami etc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media - Adding, editing, deleting media elements, working with widgets, menus – Programming Exercises.

### **UNIT-V**

**(9 Hrs.)**

#### **Word press themes**

Working with themes-parent and child themes, using featured images, configuring settings, user and user roles and profiles, adding external links, extending word press with plug-ins. Customizing the site, changing the appearance of site using css, protecting word press website from hackers – Programming Exercises.

#### **Co-Curricular Activities**

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

#### **Prescribed Books**

1. Chris Bates, Web Programming Building Internet Applications, Second Edition, Wiley (2007).
2. Paul S.WangSanda S. Katila, an Introduction to Web Design plus Programming, Thomson (2007).
3. Head First HTML and CSS, Elisabeth Robson, Eric Freeman, O'Reilly Media Inc.
4. An Introduction to HTML and JavaScript: for Scientists and Engineers, David R. Brooks. Springer, 2007.

## **Reference Books**

1. Word press for Beginners, Dr.Andy Williams.
2. Professional word press, Brad Williams, David damstra, Hanstern.
3. Schaum's Easy Outline HTML, David Mercer, Mcgraw Hill Professional.

## **Web sources:**

- a. <http://www.codecademy.com/tracks/web>
- b. <http://www.w3schools.com>
- c. <https://www.w3schools.in/wordpress-tutorial/>
- d. <http://www.homeandlearn.co.uk>

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Web Designing-Practical Course Code: 20CSP611WD2**

**No. of Hours: 45**

**LTP: 003**

**Credits: 2**

**Objectives**

- To create a static website with the help of Word press.
- To create an interface for a dynamic website.

**Course Outcomes**

**CO1:** Create a basic website with the help of HTML and CSS.

**CO2:** Acquire the skill of installing word press and various plugins of Word press.

**CO3:** Apply various themes for their websites using Word press.

**List of Practicals:**

**(30 Hrs.)**

**HTML and CSS:**

1. Create an HTML document with the following formatting options:

(a) Bold, (b) Italics, (c) Underline, (d) Headings (Using H1 to H6 heading styles), (e) Font (Type, Size and Color), (f) Background (Colored background/Image in background), (g) Paragraph, (h) Line Break, (i) Horizontal Rule, (j) Pre tag

2. Create an HTML document which consists of:

(a) Ordered List (b) Unordered List (c) Nested List (d) Image

3. Create a Table with four rows and five columns. Place an image in one column.

4. Using "table" tag, align the images as follows:



5. Create a menu form using html.
6. Style the menu buttons using css.
7. Create a form using HTML which has the following types of controls:  
(a) Text Box (b) Option/radio buttons (c) Check boxes (d) Reset and Submit buttons
8. Embed a calendar object in your web page.
9. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
10. Create nested table to store your curriculum.
11. Create a form that accepts the information from the subscriber of a mailing system.
12. Design the page as follows:



13. Create a help file as follows:



14. Create a webpage containing your bio data (assume the form and fields).

15. Write a html program including style sheets.
16. Write a html program to layers of information in web page.
17. Create a static webpage.

**Word press:**

18. Installation and configuration of word press.
19. Create a site and add a theme to it.
20. Create a child theme
21. Create five pages on COVID - 19 and link them to the home page.
22. Create a simple post with featured image.
23. Add an external video link with size 640 X 360.
24. Create a user and assign a role to him.
25. Create a login page to word press using custom links
26. Create a website for your college.

**Skill/Hands-on: Field Work/Mini Project**

**(15 Hrs.)**

1. Choosing a firm or business to develop a website, identifying various business entities to be included in the website, identifying menu bar and content to be placed in their websites.

**Prescribed Text Book**

1. WordPress for Beginners 2021: A Visual Step-by-Step Guide to Mastering WordPress.

**Reference Text Books**

1. WordPress All-in-One For Dummies.
2. Professional word press, Brad Williams, David damstra, Hanstern.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Web Applications**

**Course Code: 20CSSEC12WA3**

**Development with PHP & MYSQL**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To gain basic knowledge on server-side programming
- To understand the difference between Static and Dynamic Website
- To develop Content Management System Using PHP and MySQL

**Course Outcomes**

**CO1:** Understand how to use regular expressions, handle exceptions, and validate data using PHP.

**CO2:** Apply In-Built functions and Create User defined functions in PHP programming.

**CO3:** Design PHP scripts to handle HTML forms.

**CO4:** Learn how to work with various components in PHP.

**CO5:** Gain knowledge on how to use PHP with MySQL database and can write database driven web pages.

**UNIT-I**

**(9 Hrs.)**

**The Building blocks of PHP:** Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.

**Working with Functions:** What is function?, Calling functions, Defining Functions, Returning the values from User- Defined Functions, Variable Scope, Function arguments – Programming Exercises.

**UNIT-II**

**(9 Hrs.)**

**Introduction to Arrays:** What are Arrays? Creating Arrays, Some Array - Related Functions.

**Working with Objects:** Creating Objects, Object Instance Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP – Programming Exercises.

**UNIT-III**

**(9 Hrs.)**

**Working with Forms:** Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form



Submission, and Working with File Uploads.

**Working with Cookies and User Sessions:** Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users – Programming Exercises.

#### **UNIT-IV**

**(9 Hrs.)**

**Working with Files and Directories:** Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen(), Running Commands with exec(), Running Commands with system() or passthru().

**Working with Images:** Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input – Programming Exercises.

#### **UNIT-V**

**(9 Hrs.)**

**Interacting with MySQL using PHP:** MySQL Versus MySQL Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record – Programming Exercises.

#### **Co-Curricular Activities**

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

#### **Prescribed Books**

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).
2. Steven Holzner, PHP: The Complete Reference, McGraw-Hill.
3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014.

## **Reference Book**

1. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

## **Web resources**

- a) <http://www.codecademy.com/tracks/php>
- b) <http://www.w3schools.com/PHP>
- c) <http://www.tutorialpoint.com>

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V</b>	
<b>Course Title: PHP &amp; MYSQL-Practical</b>	<b>Course Code: 20CSP712PM2</b>	
<b>No. of Hours: 45</b>	<b>LTP: 003</b>	<b>Credits: 2</b>

**Objectives**

- To design PHP scripts to handle HTML forms
- To develop Content Management System Using PHP and MySQL.

**Course Outcomes**

- CO1:** Write, debug and implement the Programs by applying concepts and error handling techniques of PHP.
- CO2:** Create a website with reports generated from a database.
- CO3:** Write programs to create an interactive website for e-commerce sites like online shopping, etc.

**List of Practicals:**

**(30 Hrs.)**

1. Write a PHP program to Display "Hello".
2. Write a PHP Program to display the today's date.
3. Write a PHP program to display Fibonacci series.
4. Write a PHP Program to read the employee details.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
8. Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
9. Write PHP script to demonstrate passing variables with cookies.
10. Write a program to keep track of how many times a visitor has loaded the page.
11. Write a PHP application to add new Rows in a Table.
12. Write a PHP application to modify the Rows in a Table.
13. Write a PHP application to delete the Rows from a Table.
14. Write a PHP application to fetch the Rows in a Table.

15. Develop an PHP application to implement the following Operations
  - i. Registration of Users.
  - ii. Insert the details of the Users.
  - iii. Modify the Details.
  - iv. Transaction Maintenance.
    - a) No of times Logged in
    - b) Time Spent on each login.
    - c) Restrict the user for three trials only.
    - d) Delete the user if he spent more than 100 Hrs of transaction.
16. Write a PHP script to connect MySQL server from your website.
17. Write a program to read customer information like cust -no, cust-name, item- purchased, and mob-no, from customer table and display all these information in table format on output screen.
18. Write a program to edit name of customer to “Kiran” with cust-no =1, and to delete record with cust-no=3.
19. Write a program to read employee information like emp - no, emp-name, designation and salary from EMP table and display all this information using table format in your website.
20. Create a dynamic web site using PHP and MySQL.

**Skill/Hands-on: Field Work/Mini Project**

**(15 Hrs.)**

1. Choosing a firm or business to develop a website, identifying forms to be placed in the websites, back end databases to be maintained and reports to be generated and placed in the websites.

**Prescribed Text Book**

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).

**References Text Book**

1. Steven Holzner , PHP: The Complete Reference, McGraw-Hill.
2. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Internet of Things**

**Course Code: 20CSSEC21IT3**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To understand the application areas of IOT
- To realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
- To understand building blocks of Internet of Things and characteristics

**Course Outcomes**

**CO1:** Understand various concepts, terminologies and applications of IoT systems.

**CO2:** Learn how to use various sensors and wireless technologies for design of IoT.

**CO3:** Gain knowledge on how to connect various things to Internet.

**CO4:** Understand Arduino Simulation Environment.

**CO5:** Apply skills to develop simple IOT Devices.

**UNIT-I**

**(9 Hrs.)**

**Fundamentals of IoT**

Introduction, Definition, Trends & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M

**Applications of IoT:** Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Self - driven cars, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection – Programming Exercises

**UNIT-II**

**(9 Hrs.)**

**Sensors Network**

Definition, Types of Sensors, Types of Actuators, Examples and Working : Home Security, Environmental Monitoring, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, Applications The node, Connecting nodes, Networking Nodes – Programming Exercises.

### **UNIT-III**

**(9 Hrs.)**

#### **Various Technologies**

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC.

IP Based Protocols for IoT IPv6, 6LowPAN, LoRA, RPL, REST, AMPQ, CoAP, MQTT. Edge connectivity and protocols – Programming Exercises

### **UNIT-IV**

**(9 Hrs.)**

#### **Arduino Simulation Environment**

Arduino Uno Architecture, Setting up the IDE, Writing Arduino Software, Arduino Libraries, Basics of Embedded C programming for Arduino, Interfacing LED, push button and buzzer with Arduino, Interfacing Arduino with LCD.

Sensor & Actuators with Arduino: Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensors with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino – Programming Exercises

### **UNIT-V**

**(9 Hrs.)**

#### **Developing IOT's**

Implementation of IoT with Arduino, Connecting and using various IoT Cloud Based Platforms such as AWS IoT, Google Cloud IoT Core etc. Cloud Computing, Fog Computing – Programming Exercises.

#### **Co-Curricular Activities**

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

#### **Prescribed Books**

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547.
2. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on Approach)", 1st Edition, VPT, 2014.
3. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978 -1-118 -47347-4, Willy Publications.

## Reference Books

1. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press.
2. Open source software / learning websites.
  - a. <https://github.com/connectIOT/iottoolkit>
  - b. <https://www.arduino.cc/>
  - c. [https://onlinecourses.nptel.ac.in/noc17\\_cs22/course](https://onlinecourses.nptel.ac.in/noc17_cs22/course)
  - d. [http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot\\_prot/index.html](http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html)
  - e. Contiki (Open source IoT operating system)
  - f. Ardudroid (open source IoT project)
  - g. <https://blynk.io> (Mobile app)
  - h. IoT Toolkit -smart object API gateway service reference implementation

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Internet of Things  
-Practical**

**Course Code: 20CSP621IT2**

**No. of Hours: 45**

**LTP: 003**

**Credits: 2**

**Objectives**

- To implement skills to design a small IoT device
- To design and develop IoT based sensor systems

**Course Outcomes**

**CO1:** Connect various sensors, actuators, etc to Arduino board.

**CO2:** Design a small mobile app to control the sensors.

**CO3:** Deploy a simple IoT device.

**List of Practicals:**

**(30 Hrs.)**

1. Understanding Arduino UNO Board and Components
2. Installing and work with Arduino IDE
3. Blinking LED sketch with Arduino
4. Simulation of 4-Way Traffic Light with Arduino
5. Using Pulse Width Modulation
6. LED Fade Sketch and Button Sketch
7. Analog Input Sketch (Bar Graph with LEDs and Potentiometre)
8. Digital Read Serial Sketch (Working with DHT/IR/Gas or any other Sensor)
9. Working with Adafruit Libraries in Arduino
10. Spinning a DC Motor and Motor Speed Control Sketch
11. Working with Shields
12. Design APP using Blink App or Things peak API and connect it LED bulb.
13. Design APP Using Blink App and Connect to Temperature, magnetic Sensors.



**Skill/Hands-on: Field Work/Mini Project****(15 Hrs.)**

1. Choosing a Problem for IoT solution ( agriculture, aquaculture, smart home appliances, testing moisture levels, oxygen levels, etc), reasons why IoT solution is feasible for the said problem, material required, Design and architecture for the proposed IoT device, method of implementation and how to connect the device to mobile.

**Prescribed Text Book**

1. Vijay Madiseti and ArshdeepBahga, "Internet of Things ( A Hands-onApproach)", 1st Edition, VPT, 2014 .

**Reference Text Book**

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madiseti, Universities Press, 2015, ISBN: 9788173719547 .

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Application**

**Course Code: 20CSSEC22AD3**

**Development with Python**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To learn and understand Python programming basics and paradigm.
- To implement lists, tuples, and dictionaries in Python programs.
- To design and implement GUI application and how to handle exceptions and files.

**Course Outcomes**

**CO1:** Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

**CO2:** Demonstrate proficiency in handling Exceptions and File Systems.

**CO3:** Learn how to use Regular Expressions and threads.

**CO4:** Implement GUI and web programming as used in Python.

**CO5:** Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

**UNIT-I**

**(9 Hrs.)**

**Python basics, Objects-** Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Built-in Functions.

**Numbers** - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators.

**Sequences** – Strings-Assigning sting to a variable, multiline strings, string methods, Lists-accessing list elements, add and change list elements, and Tuples, Mapping and Set Types – Programming Exercises.

**UNIT-II**

**(9 Hrs.)**

**Files:** File Objects, File Built-in Function [ open() ], File Built -in Methods- read(), write(), close(), truncate() writable() etc, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution.

**Exceptions:** Exceptions in Python, Detecting and Handling Exceptions, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Exception chaining, user defined exceptions.

**Modules:** Creating a module, using a module, naming & renaming a module, built-in modules, Importing Modules, The dir() function – Programming Exercises.

### **UNIT-III**

**(9 Hrs.)**

**Regular Expressions:** Introduction, Special Symbols and Characters, Regex functions.

**Python Multithreaded Programming:** Introduction, Threads and Processes, Python Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules – Programming Exercises.

### **UNIT-IV**

**(9 Hrs.)**

**GUI Programming:** Introduction, Tkinter- A sample program using Tkinter.

**Web Programming:** Introduction, Web Surfing with Python, Creating Simple Web Clients, Advanced Web Clients – Programming Exercises.

### **UNIT-V**

**(9 Hrs.)**

**Database Programming:** Introduction, Python Database Application Programmer's Interface (DBAPI), Object Relational Managers (ORMs), Related Modules – Programming Exercises.

### **Co-Curricular Activities**

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

### **Prescribed Books**

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.
2. Think Python, Allen Downey, Green Tea Press.
3. Introduction to Python, Kenneth A. Lambert, Cengage.
4. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.

### **Reference Books**

1. Learning Python, Mark Lutz, O' Reilly.
2. Web sources suggested by the teacher concerned and the college librarian including reading material.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Programming in Python-Practical**

**Course Code: 20CSP722PP2**

**No. of Hours: 45**

**LTP: 003**

**Credits: 2**

**Objectives**

- To acquire programming skills in core python.
- To implement lists, tuples, and dictionaries in Python programs.

**Course Outcomes**

**CO1:** Implement programs related to various data structures like lists, dictionaries, etc.

**CO2:** Implement programs related to files.

**CO3:** Implement applications related to databases, Web services and IOT.

**List of Practicals:**

**(30 Hrs.)**

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. Write a python program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria :  
Grade A: Percentage  $\geq 80$   
Grade B: Percentage  $\geq 70$  and  $< 80$   
Grade C: Percentage  $\geq 60$  and  $< 70$   
Grade D: Percentage  $\geq 40$  and  $< 60$   
Grade E: Percentage  $< 40$
3. Write a python program to display the first n terms of Fibonacci series.
4. Write a python program to calculate the sum and product of two compatible matrices.
5. Write a function that takes a character and returns True if it is a vowel and False otherwise.
6. Write a menu-driven program to create mathematical 3D objects
  - I. curve
  - II. sphere

III. cone

IV. arrow

V. ring

VI. Cylinder

7. Write a python program to read n integers and display them as a histogram.
8. Write a python program to display sine, cosine, polynomial and exponential curves.
9. Write a python program to plot a graph of pulse rate p vs. height h. The values of P and H are to be entered by the user.
10. Write a python program to calculate the mass m in a chemical reaction. The mass m ( in gms) disintegrates according to the formula  $m=60/(t+2)$ , where t is the time in hours. Sketch a graph for t vs. m, where  $t \geq 0$ .
11. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:  
$$P(t) = (15000(1+t)) / (15 + e^t)$$
12. Where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.
13. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:
  - I. velocity wrt time ( $v=u+at$ )
  - II. distance wrt time ( $s=u*t+0.5*a*t*t$ )
  - III. distance wrt velocity ( $s=(v^2-u^2)/2*a$ )
14. Write a program that takes two lists and returns True if they have at least one common member.
15. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.
16. Write a program to implement exception handling.
17. Try to configure the widget with various options like: `bg="green"`, `family="times"`, `size=20`.
18. Write a Python program to read last 5 lines of a file.
19. Design a simple database application that stores the records and retrieve the same.
20. Design a database application to search the specified record from the database.
21. Design a database application that allows the user to add, delete and modify the records.

**Skill/Hands-on: Field Work/Mini Project****(15 Hrs.)**

1. Choosing a Problem for IoT solution ( agriculture, aquaculture, smart home appliances, testing moisture levels, oxygen levels, etc), reasons why IoT solution is feasible for the said problem, material required, Design and architecture for the proposed IoT device.
2. Implement Python program to connect the IOT device.

**Prescribed Text Book**

1. Let Us Python – Yashavanth Kanetkar and Aditya Kanetkar , BPB Publications ISBN: 9789388511568, 9789388511568.

**Reference Text Book**

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Data Science**

**Course Code: 20CSSEC31DS3**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To build the fundamentals of Data Science.
- To develop basic understanding of the key technologies in Data Science - data mining, machine learning, visualization techniques, predictive modeling, and statistics.
- To gain practical experience in programming tools for Data Science.

**Course Outcomes**

**CO1:** Develop relevant programming abilities

**CO2:** Demonstrate proficiency with statistical analysis of data

**CO3:** Develop the ability to build and assess data-based models

**CO4:** Demonstrate skill in data management

**CO5:** Apply data science concepts and methods to solve problems in real-world contexts

**UNIT-I**

**(9 Hrs.)**

**Introduction:** Definition, Why is it important, Life cycle, Exploration, Data Science Modeling

**Python:** Getting Python, The Zen of Python, Whitespace Formatting, Modules, Arithmetic, Functions, Strings, Exceptions, Lists, Tuples, Dictionaries, Sets, Control Flow, Truthiness, Sorting, List Comprehensions, Generators and Iterators, Randomness, Object – Orienting Programming, Functional Tools, enumerate, zip and Argument Unpacking, args and kwargs, Welcome to Data Science!

**Visualizing Data:** matplotlib, Bar charts, Line charts, Scatterplots.

**Linear Algebra:** Vectors, Matrices - Programming Exercises.

**UNIT-II**

**(9 Hrs.)**

**Statistics:** Describing a Single Set of Data, Correlation, Simpson's Paradox, some Other Correlation Caveats, Correlation and Causation.

**Probability:** Dependence and Independence, Conditional Probability, Bayes' s Theorem, Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem.

**Hypothesis and Inference:** Statistical Hypothesis Testing, Example: Flipping a Coin, Confidence Intervals, P-hacking, Example: Running an A/B

Test, Bayesian Inference.

**Gradient Descent:** The Idea behind Gradient Descent, Estimating the Gradient, Using the Gradient, Choosing the Right Step Size, Putting It All Together, Stochastic Gradient Descent – Programming Exercises.

### UNIT-III

(9 Hrs.)

**Getting Data:** stdin and stdout, Reading Files – The Basics of Text Files, Delimited Files, Scraping the Web - HTML and the parsing Thereof, Example: O'Reilly Books About Data, Using APIs – JSON ( and XML), Using an Unauthenticated API, Finding APIs.

**Working with Data :** Exploring Your Data, Exploring One-Dimensional Data, Two Dimensions Many Dimensions, Cleaning and Munging, Manipulating Data, Rescaling, Dimensionality Reduction.

**Machine Learning:** Modeling, What Is Machine Learning? Over fitting and under fitting, Correctness, The Bias-Variance Trade-off, Feature Extraction and Selection – Programming Exercises.

### UNIT-IV

(9 Hrs.)

**K-Nearest Neighbors:** The Model, Example: Favorite Languages, The Curse of Dimensionality.

**Naive Bayes:** A Really Dumb Spam Filter, A More Sophisticated Spam Filter, Implementation, Testing Our Model.

**Simple Linear Regression:** The Model, Using Gradient Descent, Maximum Likelihood Estimation.

**Multiple Regression:** The Model, Further Assumptions of the Least Squares Model, Fitting the Model, Interpreting the Model, Goodness of Fit – Programming Exercises.

### UNIT-V

(9 Hrs.)

**Logistic Regression:** The Problem, The Logistic Function, Applying the Model, Goodness of Fit Support Vector Machines.

**Decision Trees:** What Is a Decision Tree? Entropy, The Entropy of a Partition, Creating a Decision Tree, Putting It All Together, Random Forests.

**Neural Networks:** Perceptron, Feed-Forward Neural Networks And Back propagation, Example: Defeating a CAPTCHA.

**Clustering:** The Idea, The Model, Example: Meetups , Choosing k, Example: Clustering Colors, Bottom-up Hierarchical Clustering – Programming Exercises.



### **Co-Curricular Activities**

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

### **Prescribed Books**

1. Data Science from Scratch by Joel Grus O'Reilly Media
2. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.

### **Reference Book**

1. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly, 2017.

### **Web resources:**

1. <https://www.edx.org/course/analyzing-data-with-python>  
[http://math.ecnu.edu.cn/~lfzhou/seminar/\[Joel Grus\] Data Science from Scratch\\_First\\_Princ.pdf](http://math.ecnu.edu.cn/~lfzhou/seminar/[Joel%20Grus]_Data_Science_from_Scratch_First_Princ.pdf)

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Data Science-Practical**

**Course Code: 20CSP631DS2**

**No. of Hours: 45**

**LTP: 003**

**Credits: 2**

**Objectives**

- To practice the python syntax and write programs.
- To identify and implement the python concepts and techniques.

**Course Outcomes**

**CO1:** Apply data science solutions to real world problems.

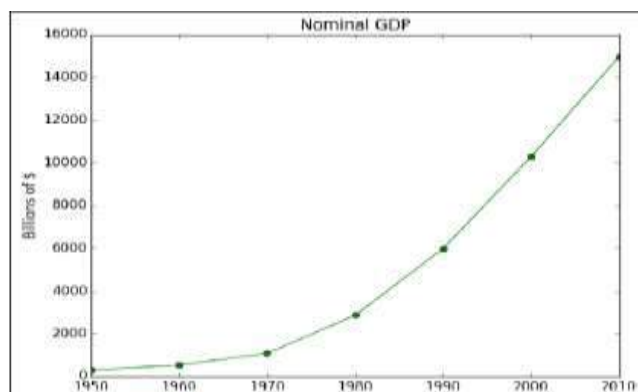
**CO2:** Implement the programs to get the required data, process it and present the outputs using Python language.

**CO3:** Execute statistical analyses with Open source Python software.

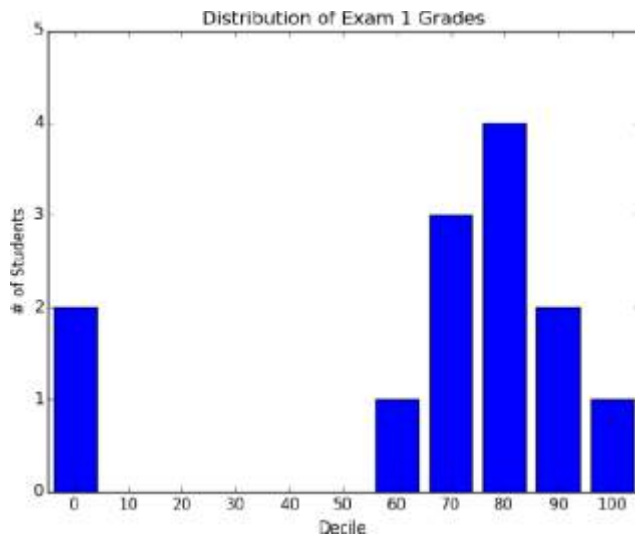
**List of Practicals:**

**(30 Hrs.)**

1. Write a Python program to create a line chart for values of year and GDP as given below.



2. Write a Python program to create a bar chart to display number of students secured different grading as given below.



3. Write a Python program to create a time series chart by taking one year month wise stock data in a CSV file.
4. Write a Python program to plot distribution curve.
5. Import a CSV file and perform various Statistical and Comparison operations on rows/columns. Write a python program to plot a graph of people with pulse rate  $p$  vs. height  $h$ . The values of  $P$  and  $H$  are to be entered by the user.
6. Import rainfall data of some location with the help of packages available in R Studio and plot a chart of your choice.

### **Skill/Hands-on: Field Work/Mini Project**

**(15 Hrs.)**

1. search online and visit any of the agencies like Statistical cell, weather forecasting centers, pollution control boards, manufacturing industries, agriculture departments, etc. to observe the manual process going on to collect the data, maintain the data, present the data and to predict the data for future instances.

### **Prescribed Text Book**

1. Data Science from Scratch by Joel Grus O'Reilly Media

### **Reference Text Book**

1. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Python for Data Science**

**Course Code: 20CSSEC32PD3**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To learn the core programming basics required for Data Science using Python language.
- To gain knowledge on Data Science modules NumPy, SciPy and Matplotlib.

**Course Outcomes**

**CO1:** Identify the need for data science and solve basic problems using Python built-in data types and their methods.

**CO2:** Design an application with user- defined modules and packages using OOP concept

**CO3:** Employ efficient storage and data operations using NumPy arrays.

**CO4:** Apply powerful data manipulations using Pandas.

**CO5:** Do data pre-processing and visualization using Pandas

**UNIT-I**

**(9 Hrs.)**

Introduction to Data Science - Why Python? - Essential Python libraries - Python Introduction- Features, Identifiers, Reserved words, Indentation, Comments, Built-in Data types and their Methods: Strings, List, Tuples, Dictionary, Set - Type Conversion- Operators. Decision Making- Looping- Loop Control statement- Math and Random number functions. User defined functions - function arguments & its types – Programming Exercises.

**UNIT-II**

**(9 Hrs.)**

User defined Modules and Packages in Python - Files: File manipulations, File and Directory related methods - Python Exception Handling. OOPs Concepts - Class and Objects, Constructors - Data hiding- Data Abstraction- Inheritance – Programming Exercises.

**UNIT-III**

**(9 Hrs.)**

Num Py Basics: Arrays and Vectorized Computation - The Num Py ndarray- Creating ndarrays- Data Types for ndarrays- Arithmetic with Num Py Arrays- Basic Indexing and Slicing - Boolean Indexing-Transposing Arrays and Swapping Axes.

Universal Functions: Fast Element-Wise Array Functions- Mathematical and Statistical Methods-Sorting- Unique and Other Set Logic – Programming Exercises.

**UNIT-IV****(9 Hrs.)**

Introduction to pandas Data Structures: Series, Data Frame and Essential Functionality: Dropping Entries- Indexing, Selection, and Filtering- Function Application and Mapping- Sorting and Ranking.

Summarizing and Computing Descriptive Statistics - Unique Values, Value Counts, and Membership. Reading and Writing Data in Text Format – Programming Exercises.

**UNIT-V****(9 Hrs.)**

Data Cleaning and Preparation: Handling Missing Data - Data Transformation: Removing Duplicates, Transforming Data Using a Function or Mapping, Replacing Values, Detecting and Filtering Outliers - String Manipulation: Vectorized String Functions in pandas.

Plotting with pandas: Line Plots, Bar Plots, Histograms and Density Plots, Scatter or Point Plots – Programming Exercises.

**Co-Curricular Activities**

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

**Prescribed Books**

1. Y. Daniel Liang, “Introduction to Programming using Python”, Pearson, 2012.
2. Wes McKinney, “Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython”, O’Reilly, 2nd Edition, 2018.
3. Jake VanderPlas, “Python Data Science Handbook: Essential Tools for Working with Data”, O’Reilly, 2017.

**Reference Books**

1. Wesley J. Chun, “Core Python Programming”, Prentice Hall, 2006.
2. Mark Lutz, “Learning Python”, O’Reilly, 4th Edition, 2009.

**Web resources:**

- a. <https://www.edx.org/course/python-basics-for-data-science>
- b. <https://www.edx.org/course/analyzing-data-with-python>
- c. <https://www.coursera.org/learn/python-plotting?specialization=data-science-python>
- d. <https://www.programmer-books.com/introducing-data-science-pdf/>

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**

**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V</b>	
<b>Course Title: Python for Data Science – Practical</b>	<b>Course Code: 20CSP732PD2</b>	
<b>No. of Hours: 45</b>	<b>LTP: 003</b>	<b>Credits: 2</b>

**Objectives**

- To practice the python syntax and write programs.
- To identify and implement the python concepts and techniques.

**Course Outcomes**

**CO1:** Implement simple programs in Python.

**CO2:** Implement programs related to various structures like arrays, lists, Data frames, etc.

**CO3:** Implement applications related to data science.

**List of Practicals:**

**(30 Hrs.)**

1. Perform Creation, indexing, slicing, concatenation and repetition operations on Python built-in data types: Strings, List, Tuples, Dictionary, Set.
2. Apply Python built-in data types: Strings, List, Tuples, Dictionary, Set and their methods to solve any given problem.
3. Handle numerical operations using math and random number functions.
4. Create user-defined functions with different types of function arguments.
5. Create packages and import modules from packages.
6. Perform File manipulations- open, close, read, write, append and copy from one file to another.
7. Write a program for Handle Exceptions using Python Built-in Exceptions.
8. Write a program to implement OOP concepts like Data hiding and Data Abstraction.
9. Create NumPy arrays from Python Data Structures, Intrinsic NumPy objects and Random Functions.
10. Manipulation of NumPy arrays- Indexing, Slicing, Reshaping, Joining and Splitting.

11. Computation on NumPy arrays using Universal Functions and Mathematical methods.
12. Load an image file and do crop and flip operation using Num Py Indexing.
13. Create Pandas Series and Data Frame from various inputs.
14. Import any CSV file to Pandas Data Frame and perform the following:
  - (a) Visualize the first and last 10 records
  - (b) Get the shape, index and column details
  - (c) Select/Delete the records (rows)/columns based on conditions.
  - (d) Perform ranking and sorting operations.
  - (e) Do required statistical operations on the given columns.
  - (f) Find the count and uniqueness of the given categorical values.
  - (g) Rename single/multiple columns
15. Import any CSV file to Pandas Data Frame and perform the following:
  - (a) Handle missing data by detecting and dropping/ filling missing values.
  - (b) Transform data using apply () and map() method.
  - (c) Detect and filter outliers.
  - (d) Perform Vectorized String operations on Pandas Series.
  - (e) Visualize data using Line Plots, Bar Plots, Histograms, Density Plots and Scatter Plots.

**Skill/Hands-on: Field Work/Mini Project (15 Hrs.)**

Visit any of the agencies like Agriculture dept, statistical cell, irrigation department, Ground water department, CPO office, Rural Water Supply and Sanitation department etc or search online to get real time data like Aids database, weather forecasting database, social networking data, etc and identify any one database, implement and present the necessary charts in Python language.

**Prescribed Text Book**

- Data Science from Scratch by Joel Grus O'Reilly Media .

**Reference Text Book**

- Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8**

(Affiliated to Krishna University, Machilipatnam)

**SYLLABUS**

**Subject: Commerce & Management Studies**

**Semester: I**

**Course Title: Fundamentals of Commerce**

**Course Code:23CMCCFC14**

**No. of Hours: 60 Hrs.**

**LTP: 400**

**Credits: 4**

**Objectives:**

- To gain knowledge and insight into the procedural aspects of commerce and accounting
- To understand the taxation system prevailing in India

**Course Outcomes:**

After successful completion of this course, the student will be able to

**CO1:** Demonstrate an understanding of role of commerce and accounting concepts

**CO2:** Acquire knowledge about demand, supply and elasticity

**CO3:** Understand the branches of accounting

**CO4:** Familiarize with the taxation system and its practices

**CO5:** Developing simple website in Wordpress

**Unit-I: Introduction (10 Hrs.)**

Definition of Commerce – Role of Commerce in Economic Development - Role of Commerce in Societal Development. Imports and Exports, Balance of Payments. World Trade Organization.

**Unit-II: Economic Theory (10 Hrs.)**

Macro Economics – Meaning, Definition, Measurements of National Income, Concepts of National Income. Micro Economics – Demand and Supply. Elasticity of Demand and Supply. Classification of Markets -Perfect Competition – Characteristics – Equilibrium Price, Marginal Utility.

**Unit-III: Accounting Principles (10 Hrs.)**

Meaning and Objectives Accounting, Accounting Cycle - Branches of Accounting - Financial Accounting, Cost Accounting, Management Accounting. Concepts and Conventions of Accounting – GAAP.



#### **Unit-IV: Taxation (10 Hrs.)**

Meaning of Tax, Taxation - Types of Tax- Income Tax, Corporate Taxation, GST, Customs & Excise. Differences between Direct and Indirect Tax – Objectives of Tax- Concerned authorities – Central Board of Direct Taxes (CBDT) and Central Board of Excise and Customs (CBIC).

#### **Unit-V: Computer Essentials (10 Hrs.)**

Web Design - Word Press Basics, Developing a Simple Website. Digital Marketing - Social Media Marketing, Content Marketing, Search Engine Optimization (SEO), E-mail Marketing. Data Analytics- Prediction of customer behavior, customized suggestions.

#### **Activities:**

- Group Discussion - Problem solving.
- Quiz Programs
- Assignment on different types of taxes which generate revenue to the Government of India.
- Co-operative learning on Accounting Principles.
- Group Activity – Website building in wordpress

#### **Prescribed Text Book:**

1. S.P. Jain & K.L Narang, Fundamentals of Commerce - I Kalyani Publishers.

#### **Reference Books:**

1. S.P. Jain & K.L Narang, Accountancy - I Kalyani Publishers.
2. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand
3. Business Economics -S.Sankaran, Margham Publications, Chennai.
4. Business Economics - Kalyani Publications.
5. Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann Publications.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8**  
(Affiliated to Krishna University, Machilipatnam)

**SYLLABUS**

**Subject: Commerce & Management Studies**

**Semester: I**

**Course Title: Business Organization**

**Course Code: 23CMCCBO14**

**No. of Hours: 60**

**LTP: 400**

**Credits: 4**

**Objectives**

- To acquire conceptual knowledge of business, formation various business organizations
- To provide the knowledge on deciding plant location, plan layout and business combinations

**Course Outcomes**

After successful completion of this course, the student will be able to

**CO1:** Understand the concept of Business Organization along with the basic laws and norms of Business Organization

**CO2:** Classify different forms of Business Organization.

**CO3:** Identify the importance of plant location and layout.

**CO4:** Explore the need for Forms and Kinds of Business Combination

**CO5:** Explain the evolution of Computer Evolution in relation to Business Organization

**Unit-I: Business Organization (10 Hrs.)**

Concept, Meaning, Features, Stages of development of business and importance of business. Classification of Business Activities. Meaning, Characteristics, Importance and Objectives of Business Organization. Difference between Industry & Commerce and Business & Profession, Modern Business and their Characteristics.

**Unit-II: Promotion of Business (10 Hrs.)**

Considerations in Establishing New Business. Qualities of a Successful Businessman. Forms of Business Organization - Sole Proprietorship, Partnership, Joint Stock Companies & Co-operatives and their Characteristics, relative merits and demerits, Difference between Private and Public Company, Concept of One Person Company.

**Unit-III: Plant Location and Layout (10 Hrs.)**

Meaning, Importance, Factors affecting Plant Location. Plant Layout - Meaning, Objectives, Importance, Types of Layout, Factors affecting Layout. Size of Business Unit - Criteria for Measuring the Size and Factors affecting the Size. Optimum Size and factors determining the Optimum Size.

**Unit-IV: Business Combination: (10 Hrs.)**

Meaning, Characteristics, Objectives, Causes, Forms and Kinds of Business Combination. Rationalization: Meaning, Characteristics, Objectives, Principles, Merits and demerits, Difference between Rationalization and Nationalization.

**Unit-V: Computer Essentials: (10 Hrs.)**

Milestones of Computer Evolution – Computer, Block diagram, generations of computer. Internet Basics - Internet, history, Internet Service Providers, Types of Networks, IP, Domain Name Services, applications. Ethical and Social Implications - Network and security concepts - Information Assurance Fundamentals, Cryptography Symmetric and Asymmetric, Malware, Firewalls, Fraud Techniques, privacy and data protection

**Co-Curricular Activities: (10Hrs.)**

- Assignment on business organizations and modern business
- Group Discussion on factors that influence plan location
- Seminars on different topics related to Business organization
- Case study could be given to present business plan of student's choice
- Latest Fraud techniques used by hackers.

**Prescribed Text Book:**

1. Gupta, C.B., "Business Organisation", Mayur Publication, (2014).

**Reference Books:**

1. Singh, B.P., Chhabra, T.N., "An Introduction to Business Organisation & Management", Kitab Mahal, (2014).
2. Sherlekar, S.A. & Sherlekar, V.S, "Modern Business Organization & Management Systems Approach Mumbai", Himalaya Publishing House, (2000).
3. Bhusan Y. K., "Business Organization", Sultan Chand & Sons.
4. Prakash, Jagdish, "Business Organistaton and Management", Kitab Mahal Publishers (Hindi and English)
5. Fundamentals of Computers by V. Raja Raman
6. Cyber Security Essentials by James Graham, Richard Howard, Ryan Olson

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA –8**  
(Affiliated to Krishna University, Machilipatnam)

**SYLLABUS**

Subject: Computer Science

Semester: III

Course Title: Office Automation Tools

Course Code: 23CSCCOA23

No. of Hrs.:45

LTP:300

Credits:3

**Objectives**

- To acquire knowledge on the environment of GUI in Ms-Word and its features.
- To apply fundamentals concepts using Ms-Word and its features
- To provide hands on use of Word, Excel and PowerPoint.

**Course Outcomes**

After successful completion of this course, the student will be able to

**CO1:** Understand concept of Word Processor and use its features.

**CO2:** Apply advanced features of Ms-Word to make day to day usage easier.

**CO3:** Work comfortably with Ms-Excel Environment.

**CO4:** Create work sheets and user advanced feature of Excel.

**CO5:** Build presentations and inserting multimedia in them.

**Unit I: (8 Hrs.)**

**Introduction to MS Office & MS Word:** MS-Word: Features of MS-Word, MS-Word Window components, working with formatted text, Shortcut keys, formatting documents: Selecting text, Copying & moving data, formatting characters, changing cases, Paragraph formatting, Indents, Drop Caps, using format painter, Page formatting, Header & footer, Bullets & numbering, Tabs, Forming tables. Finding & replacing text, go to(F5) command, proofing text (Spell-check, Auto correct).

**Case Study: (1 Hr)**

1. Create a document to write a letter to the DM&HO of the district complaining about Hygienic conditions in your area.
2. Create a document to share your experience of your recent vacation with family.

## **Unit II: (8 Hrs.)**

**MS Word Advanced features:** Difference between Wizard and Template – Customize the Quick Access Tool Bar – **Macros:** Purpose – Creating Macro – Using Macro – Storing Macro, **Inserting pictures:** From Computer, Online Pictures – Insert 3d Models - Insert Shapes – Insert Text Box – Insert Equation, Hyperlinks, Tables Insert tables Mail merging, Printing documents, **Tables:** Insert tables, Mathematical calculations on tables data. Insert Text Box etc.

### **Case Study: (1 Hr)**

1. Create a document to send a holiday intimation to all the parents at time about Dasara Vacation.
2. Create a document to create Time Table of you class using tables.

## **Unit III: (8 Hrs.)**

**Introduction to MS Excel & Its features:** MS-Excel: Excel Features, Spreadsheets, workbooks, creating, saving & editing a workbook, renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace, Adding and deleting rows and columns Filling series, fill with drag, data sort, Formatting worksheet, Functions and its parts, Some useful Functions in Excel (SUM, AVERAGE, COUNT, MAX, MIN, IF).

### **Case Study: (1 Hr)**

1. Create a worksheet with you class marks displaying total, average, top marks in the class and least marks in the class.

## **Unit IV: (8 Hrs.)**

**Ms-Excel Advanced Features:** Cell referencing (Relative, Absolute, Mixed), What-if analysis, Introduction to charts: types of charts, creation of charts, printing a chart, printing worksheet – Sort – Filters – View Menu

### **Case Study: (1 Hr)**

1. Prepare a chart with height and weights of you class mates in at least 3 types of charts.
2. Demonstrate the use of Filter with the attendance data of your class.

## **Unit V: (8 Hrs.)**

**Ms-PowerPoint and its Applications:** MS-Power Point: Features of Power Point, Uses, components of slide, templates and wizards, using template, choosing an auto layout, using outlines, adding sub headings, editing text, formatting text, using master slide, adding slides, changing color scheme, changing background and shading, adding header and footer, adding clipart and auto shapes. Various presentation, working in slide sorter view (deleting, duplicating, rearranging slides), adding transition and animations to slide show, inserting music or sound on a slide, viewing slide show, Printing slides.

### **Case Study: (1 Hr)**

1. Prepare a presentation with your achievements and experiences in College.

### **Prescribed Text Books**

1. Computer Fundamentals–Pradeep.K.Sinha:BPBPublications.
2. Fundamentals of Computers -ReemaThareja, Oxford University Press India

### **Reference Books**

1. Fundamentals of Computer – V . Rajaraman, Printice Hell of India.
2. Introduction to Computers–Peter Norton McGraw-Hill.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**

**BLUEPRINT**

Subject: Computer Science

Semester: III

Course Title: Office Automation Tools

Course Code: 23CSCCOA23

Time: 3 Hrs.

Max. Marks: 100

Section - A

Answer any **FIVE** questions

**5 × 8 = 40 M**

Question No.	Unit	Marks Weightage	RBT Level
1	I	8	RBT1 – 3Q RBT2 – 3Q RBT3 – 4Q
2	I	8	
3	II	8	
4	II	8	
5	III	8	
6	III	8	
7	IV	8	
8	IV	8	
9	V	8	
10	V	8	

Section - B

Answer **ALL** questions:

**5 × 12 = 60 M**

Question No.	Unit	Marks Weightage	RBT Level
11(a) OR 11(b)	I	12	RBT1 - 2Q
12(a) OR 12(b)	II	12	RBT2 – 2Q
13(a) OR 13(b)	III	12	RBT3 – 1Q
14(a) OR 14(b)	IV	12	<b>Every question's (a) and (b) must be at the same RBT level.</b>
15(a) OR 15(b)	V	12	

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
**(Affiliated to Krishna University, Machilipatnam)**

**Model Question Paper**

Subject: Computer Science

Semester: III

Course Title: Office Automation Tools

Course Code: 23CSCCOA23

Time: 3 Hrs.

Max. Marks: 100

Section - A

Answer any **FIVE** questions

**5 × 8 = 40 M**

1. Explain the significance of using shortcut keys in MS-Word. Provide four examples of commonly used shortcut keys and describe how they enhance efficiency in document editing.
2. Describe the process of formatting characters in MS-Word. Discuss at least four formatting options available.
3. Differentiate between Wizards and Templates in MS Word.
4. Demonstrate how to customize the Quick Access Toolbar in MS Word. Provide step-by-step instructions and explain the benefits of customization.
5. Describe the various data entry types in MS Excel, including numbers, labels, and formulas. Provide examples of each.
6. Explain various features of Excel.
7. Describe the different types of cell referencing in MS Excel, including relative, absolute, and mixed referencing. Provide examples of each type.
8. Explain the process of printing a chart and a worksheet in MS Excel. Provide step-by-step instructions.
9. Discuss the process of adding transitions and animations to a slide show in MS PowerPoint.
10. Create a Custom layout or Slide Master for professional presentation.

Section - B

Answer **ALL** questions

**5 × 12 = 60 M**

11. a) Explain formatting tables in MS-Word. Describe three techniques and illustrate with examples.

OR

- b) Discuss the significance of page formatting in MS-Word. Explain four options and provide practical examples.



12. a) Discuss the significance of Macros in MS Word. Provide a detailed procedure for creating a Macro, utilizing it, and storing it for future use.

OR

b) Explain the process of inserting various elements in MS Word documents, including pictures, 3D models, shapes, text boxes, and equations.

13. a) Discuss the importance of functions in MS Excel and their components. Explain the purpose and usage of functions such as SUM, AVERAGE, COUNT, MAX, MIN, and IF with examples.

OR

b) The ABC Company shows the sales of different product or 5years. Create BAR Graph, 3D and Pie chart for the following.

A	B	C	D	E	F
S.No.	Year	Pro1	Pro2	Pro3	Pro4
1	1989	1000	800	900	1000
2	1990	800	80	500	900
3	1991	1200	190	400	800
4	1992	400	200	300	1000
5	1993	1800	400	400	1200

14. a) Enter the following data into the sheet:

Subject/Name	Raju	Rani	Mark	Rosy	Ismail	Reshma
English	76	89	43	51	76	87
2ndLang	55	85	78	61	47	33
Maths	65	82	34	58	52	65
Computers	45	91	56	72	49	56
HumanValues	51	84	54	64	32	64

Apply the conditional formatting for marks

- 35 below Red
- 35 to 50 Blue
- 51 to 70 Green
- 71 to 100 Yellow

OR

b) Create a suitable examination data base and find the sum of the marks (total) of each student and respective, class secured by the student.

- Pass: if marks in each subject  $\geq 35$
  - Distinction :if average  $\geq 75$
  - First class :if average  $\geq 60$  but  $< 75$
  - Second class: if average  $\geq 50$  but less than 60
  - Third class: if average  $\geq 35$  but less than 50
  - Fail: if marks in any subject  $< 35$
15. a) Demonstrate the advanced features of MS PowerPoint, such as working in slide sorter view, adding music or sound to a slide, and viewing and printing slides.

OR

- b) Create a table in PPT and apply graphical representation.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA –8**  
(Affiliated to Krishna University, Machilipatnam)

**SYLLABUS**

Subject: Computer Science	Semester: II	
Course Title: Office Automation Tools - Practical	Course Code: 23CSP2OA21	
No. of Hrs.:30	LTP: 002	Credits:1

**Objectives**

- Understand and become proficient in using various office automation tools such as word processors, spreadsheets, presentation software.
- Develop skills in using spreadsheet software for data analysis, visualization, and reporting.

**Course Outcomes**

After successful completion of this course, the student will be able to

**CO1:** Demonstrate proficiency in using various office automation tools.

**CO2:** Analyse data, create visualizations, and generate reports using spreadsheet software

**CO3:** Create and deliver professional presentations using presentation software.

**List of experiments**

1) Design a visiting card for Managing Director of a company as per the following specification.

- Size of visiting card is 3½x2
- Name of the company with big font
- Phone number, Fax number and E-mail address with appropriate symbols.
- Office and Residence address separated by a line

2) Create a table with following columns and display the result in separate cells for the following

- Emp Name, Basic pay, DA, HRA, Total salary.
- Sort all the employees in ascending order with the name as the key
- Calculate the total salary of the employee

- Calculate the Grand total salary of the employee
  - Finding highest salary and
  - Find lowest salary
- 3) Prepare an advertisement to a company requiring software professional with the following
- Attractive page border
  - Design the name of the company using WordArt
  - Use at least one clipart.
  - Give details of the company (use bullets etc)
  - Give details of the Vacancies in each category of employee's (Business manager, Software engineers, System administrators, Programmers, Data entry operators) qualification required.
- 4) Create a letter having following specifications
- Name of the company on the top of the page 2 with big font and good style
  - Phone no, Fax no and E-mail address with symbols.
  - Main products manufactured by the company
  - Slogans if any should be specify in bold at the bottom
- 5) Create two pages of curriculum vitae of a graduate with the following specifications
- Table to show qualifications with proper headings
  - Appropriate left and right margins
  - Format  $\frac{1}{2}$  page using two-column approach about yourself
  - Name on each page at the top right side
  - Page no. in the footer on the right side.
- 6) Write a macro format documents below
- Linespacing "2" (double)
  - Paragraph indent of 0.1
  - Justification formatting style
  - Arial font and Bold of 14pt-size
- 7) Create a letter as the main document and create 10 records for the 10 persons use mail merge to create letter for selected persons among 10.
- 8) Create an electronic spread sheet in which you enter the following decimal numbers and convert to octal, Hexa decimal and binary numbers and vice-versa.
- Decimal Numbers: 35, 68, 95, 78, 165, 225, 355, 375, 465
- Binary Numbers: 101, 1101, 11101, 11111, 10001, 11101111
- 9) Calculate the net pay of the employees following the conditions below.

S. no	A	B	C	D	E	F	G	H	I
1	Employee Number	Employee name	Basic Pay	D A	H R A	G P F	Gross Pay	Incom etax	Net Pay

- DA:-56% of the basic pay if Basic pay is greater than 20000 or else 44%.
- HRA:-15% of the Basic pay subject to maximum of Rs.4000.
- GPF: -10% of the basic pay.
- INCOMETAX:-10% of basic if Basic pay is greater than 20000.
- Find who is getting highest salary & who is get lowest salary?

10) The ABC Company shows the sales of different product or 5 years. Create BAR Graph, 3D and Pie chart for the following.

A	B	C	D	E	F
S.No.	Year	Pro1	Pro2	Pro3	Pro4
1	1989	1000	800	900	1000
2	1990	800	80	500	900
3	1991	1200	190	400	800
4	1992	400	200	300	1000
5	1993	1800	400	400	1200

11) Create a suitable examination data base and find the sum of the marks (total) of each student and respective, class secured by the student.

- Pass: if marks in each subject  $\geq 35$
- Distinction :if average  $\geq 75$
- First class :if average  $\geq 60$  but  $< 75$
- Second class: if average  $\geq 50$  but less than 60
- Third class: if average  $\geq 35$  but less than 50
- Fail: if marks in any subject  $< 35$

12) Enter the following data into the sheet.

Name	Department	Salary
Anusha	Accounts	12000
Rani	Engineering	24000
Lakshmi	Accounts	9000
Purnima	Marketing	20000
Bindu	Accounts	4500
Tejaswi	Accounts	11000

Swetha	Engineering	15000
Saroja	Marketing	45000
Sunitha	Accounts	5600
Sandhya	Engineering	24000
Harika	Marketing	8000

- Extract records for department tin Accounts and Salary > 10000
- Sort the data by salary with the department using “sort commands”.
- Calculate total salary for a ch department using Subtotals

13) Enter the following data into the sheet..

Subject/Name	Raju	Rani	Mark	Rosy	Ismail	Reshma
English	76	89	43	51	76	87
2ndLang	55	85	78	61	47	33
Maths	65	82	34	58	52	65
Computers	45	91	56	72	49	56
HumanValues	51	84	54	64	32	64

Apply the conditional formatting for marks

- 35 below Red
- 35 to 50 Blue
- 51 to 70 Green
- 71 to 100 Yellow

14) Create a presentation using templates.

15) Create a Custom layout or Slide Master for professional presentation.

16) Create a presentation with slide transitions and animation effects.

17) Create a table in PPT and apply graphical representation

### **Prescribe Text Books**

- Excel Formulas and Functions 2020 (Adam Ramirez)
- Microsoft Office 2019 All-in-One for Dummies" by Peter Weverka

### **Reference Book**

- Ms Office 2016 Quintessential Course (Withfree Dvd) by Vishnu P Singh, Computech Publications Ltd.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8  
(Affiliated to Krishna University, Machilipatnam)**

**Practical-Scheme of Valuation**

**Maximum Marks: 50**

**Maximum Time: 3 Hrs.**

<b>Practical</b>	<b>Marks</b>
Program Writing	15 M
Program Execution	15 M
Viva	10 M
Practical Record	10 M
<b>Total</b>	<b>50 M</b>

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8**

(Affiliated to Krishna University, Machilipatnam)

**SYLLABUS**

**Subject: Commerce & Management Studies**

**Semester: I**

**Course Title: Fundamentals of Commerce**

**Course Code:23CMCCFC14**

**No. of Hours: 60 Hrs.**

**LTP: 400**

**Credits: 4**

**Objectives:**

- To gain knowledge and insight into the procedural aspects of commerce and accounting
- To understand the taxation system prevailing in India

**Course Outcomes:**

After successful completion of this course, the student will be able to

**CO1:** Demonstrate an understanding of role of commerce and accounting concepts

**CO2:** Acquire knowledge about demand, supply and elasticity

**CO3:** Understand the branches of accounting

**CO4:** Familiarize with the taxation system and its practices

**CO5:** Developing simple website in Wordpress

**Unit-I: Introduction (10 Hrs.)**

Definition of Commerce – Role of Commerce in Economic Development - Role of Commerce in Societal Development. Imports and Exports, Balance of Payments. World Trade Organization.

**Unit-II: Economic Theory (10 Hrs.)**

Macro Economics – Meaning, Definition, Measurements of National Income, Concepts of National Income. Micro Economics – Demand and Supply. Elasticity of Demand and Supply. Classification of Markets -Perfect Competition – Characteristics – Equilibrium Price, Marginal Utility.

**Unit-III: Accounting Principles (10 Hrs.)**

Meaning and Objectives Accounting, Accounting Cycle - Branches of Accounting - Financial Accounting, Cost Accounting, Management Accounting. Concepts and Conventions of Accounting – GAAP.



**Unit-IV: Taxation (10 Hrs.)**

Meaning of Tax, Taxation - Types of Tax- Income Tax, Corporate Taxation, GST, Customs & Excise. Differences between Direct and Indirect Tax – Objectives of Tax- Concerned authorities – Central Board of Direct Taxes (CBDT) and Central Board of Excise and Customs (CBIC).

**Unit-V: Computer Essentials (10 Hrs.)**

Web Design - Word Press Basics, Developing a Simple Website. Digital Marketing - Social Media Marketing, Content Marketing, Search Engine Optimization (SEO), E-mail Marketing. Data Analytics- Prediction of customer behavior, customized suggestions.

**Activities:**

- Group Discussion - Problem solving.
- Quiz Programs
- Assignment on different types of taxes which generate revenue to the Government of India.
- Co-operative learning on Accounting Principles.
- Group Activity – Website building in wordpress

**Prescribed Text Book:**

1. S.P. Jain & K.L Narang, Fundamentals of Commerce - I Kalyani Publishers.

**Reference Books:**

1. S.P. Jain & K.L Narang, Accountancy - I Kalyani Publishers.
2. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand
3. Business Economics -S.Sankaran, Margham Publications, Chennai.
4. Business Economics - Kalyani Publications.
5. Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann Publications.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8**  
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**SYLLABUS**

**Subject: Commerce & Management Studies**

**Semester: I**

**Course Title: Business Organization**

**Course Code: 23CMCCBO14**

**No. of Hours: 60**

**LTP: 400**

**Credits: 4**

**Objectives**

- To acquire conceptual knowledge of business, formation various business organizations
- To provide the knowledge on deciding plant location, plan layout and business combinations

**Course Outcomes**

After successful completion of this course, the student will be able to

**CO1:** Understand the concept of Business Organization along with the basic laws and norms of Business Organization

**CO2:** Classify different forms of Business Organization.

**CO3:** Identify the importance of plant location and layout.

**CO4:** Explore the need for Forms and Kinds of Business Combination

**CO5:** Explain the evolution of Computer Evolution in relation to Business Organization

**Unit-I: Business Organization (10 Hrs.)**

Concept, Meaning, Features, Stages of development of business and importance of business. Classification of Business Activities. Meaning, Characteristics, Importance and Objectives of Business Organization. Difference between Industry & Commerce and Business & Profession, Modern Business and their Characteristics.

**Unit-II: Promotion of Business (10 Hrs.)**

Considerations in Establishing New Business. Qualities of a Successful Businessman. Forms of Business Organization - Sole Proprietorship, Partnership, Joint Stock Companies & Co-operatives and their Characteristics, relative merits and demerits, Difference between Private and Public Company, Concept of One Person Company.

**Unit-III: Plant Location and Layout (10 Hrs.)**

Meaning, Importance, Factors affecting Plant Location. Plant Layout - Meaning, Objectives, Importance, Types of Layout, Factors affecting Layout. Size of Business Unit - Criteria for Measuring the Size and Factors affecting the Size. Optimum Size and factors determining the Optimum Size.

**Unit-IV: Business Combination: (10 Hrs.)**

Meaning, Characteristics, Objectives, Causes, Forms and Kinds of Business Combination. Rationalization: Meaning, Characteristics, Objectives, Principles, Merits and demerits, Difference between Rationalization and Nationalization.

**Unit-V: Computer Essentials: (10 Hrs.)**

Milestones of Computer Evolution – Computer, Block diagram, generations of computer. Internet Basics - Internet, history, Internet Service Providers, Types of Networks, IP, Domain Name Services, applications. Ethical and Social Implications - Network and security concepts - Information Assurance Fundamentals, Cryptography Symmetric and Asymmetric, Malware, Firewalls, Fraud Techniques, privacy and data protection

**Co-Curricular Activities: (10Hrs.)**

- Assignment on business organizations and modern business
- Group Discussion on factors that influence plan location
- Seminars on different topics related to Business organization
- Case study could be given to present business plan of student's choice
- Latest Fraud techniques used by hackers.

**Prescribed Text Book:**

1. Gupta, C.B., "Business Organisation", Mayur Publication, (2014).

**Reference Books:**

1. Singh, B.P., Chhabra, T.N., "An Introduction to Business Organisation & Management", Kitab Mahal, (2014).
2. Sherlekar, S.A. & Sherlekar, V.S, "Modern Business Organization & Management Systems Approach Mumbai", Himalaya Publishing House, (2000).
3. Bhusan Y. K., "Business Organization", Sultan Chand & Sons.
4. Prakash, Jagdish, "Business Organistaton and Management", Kitab Mahal Publishers (Hindi and English)
5. Fundamentals of Computers by V. Raja Raman
6. Cyber Security Essentials by James Graham, Richard Howard, Ryan Olson



## UNIT - IV

(9 Hrs.)

### Classes and Objects

Introduction to OOP and its basic features - C++ program structure - Classes and objects - Friend Functions-Constructor – Types of constructors – Destructors.

## UNIT - V

(9 Hrs.)

### Inheritance

Inheritance - Types of Inheritance -Types of derivation- Public – Private - Protected Hierarchical Inheritance - Multilevel Inheritance – Multiple Inheritance - Hybrid Inheritance

### References

1. E. Balagurusamy "Object oriented programming with C++
2. R.Ravichandran "Programming with C++"
3. Mastering C by K R Venugopal and Sudeep R Prasad, Mc Graw Hill
4. Expert C Programming: Deep Secrets Kindle Edition Peter van der Linden (5 ) Let Us C YashavantKanetkar
5. The C++ Programming Language Bjarne Stroustrup
6. C++ Primer Stanley B. Lippman, Josée Lajoie, Barbara E. Moo

### Online Resources

[https:// www.tutorialspoint.com/cprogramming/index.htm](https://www.tutorialspoint.com/cprogramming/index.htm) |

[https:// www.learn-c.org/](https://www.learn-c.org/)

[https:// www.programiz.com/c-programming](https://www.programiz.com/c-programming)

[https:// www.w3schools.in/c-tutorial/](https://www.w3schools.in/c-tutorial/)

[https:// www.cprogramming.com/tutorial/c-tutorial.html](https://www.cprogramming.com/tutorial/c-tutorial.html)

[https:// www.tutorialspoint.com/cplusplus/index.htm](https://www.tutorialspoint.com/cplusplus/index.htm) |

[https:// www.programiz.com/cpp-programming](https://www.programiz.com/cpp-programming)

[http:// www.cplusplus.com/doc/tutorial/](http://www.cplusplus.com/doc/tutorial/)

[https:// www.learn-cpp.org/](https://www.learn-cpp.org/)

<https://www.javatpoint.com/cpp-tutorial>

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**SYLLABUS**

**Subject: Computer Science**

**Semester: III**

**Course Title: Programming with C & C++  
- Practical**

**Course Code: 20CSP3PC31**

**No. of Hours: 30**

**LTP: 002**

**Credits: 1**

**Objectives**

- To develop programming skills
- To plan structure and content, writing, updating and modifying computer programs for user solutions

**Course Outcomes**

**CO1:** Develop programming skills using the fundamentals and basics of C & C++ Languages.

**CO2:** Solve computing problems.

**CO3:** Apply various forms of inheritance.

**List of practicals**

1. Write C programs for
  - a. Fibonacci Series
  - b. Prime number
  - c. Palindrome number
  - d. Armstrong number.
2. 'C' program for multiplication of two matrices
3. 'C' program to implement string functions
4. 'C' program to swap numbers
5. 'C' program to calculate factorial using recursion
6. 'C++' program to perform addition of two complex numbers using constructor
7. Write a program to find the largest of two given numbers in two different classes using friend function
8. Program to add two matrices using dynamic constructor
9. Implement a class string containing the following functions:
  - a. Overload + operator to carry out the concatenation of strings.
  - b. Overload == operator to carry out the comparison of strings.
10. Program to implement inheritance.

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**SYLLABUS**

**Subject: Computer Science**

**Semester: IV**

**Course Title: Database Management**

**Course Code: 20CSCCDM43**

**No. of Hours: 45**

**LTP: 300**

**Credits: 3**

**Objectives**

- To understand the role of a database management system in an organization.
- To Identify entities, relationships and design databases.
- To be able to perform SQL and PL/SQL commands on the database.

**Course Outcomes**

**CO1:** Explain the basic concepts of database management system.

**CO2:** Analyze file- based system and database approach.

**CO3:** Explain entity-relationship model and relational database design.

**CO4:** Formulate and apply SQL queries to relational databases.

**CO5:** Discuss PL/SQL concepts.

**UNIT - I**

**(9 Hrs.)**

**Overview of Database Management System**

Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management System, Classification of Database Management System.

**UNIT - II**

**(9 Hrs.)**

**File- Based System**

File Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of DBMS, Data Models, Components of Database System, Database Architecture, DBMS Vendors and their products.

**UNIT - III**

**(9 Hrs.)**

**Entity- Relationship Model**

Introduction, The Building Blocks of an Entity-Relationship, Classification of Entity Set, Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, Aggregation and Composition, CODD's Rules, Relational Data Model, Concept of Relational Integrity. Functional dependencies Introduction to Normalization.

**UNIT - IV**

**(9 Hrs.)**

**Structured Query Language**

Introduction, History of SQL Standards, Commands in SQL, Data types in SQL, Data Definition Language (DDL), Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.

## UNIT - V

(9 Hrs.)

### PL/SQL

Introduction, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Control Structure, Steps to Create a PL/SQL Program, Iterative Control Cursors, Steps to Create a Cursor, Procedure, Functions, Packages, Exceptions Handling, Database Triggers, Types of triggers.

### Reference Books

1. Paneerselvam: Database Management system, PHI.
2. David Kuklinski, Osborne, Data management system McGraw Hill Publication.
3. Shgirley Neal And Kenneth LC Trunik Database management system in Business PHI.
4. Godeon C. EVEREST, Database Management- McGraw Hill Book company.
5. MRTIN, Database Management-Prentice Hall of India, New Delhi.
6. Bipin C. Desai, 'An Introduction to Database System', Galgotia Publications
7. Korth, Database Management System.
8. Navathe, Database Management System.
9. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management System

### Online resources

1. [http:// www.onlinegdb.com/](http://www.onlinegdb.com/)
2. [http:// www.tutorialspoint.com/](http://www.tutorialspoint.com/)
3. <http://learnsql.com>
4. [https:// www.codecademy.com/ learn/ learn - sql/](https://www.codecademy.com/learn/learn-sql/)
5. [https:// www.w3schools.com/sql/default.asp](https://www.w3schools.com/sql/default.asp)



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**SYLLABUS**

**Subject: Computer Science**

**Semester: IV**

**Course Title: Database Management  
- Practical**

**Course Code: 20CSP4DM41**

**No of Hours: 30**

**LTP: 002**

**Credits: 1**

**Objectives**

- To Identify entities, relationships and design databases.
- To be able to perform SQL and PL/SQL commands on the database.

**Course Outcomes**

**CO1:** Use the basics of SQL and create database tables and establish relationships between tables.

**CO2:** Formulate queries using SQL DML/DDL/DCL commands.

**CO3:** Apply SQL queries to relational databases.

**List of practicals**

1. Create tables department and employee with required constraints.
2. Initially only the few columns (essential) are to be added. Add the remaining columns separately by using appropriate SQL command.
3. Basic column should not be null
4. Add constraint that basic should not be less than 5000.
5. Calculate hra, da, gross and net by using PL/SQL
6. program. 6. The percentage of hra and da are to be stored separately.
7. When the da becomes more than 100 %, a message has to be
8. generated and with user permission da has to be merged with basic.
9. Empno should be unique and has to be generated automatically.

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**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V/VI</b>
<b>Course Title: Big Data Analytics with R</b>	<b>Course Code: 20CSSEC11BD3</b>
<b>No. of Hours: 45 Hrs.</b>	<b>LTP: 300 Credits: 3</b>

**Objectives**

- To learn the classification of digital data.
- To learn the classification of analytics.
- To analyze the importance and Exploring data in R programming.

**Course Outcomes**

**CO1:** Explain data and classification of digital data.

**CO2:** Explain Big Data Analytics.

**CO3:** Load data in to R.

**CO4:** Organize data in the form of R objects and manipulate them as needed.

**CO5:** Perform analytics using R programming.

**UNIT-I**

**(9 Hrs.)**

**Introduction to Big data:** Data, classification Of Digital Data--structured, unstructured, semi-structured data, characteristics of data, evaluation of big data, definition and challenges of big data , what is big data and why to use big data ?, business intelligence Vs big data. - Programming Exercises

**UNIT-II**

**(9 Hrs.)**

**Big data Analytics:**What is and isn't big data analytics? Why hype around big data analytics? Classification of analytics, top challenges facing big data, importance of big data analytics, technologies needed to meet challenges of big data - Programming Exercises.

**UNIT-III**

**(9 Hrs.)**

**Introduction to R and getting started with R:** What is R? Why R? , advantages of R over other programming languages, Data types in R- logical, numeric, integer, character, double, complex, raw, coercion, ls() command, expressions, variables and functions, control structures, Array, Matrix, Vectors, R packages - Programming Exercise.

**UNIT-IV**

**(9 Hrs.)**

**Exploring data in R:**Data frames-data frame access, ordering data frames, R functions for data frames dim(), nrow(), ncol(), str(), summary(), names(), head(), tail(), edit() .Load data frames—reading from .CSV files, sub setting data frames, reading from tab separated value files, reading from tables - Programming Exercises.

#### **UNIT-V**

**(9 Hrs.)**

##### **Data Visualization using R:**

**Reading and getting data into R (External Data):**XML files, Web Data, JSON files, Databases, Excel files.

**Working with R Charts and Graphs:** Histograms, Bar Charts, Line Graphs, Scatterplots, Pie Charts - Programming Exercises.

#### **Prescribed Books**

1. Seema Acharya ,SubhashiniChellappan --- Big Data And Analytics second edition, Wiley.
2. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
3. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj kamal, Preeti Saxena, McGraw Hill, 2018.
4. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends for Today's Business, Michael Minelli, Michelle Chambers, and AmbigaDhiraj, John Wiley & Sons, 2013.

#### **Reference Book**

1. An Introduction to R, Notes on R: A Programming Environment forData Analysis and Graphics. W. N. Venables, D.M. Smith and the R Development Core Team.



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**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V/VI</b>
<b>Course Title: Data Science with Python</b>	<b>Course Code: 20CSSEC12DP3</b>
<b>No. of Hours: 45 Hrs.</b>	<b>LTP: 300</b>
	<b>Credits: 3</b>

**Objectives**

- To learn the process of data science.
- To learn the basics of python.
- To analyze the importance of data science and exploring data in Python programming.

**Course Outcomes**

**CO1:** Explain the basic concepts of data science

**CO2:** Understand why python is a useful scripting language for developers.

**CO3:** Use standard programming constructs like selection and repetition.

**CO4:** Use aggregated data (list, tuple, and dictionary).

**CO5:** Implement functions and modules.

**UNIT-I**

**(9 Hrs.)**

**Introduction to data science:** Data science and its importance, advantages of data science, the process of data science, Responsibilities of a data scientist, qualifications of data scientists, would you be a good data scientist, why to use python for data science.- Programming Exercises

**UNIT-II**

**(9 Hrs.)**

**Introduction to python:** What is python , features of python, history of python, writing and executing the python program, basic syntax, variables, keywords, data types ,operators ,indentation, Conditional statements-if, if-else, nested if-else, looping statements-for, while, break, continue, pass- Programming Exercises.

**UNIT-III**

**(9 Hrs.)**

**Control structures and strings:** Strings - definition, accessing, slicing and basic operations; Lists - introduction, accessing list, operations, functions and methods; Tuples - introduction, accessing tuple; Dictionaries - introduction, accessing values in dictionaries - Programming Exercise.

**UNIT-IV**

**(9 Hrs.)**

**Functions and modules:** Functions - defining a function, calling a function, types of functions, function arguments, local and global variables, lambda and recursive functions, Modules- math and random - Programming Exercises.

**UNIT-V****(9 Hrs.)****Classes & Objects:**

Classes and Objects, Class method and self-argument, class variables and object variables, public and private data members, private methods, built-in class attributes, static methods. - Programming Exercises.

**Prescribed Text Book**

Steven cooper--- Data Science from Scratch, Kindle edition

**Reference Book**

1. Reemathareja—Python Programming using problem solving approach, Oxford Publication.

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Python Programming –  
Practical**

**Course Code: 20CSP612PP1**

**No of Hours: 45 Hrs.**

**LTP: 002**

**Credits: 1**

**Objectives**

- To practice the Python syntaxes and write programs.
- To identify and program the Python concepts and techniques.

**Course Outcomes**

**CO1:** Use standard programming constructs like selection and repetition.

**CO2:** Use aggregated data (list, tuple, and dictionary).

**CO3:** Implement functions and modules in python.

**List of Practicals:**

**(30 Hrs.)**

1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to Check if a Number is Odd or Even
5. Python Program to Find the Largest Among Three Numbers
6. Python Program to Check Prime Number
7. Python Program to Display the multiplication Table
8. Python Program to Print the Fibonacci sequence
9. Python Program to Find the Sum of Natural Numbers
10. Python Program to Find Factorial of Number Using Recursion
11. Python Program to work with string methods.
12. Python Program to create a dictionary and print its content.
13. Python Program to create class and objects.

**Skill/Hands-on: Field work/Mini Project**

1. Study Of Server Side Validation and Page Redirection In PHP Design A Login Form and Validate that Form using PHP Programming

**Reference Book**

1. Reemathareja—Python Programming using problem solving approach, Oxford Publication.





**UNIT-V****(9 Hrs.)**

Introduction of MIT App Inventor, Application Coding, Programming Basics & Dialog, Audio & Video, File - Programming Exercises.

**Prescribed Text Books**

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. App Inventor: create your own Android apps by Wolber, David (David Wayne).

**Reference Books**

1. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015.
2. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
3. Anubhav Pradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
4. Android Online Developers Guide
5. <http://developer.android.com/reference/> Udacity: Developing Android
6. Apps- Fundamentals
7. <https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd>
8. <http://www.appinventor.mit.edu>

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Android Programming  
– Practical**

**Course Code: 20CSP521AP1**

**No of Hours: 45 Hrs.**

**LTP: 002**

**Credits: 1**

**Objectives**

- To describe the layouts and controls of android.
- To create robust mobile applications.

**Course Outcomes**

**CO1:** Explain the android platform.

**CO2:** Explain the features of services and able to publish android Application.

**CO3:** Design and implementation of various mobile applications.

**List of Practicals:**

**(30 Hrs.)**

1. Demonstrate mobile technologies and devices
2. Demonstrate Android platform and applications overview
3. Working with texts, shapes, buttons and lists
4. Develop a calculator application
5. Implement an application that creates a alarm clock

**Skill/Hands-on: Field work/Mini Project**

**(15 Hrs.)**

1. Develop a mobile application that uses GPS location information.

**Reference Books**

1. Anubhav Pradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
2. Android Online Developers Guide 5.  
<http://developer.android.com/reference/> Audacity: Developing Android
3. <https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd>
4. <http://www.appinventor.mit.edu/>

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**SYLLABUS**

**Subject: Computer Science** Semester: V/VI  
**Course Title: Cyber Security & Malware** Course Code: 20CSSEC22CM3  
**No. of Hours: 45 Hrs.** LTP: 300 Credits: 3

**Objectives**

- To learn the importance of computer networks and network tools.
- To describe NIST Cyber Security Framework
- To apply Malware analysis tools for various issues.

**Course Outcomes**

- CO1:** Explain the computer networks, networking tools and cyber security.  
**CO2:** Describe about NIST Cyber Security Framework.  
**CO3:** Explain the OWASP Vulnerabilities.  
**CO4:** Implement various Malware analysis tools.  
**CO5:** Explain about Information Technology act 2000.

**UNIT-I** (9 Hrs.)

**Introduction to Networks & cyber security:** Computer Network Basics • Computer network types • OSI Reference model • TCP/IP Protocol suite • Difference between OSI and TCP/IP • What is cyber, cyber-crime and cyber-security • All Layer wise attacks • Networking devices: router, bridge, switch, server, firewall • How to configure: router • How to create LAN - Programming Exercises

**UNIT-II** (9 Hrs.)

**NIST Cyber security framework:** Introduction to the components of the framework • Cyber security Framework Tiers • What is NIST Cyber security framework • Features of NIST Cyber security framework • Functions of NIST Cyber security framework • Turn the NIST Cyber security Framework into Reality/ implementing the framework - Programming Exercises.

**UNIT-III** (9 Hrs.)

**OWASP:** • What is OWASP? • OWASP Top 10 Vulnerabilities – Injection - Broken Authentication - Sensitive Data Exposure - XML External Entities (XXE) - Broken Access Control - Security

Misconfiguration - Cross-Site Scripting (XSS) - Insecure Deserialization - Using Components with Known Vulnerabilities - Insufficient Logging and Monitoring • Web application firewall - Programming Exercise.

#### **UNIT-IV**

**(9 Hrs.)**

**MALWARE Analysis:** • What is malware • Types of malware - Key loggers - Trojans - Remote access trojan - Rootkits • Antivirus • Firewalls • Malware analysis - VM ware - How to use sandbox - Process explorer - Process monitor - Programming Exercises.

#### **UNIT-V**

**(9 Hrs.)**

**CYBER SECURITY: Legal Perspectives** • Cybercrime and the legal landscape around the world • Indian IT ACT 2008 -- Cybercrime and Punishments • Challenges to Indian law and cybercrime scenario in India - Programming Exercises.

#### **Prescribed Text Books**

1. Computer Networks | Fifth Edition | By Pearson (6th Edition)|Tanenbaum, Feamster & Wetherill
2. Computer Networking | A Top-Down Approach | Sixth Edition | By Pearson | Kurose James F. Ross Keith W.
3. Cyber Security by Sunit Belapure, Nina Godbole|Wiley Publications
4. TCP/IP Protocol Suite |Mcgraw-hill| Forouzan|Fourth Edition

#### **References**

1. <https://csrc.nist.gov/Projects/cybersecurity-framework/nist-cybersecurity-framework-a-quick-start-guide>
2. <https://owasp.org/www-project-top-ten/>
3. <https://owasp.org/www-project-juice-shop/>

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Cyber Security – Practical**

**Course Code: 20CSP622CS1**

**No of Hours: 45 Hrs. LTP: 002**

**Credits: 1**

**Objectives**

- To gain the knowledge in cyber security.
- To configure the LAN using Networking.

**Course Outcomes**

**CO1:** Implement the concepts of switch, router and packet.

**CO2:** Implement the features of services and able to publish Networking Applications.

**CO3:** Implement various Malware analysis tools.

**List of Practicals:**

**(30 Hrs.)**

1. Configure a LAN by using a switch
2. Configure a LAN by using Router
3. Perform the packet sniffing mechanism by download the "wire shark" tool and extract the packets
4. Perform an SQL Injection attack and its preventive measure to avoid Injection attack

**Skill/Hands-on: Field work/Mini Project**

1. Configure a LAN for a computer lab using network devices.

**Website References:**

1. <https://csrc.nist.gov/Projects/cybersecurity-framework/nist->
2. [cybersecurity-framework-aquick-start-guide](#)
3. <https://owasp.org/www-project-top-ten/>
4. <https://owasp.org/www-project-juice-shop>

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**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V/VI</b>
<b>Course Title: E-Commerce Applications</b>	<b>Course Code: 20CSSEC31EA3</b>
<b>No. of Hours: 45 Hrs.</b>	<b>LTP: 300</b>
	<b>Credits: 3</b>

**Objectives**

- To understand the foundation and importance of e-commerce.
- To analyse and evaluate electronic business applications and design electronic business models
- To learn how to Create and Customize Wordpress Website

**Course Outcomes**

- CO1:** Apply knowledge in all fields of business studies by drafting a website presence plan.
- CO2:** Understand the factors needed in order to be successful in e-commerce.
- CO3:** Gain skills to gather about the different components of building a web presence
- CO4:** Solve problems and issues that might pop up during the establishment of the web presence
- CO5:** Apply Word Press as a content management system (CMS) and design a website.

**UNIT- I**

**(9 Hrs.)**

**Introduction to E-commerce** – Meaning and concept – E-commerce, E-commerce v/s Traditional Commerce, E-Business & E-Commerce – History of E-Commerce, EDI – Importance, features & benefits of E-Commerce, Impacts, Challenges & Limitations of E-Commerce - Programming Exercises.

**UNIT- II**

**(9 Hrs.)**

**Business models of E – Commerce** – Business to Business, 2.1.2 Business to customers 2.1.3 Customers to Customers, Business to Government, Business to Employee, Influencing factors of successful E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture, Internet Commerce - Programming Exercises.

**UNIT- III****(9 Hrs.)**

Electronic data Interchange – EDI Technology, EDI- Communications , EDI Agreements, E- Commerce payment system, Digital Economy - Programming Exercises.

**UNIT- IV****(9 Hrs.)**

**A Page on the web** – HTML Basics, Client Side scripting -JAVA SCRIPT basics, Server side Scripting- PHP basics - Programming Exercises.

**UNIT- V****(9 Hrs.)**

**Logging in to Your Word press Site** – word press dash board, creating your first post, adding photos and images, creating hyper link, adding categories and tags - Programming Exercises.

**Prescribed Text Books**

1. Turban, Rainer, and Potter, Introduction to E-Commerce, second edition, 2003.
2. H. M. Deitel, P. J. Deitel and T. R. Nieto, E-Business and E-Commerce: How to Programe, Prentice hall, 2001.
3. WordPress All-in-One For Dummies -written by Lisa Sabin Wilson with contributions by Michael Torbert, Andrea Rennick, Cory Miller, and Kevin Palmer.

**Reference Books**

1. Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt Ltd.
2. Ravi Kalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley
3. <https://w3cschools.com>
4. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8**  
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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: E-Commerce – Practical**

**Course Code: 20CSP531EC1**

**No. of Hours: 45 Hrs.**

**LTP: 002**

**Credits: 1**

**Objectives**

- To understand the foundation and importance of e-commerce.
- To analyze and evaluate electronic business applications and design electronic business models

**Course Outcomes**

**CO1:** Gain skills to gather about the different components of building a web presence.

**CO2:** Apply Word Press as a content management system (CMS) and design a website.

**Case study of e –commerce**

**(30 Hrs.)**

1. Home page design of web site
2. Validation using PHP
3. Implement Catalogue design
4. Implement Access control mechanism( eg: username and password)
5. Case study on business model of online E-Commerce store

**Skill/Hands-on: Field work/Mini Project**

1. Choosing a firm or business to develop a website, identifying various business entities to be included in the website

**Reference Book**

1. Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt.Ltd.



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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Real Time Governance System Course Code: 20CSSEC32RG3**

**No. of Hours: 45 Hrs.**

**LTP: 300**

**Credits: 3**

**Objectives**

- To learn E-Governance implementation in several Indian states and countries.
- To analyze the real time applications of RTGS.

**Course Outcomes**

**CO1:** Appreciate the terms regarding Governance, E-Governance and RTGS.

**CO2:** Learn about E-Governance Infrastructure.

**CO3:** Understand the E-Governance implementation in several countries.

**CO4:** Understand the E-Governance implementation in several Indian states.

**CO5:** Analyze the applications of RTG.

**UNIT- I**

**(9 Hrs.)**

Introduction to E-Governance, Government, Governance and Good Governance – What is E-Governance or Electronic Governance? , E-Government and E-Governance -A conceptual Analysis - Objectives, Components, application domains, four phase model, implementing E-Governance, issues while implementing E-Governance Opportunities and challenges, Types of E-Governance, What is Real-Time Governance (RTG), Real Time Governance Society (RTGS) - Programming Exercises.

**UNIT- II**

**(9 Hrs.)**

E-Governance Infrastructure – Data Systems infrastructure, Executive Information Systems, Management Information Systems, Knowledge Management Systems, Transaction Processing Systems, Legal Infrastructural preparedness, IT Act 2000, Challenges to Indian law and cybercrime scenario in India, Amendments of the Indian IT Act, Institutional Infrastructural , preparedness, Internet, intranet, extranet, Human Infrastructural preparedness, Top-level management, Middle-level management, Low-level management, Technological Infrastructural preparedness, Information and communications technology, Data , Warehousing, Cloud Computing - Programming Exercises.

**UNIT-III**

**(9 Hrs.)**

Country profiles of E-Governance: INDIA, US, UK, CHINA, DUBAI - Programming Exercises.

**UNIT-IV**

**(9 Hrs.)**

E-Governance in India – Andhra Pradesh, Karnataka, Kerala, Uttar Pradesh, Maharashtra, West Bengal, Gujarat - Programming Exercises.

**UNIT-V**

**(9 Hrs.)**

Latest Applications in Real Time Governance – Agriculture, Rural Development, Education, Tourism, Commerce and Trade - Programming Exercises.

**Prescribe Text Books**

1. E-Governance: concepts and case studies| CSR Prabhu| Prentice-Hall|.
2. E-Governance| Niranjani, Sanhari Mishra | Himalaya Publishing House.

**Website References**

1. <http://www.egov4dev.org/success/case/>
2. <https://vikaspedia.in/e-governance/resources-for-vles>
3. <https://altametrics.com/en/information-systems/information-system-types.html>
4. <https://core.ap.gov.in/CMDashBoard/Index.aspx>

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/ VI**

**Course Title: RTGS – Practical**

**Course Code: 20CSP632RG1**

**No. of Hours: 45 Hrs.**

**LTP: 002**

**Credits: 1**

**Objectives**

- Learn about E-Governance Infrastructure.
- Analyze the applications of RTG

**Course Outcomes**

**CO1:** Understand the E-Governance implementation in several countries.

**CO2:** Understand the E-Governance implementation in several Indian states

**CO3:** Analyze the applications of RTG

**List of Practicals:**

**(30 Hrs.)**

1. Write a Report on the role of Nationwide Networking in E-Governance.
2. Write a Report on SETU: A Citizen Facilitation Centre in India, regarding it's successful or failure journey.
3. Write a Report on National Cyber Security Policy, how it is useful to Indian citizens.
4. Write a Report on mee-seva/Village Secretariat/Ward secretariat, a new paradigm in citizen services.
5. Write a Report on how Andhra Pradesh is implementing RTGS in Agriculture.
6. Write a Report on how Andhra Pradesh is implementing RTGS in social welfare schemes.
7. Write a Report on how Andhra Pradesh is implementing RTGS in waste lands, agricultural lands and house properties.
8. Write a Report on Electronic Birth Registration in any one state of our country.

**Skill/Hands-on: Field work/Mini Project**

1. Case study on Electronic academic certificates of a college.

**Reference Book**

1. E-Governance: concepts and case studies| CSR Prabhu [Prentice-Hall]

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V/VI**

**Course Title: Multimedia Tools &  
Applications**

**Course Code: 20CSSEC41MM3**

**No. of Hours: 45 Hrs.**

**LTP: 300**

**Credits: 3**

**Objectives**

- To explore the fundamentals of Multimedia to design and develop animations.
- To create animations that incorporate text, images, sound, and video
- To learn how to use basic video compression techniques.

**Course Outcomes**

**CO1:** Gain knowledge on the concepts related to Multimedia.

**CO2:** Understand the concepts like image data representation and colour modes.

**CO3:** Understand the different types of video signals and digital audio.

**CO4:** Know about multimedia data compression types and audio compression standards.

**CO5:** Learn about basic video compression techniques.

**UNIT-I**

**(9 Hrs.)**

**Introduction to multimedia**– What is Multimedia? Components of Multimedia System, Multimedia and Hypermedia, Multimedia Authoring metaphors, Multimedia Production, Multimedia Presentation, Some Technical Design Issues, Automatic Authoring – Programming Exercises.

**UNIT-II**

**(9 Hrs.)**

**Image Data Representations and color models** – Color science Human vision Image data types– Black & white images – 1-bit images (Binary Image),8-bit (Gray -level images).Color images –24-bit color images,8-bit color images.Color models – Programming Exercises.

**UNIT-III**

**(9 Hrs.)**

**Fundamental concepts in video**– Types of Video Signals– Analog Video, Digital Video.Basics of Digital Audio– What is Sound, Digitization of Sound, Quantization and Transmission of Audio, Pulse code modulation, Differential coding of audio, Predictive coding – Programming Exercises.

**UNIT-IV****(9 Hrs.)**

**Multimedia Data Compression**– Introduction, Basics of Information Theory, Lossless Compression Algorithms, Fix-Length Coding, Run-length coding, Dictionary-based coding, Variable Length Coding, Huffman Coding Algorithm.

**Audio Compression standards**– Introduction, Psychoacoustics model, MPEG Audio – Programming Exercises.

**UNIT-V****(9 Hrs.)**

**Basic Video Compression Techniques**– Introduction to Video compression, Video compression standard H.261, Video compression standard MPEG-1 – Programming Exercises.

**Prescribed Book**

1. Fundamentals of Multimedia by Ze-Nian Li & Mark S. Drew. Publisher: Prentice Hall.

**Reference Books**

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.
2. Digital Multimedia by Nigel Chapman & Jenny Chapman. 2009.

**Online Resources**

1. <https://ksuit342.wordpress.com/lectuers/>.
2. <https://www.tutorialspoint.com/multimedia>.

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**SYLLABUS**

**Subject: Computer Science**

**Semester: V**

**Course Title: Multimedia Tools &  
Applications - Practical**

**Course Code: 20CSP541MM1**

**No. of Hours: 45**

**LTP: 003**

**Credits: 1**

**Objectives**

- To explore the fundamentals of Multimedia to design and develop animations.
- To create animations that incorporate text, images, sound, and video

**Course Outcomes**

**CO1:** Implement the concepts like image data representation and colour modes.

**CO2:** Apply different types of video signals and digital audio.

**CO3:** Know about multimedia data compression types and audio compression standards.

**List of Practicals:**

1. Editing images using GIMP
2. Improve the Quality of your Image in GIMP
3. Create an Impressive background in GIMP
4. Applying Shadow & Highlight effects in images
5. Black& white and color photo conversion.

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**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V/VI</b>
<b>Course Title: Digital Imaging</b>	<b>Course Code: 20CSSEC42DI3</b>
<b>No. of Hours: 45 Hrs.</b>	<b>LTP: 300 Credits: 3</b>

**Objectives**

- To learn the fundamentals of Computer Graphics.
- To achieve a level of comfort with the tools and techniques needed to create digital images.
- To experiment with new ways to connect digital technologies to one's own creative practice.

**Course Outcomes**

**CO1:** Gain knowledge about Types of Graphics, Objects and video editing tools.

**CO2:** Show their skills in editing and altering photographs.

**CO3:** Gain knowledge in using the layers.

**CO4:** Apply knowledge in using selection and drawing tools.

**CO5:** Gain knowledge in using touch up tools and filters.

**UNIT-I**

**(9 Hrs.)**

**Types of Graphics** – Raster vs Vector Graphics

**Types of Objects** – Audio formats, Video formats, Image formats, Text document formats.

Types of video editing, Different color modes, Image Scanner –  
Types of Image Scanners.

**UNIT-II**

**(9 Hrs.)**

**What is GIMP**– GIMP tool box window, Layers Dialog, Tool Options Dialog, Image window, Image window menu

**UNIT-III**

**(9 Hrs.)**

**Improving Digital Photos**– Opening files- Rescaling saving files  
Cropping, Brightening & Darkening, Rotating, Sharpening.

**Introduction to layers**– What is layer- Using layer to add text, Using move tool, Changing colors, Simple effects on layers, Performing operations on layers, Using layers to copy and paste.

**UNIT-IV****(9 Hrs.)**

**Drawing**– Drawing lines and curves, Changing colors and brushes, Erasing, Drawing rectangles, Circles and other shapes, Outlining and filling regions, Filling with patterns and gradients.

**Selection**- Working with selections, Select by color and fuzzy, Select Bezier paths, Modifying selections with selection modes.

**UNIT-V****(9 Hrs.)**

**Erasing and Touching Up**– Dodge and burn tool, Clone tool, Sharpening using convolve tool, Correcting Color Balance.

**Filters**– Filters, Blur, Enhance, Noise Filters.

**Prescribed Book**

1. Beginning GIMP from Novice to professional by Akkana Peck, Second Edition, Apress.

**Reference Book**

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.



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**SYLLABUS**

<b>Subject: Computer Science</b>	<b>Semester: V/VI</b>
<b>Course Title: Digital Imaging - Practical</b>	<b>Course Code: 20CSP642DI1</b>
<b>No. of Hours: 45 Hrs.</b>	<b>LTP: 003</b>
	<b>Credits: 1</b>

**Objectives**

- To Develop a balanced view of modern image processing studies between theoretical aspects and practical implementations.
- To Implement computer vision techniques with emphasis on practical aspect.

**Couse Outcomes**

**CO1:** Implement their skills in editing and altering photographs  
**CO2:** Apply selection and drawing tools to digitalize the images  
**CO3:** Apply filters and touchup tools to modify the images

**List of Practicals:** **(30 Hrs.)**

1. Designing a Visiting card
2. Design Cover page of a book
3. Paper add for calling tenders
4. Design a Pamphlet
5. Brochure designing
6. Titles designing
7. Custom shapes creation
8. Image size modification
9. Background changes
10. Texture and patterns designing

**Skill/Hands-on: Field Work/Mini Project** **(15 Hrs.)**

1. Create pamphlets for any organization about their business.