Department of Computer Science and Applications

Board of Studies

B.Sc. (M.P.Cs, M.S.Cs, M.G.Cs, G.G.Cs)

2022-23

Government College (A), Rajahmundry

Accredited with 'A+' grade by NAAC

PROCEEDINGS OF THE PRINCIPAL
GOVERNMENT AUTONOMOUS COLLEGE, RAJAHMUNDRY

PRESENT: Dr.R. David Kumar, M.Sc., M.Phil.., Ph.D.

RC. NO. 152/GCRJY/ACAD. CELL//BOS/2021/, DATED. 05.07. 2022

Sub: GCRJY-**Conduct of BoS Meetings for the Academic Year 2022-23** - Regarding
***

ORDER:

       With reference to the subject cited, the lecturers-in-Charge of all the departments are hereby informed to conduct their respective Board of Studies (BoS) meetings by the end of July 2022.

       You are also informed to intimate the date of your BoS meeting well in advance to the subject experts/University nominee/Industrial Nominee/members of BoS/Student nominee concerned to get their valuable views and suggestions in the deliberations to frame the concrete syllabi for your subjects keeping in view the objectives of the college and interest of the stake holders. The date should also be indicated to Academic Cell in advance.

       You are further suggested to utilize the academic autonomy in incorporating the additional modules in the syllabi and identify the pedagogical strategies to implement the same.

Please note that your BoS document should contain the following contents in order
  a) Proceedings of the Principal pertaining to BoS
  b) Composition of BoS
  c) Table showing the Allocation of Credits   in the following table for both theory and Lab in case of science subjects

S. No	Semester	Course Code	Title of the Course (Paper)	Max. Marks (SEE)	Marks in CIA	L	T	P	C

L= Lecture, T= Tutorial, P= Practical, C= Credits

  d) Agenda wise Resolutions adopted in the meeting with detailed discussions
  e) Table showing Members present with signatures
  f) List of Examiners & Paper setters
  g) Syllabus for each course in the **Proforma given** (both theory & Practical in case of Science subjects) followed by model question papers (theory & practical)
  h) Unit wise Assignment questions at the end of syllabus of each course

       You are requested to submit a separate document regarding addition/deletion of specific topics from the syllabus in each course (paper) with justification, if any.

All the *new Courses/certificate courses* proposed for the calendar year 2022, Seminars/ workshops, field visits, study tours for 2022-23 should be placed before the respective Board and get them approved.

You are also requested to submit 2 hard copies & 2 soft copies (CDs) of BoS document to the Academic cell along with original bills and settle the bills after completion of the BoS meeting. You can approach the Academic Cell for necessary documents.

Most Important: You are requested to submit soft & hard copies of *Resolutions (including discussion)* separately to IQAC immediately after BoS meeting is completed.

PRINCIPAL ·
GOVERNMENT AUTONOMOUS COLLEGE
RAJAHMUNDRY

Copy to:
1. Lecturers-in-Charge of all the departments
2. File

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

DEPARTMENT OF COMPUTER SCIENCE
B.Sc. PROGRAMME – COURSE STRUCTURE

UNDER CBCS PATTERN

We have made significant changes to the following syllabus based on the feedback from learners and educators.

S. No	Semester	Course Code	Title of the course	Changes in the Syllabus
1	I	CSC-155	Problem Solving in C	1. Pointer Concept is shifted from UNIT –IV to UNIT V **2.** Files concept added in UNIT V
2	II	CSC-156	Data Structures	1. Arrays topic moved from UNIT-I to UNIT -II 2. Stacks concept moved to UNIT-III 3. Binary trees topic moved to UNIT-IV
3	III	CSC-157	Database management Systems	1. Functional dependencies and normal forms topic moved to UNIT III 2. PL/SQL topic shifted to UNIT V
4	IV	CSC-158	Object Oriented Programing through Java	1. Streams, Applets and JDBC connectivity are included in UNIT V
5	IV	CSC-159	Operating Systems	1. Memory Management is moved to UNIT IV 2. UNIT V comprised of File and I/O Management, OS security, Android application development frame work and

		architecture

		The following courses are introduced in V Semester
6	V	CSC-160 Web Interface Designing Technologies,
		CSC -161 Web Applications Development using PHP& MYSQL
		CSC-162 Internet of things
		CSC-163 Application Development using Python
		CSC-164 Data science
		CSC-165 Python for Data Science

S.No	Semester	Course Code	Title of the Course (Paper)		Max Marks (SEE)	Marks in CIA	L	T	P	C
1	SEM - I	CSC-155		Problem Solving in C	50	50	3	1	-	3
2		CSC-155P		Problem Solving in C Lab	50	--	-	-	3	2
3	SEM - II	CSC-156		Data Structures using C	50	50	3	1	-	3
4		CSC-156P		Data Structures using C Lab	50	--	-	-	3	2
5	SEM-III	CSC157		Database Management System	50	50	3	1	-	3
6		CSC157P		Database Management System Lab	50	--	-	-	3	2
7	SEM-IV	CSC158		Object Oriented Programming using Java	50	50	3	1	-	3
8		CSC158P		Object Oriented Programming using Java Lab	50	--	-	-	3	2
9		CSC159		Operating Systems	50	50	3	1	-	3
10		CSC159P		Operating Systems Lab using C/Java	50	--	-	-	3	2
11	SEM-V	CSC160	Elective-A	Web Interface Designing Technologies	50	50	3	1	-	3
12		CSC160P		Web Interface Designing Technologies Lab	50	--	-	-	3	2
13		CSC161		Web Applications Development using PHP& MYSQL	50	50	3	1	-	3
14		CSC161P		Web Applications Development using PHP& MYSQL Lab	50	--	-	-	3	2
15		CSC162	Elective-B	Internet of things	50	50	3	1	-	3
16		CSC162P		Internet of things Lab	50	--	-	-	3	2
17		CSC163		Application Development using Python	50	50	3	1	-	3
18		CSC163P		Application Development using python Lab	50	--	-	-	3	2
19		CSC164	Elective-C	Data science	50	50	3	1	-	3
20		CSC164P		Data science Lab	50	--	-	-	3	2
21		CSC165		Python for Data Science	50	50	3	1	-	3
22		CSC165P		Python for Data Science Lab	50	--	-	-	3	2

GOVERNMENT COLLEGE (AUTONOMOUS),RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

COMPOSITION OFBOARD OF STUDIES FOR THE YEAR 2022-23

Chairman	Mr. Suneel Kumar Duvvuri In-charge of the Department, Department Of Computer Science & Applications Government College (A), Rajahmundry.
University Nominee	Dr.V. Persis Dept. of CSC, UCEngg. AdikaviNannaya University, Rajahmundry.
Subject Expert	Smt. E. Jyothi Kiranmayi SVD Govt. College for Women, Nidadavole
Subject Expert	Mr. R V SatyanarayanaPR GDC, Kakinada
Expert from Industry	Sri K. Vasanth Kumar, Lead SAS Programmer, B&P Team, EMMES Services Pvt Ltd, Bangalore
Members	
Smt U. Sandhya Rani	Faculty Member
Sri Devaraju Hanumanthu	Faculty Member
Sri P. Narsingarao	Faculty Member
Sri. D. SeethaRamulu	Faculty Member
Kum S.Jaya Lakshmi	Faculty Member
Sri K.Ramesh	Faculty Member
Ch. Sujatha	Faculty Member
V. Sailaja	Faculty Member
N. Priyanka	Faculty Member
M. Tejaswi	Faculty Member
B. Balaparameswari	Faculty Member
S. Lakshmi Sandhya	Student Member

	Government College (Autonomous) Rajahmundry				
Course Code CSC-155	**TITLE OF THE COURSE** Problem Solving in C	**Program & Semester** I B.Sc. (I Sem)			
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:	Basic Mathematics	3	1	-	3

Course Objectives:

1. This course aims to provide exposure to problem-solving through programming.

2. It introduces the concepts of the C Programming language.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the evolution and functionality of a Digital Computer
CO2	Develop an algorithm for solving a given problem.
CO3	Apply 'C' language constructs like Decision control statements and Iterative statements to develop various programs.
CO4	Analyze various data structures like arrays, structures and unions, pointers and files to store and retrieve data.
CO5	Apply modular programming through functions.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I: **[13 Hrs.]**

General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and

Maintainable Programs.

UNIT II: [13 Hrs.]

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers –Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples.

Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

UNIT III: [12 Hrs.]

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional **arrays, character handling and strings.**

UNIT IV: [12 Hrs.]

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types.

UNIT V: [10 Hrs.]

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables– Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments.

Text books:

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.

2. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.

Reference books:

1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.

2. Programming in C second edition. Pradep Day, Manas Ghosh

Web Links:

1. https://nptel.ac.in/courses/106/104/106104128/

2. https://nptel.ac.in/courses/106/105/106105171/

3. https://data-flair.training/blogs/c-tutorial/

4. https://www.programiz.com/c-programming

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc.   Semester-I

Problem solving in C

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

SECTION - I

Answer any 5 questions   **5X2= 10M**

1. Explain Block diagram of Computer.

2. Define an Algorithm. What are the key features of an algorithm?

3. Write about go to statement with syntax and example.

4. Write a short note on Dynamic memory allocation.

5. Explain pointers in arrays.

6. How to write data from files with example?

7. Write about enumerated data types.

8. Briefly explain various types of recursions.

SECTION - II

Answer following question   **5X8 = 40M**

9. Briefly explain about generations of computers.

(OR)

10. What is a Flowchart? Explain significance with an example.

11. Explain basic data types in C?

(OR)

12. Explain about iterative statements available in C.

13. What is an Array? Explain different types of arrays with examples.

(OR)

14. What is a string? Explain various string handling functions available in C.

15. Define a function. Explain the passing parameter mechanism.

(OR)

16. Explain about Structure with syntax and example in detail.

17. Define and use of a pointer and write a 'C' program on swapping of two numbers using pointers.

(OR)

18. Explain reading from and writing data into files.

	Government College (Autonomous) Rajahmundry				
Course Code CSC-155P	**TITLE OF THE COURSE** Problem Solving in C Lab	**Program & Semester** I B.Sc. (I Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	Basic mathematical knowledge	0	0	3	2

Objectives:

1. The purpose of this course is to introduce to students to the field of programming in C language.

2. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

List of Experiments/Syllabus:

1. Write a program to check whether the given number is Armstrong or not.

2. Write a program to find the sum of individual digits of a positive integer.

3. Write a program to generate the first n terms of the Fibonacci sequence.

4. Write a program to find both the largest and smallest number in a list of integer values

5. Write a program to demonstrate refection of parameters in swapping of two integer values using Call by Value&Call by Address

6. Write a program that uses functions to add two matrices.

7. Write a program to calculate factorial of given integer value using recursive functions

8. Write a program for multiplication of two N X N matrices.

9. Write a program to perform various string operations.

10. Write a program to search an element in a given list of values.

11. Write a program to sort a given list of integers in ascending order.

12. Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure.

   DA is 30 % of Basic Pay

   HRA is 15% of Basic Pay

   Deduction is 10% of (Basic Pay + DA)

Gross Salary = Basic Pay + DA+ HRA

Net Salary = Gross Salary - Deduction

13. Write a program to illustrate pointer arithmetic.

14. Write a program to read the data character by character from a file.

15. Write a program to create Book (ISBN, Title, Author, Price, Pages, Publisher)structure and store book details in a file and perform the following operations

      a. Add book details

      b. Search a book details for a given ISBN and display book details, if available

      c. Update a book details using ISBN

      d. Delete book details for a given ISBN and display list of remaining Books

Reference books:

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.

2. YashavantKanetkar - Let Us 'C' – BPB Publications.

3. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.

Virtual Lab Links:

1. IIIT Hyderabad: Computer Programming LAB   https://cse02-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry		**Program & Semester** I B.Sc (II Sem)			
Course Code CSC-156	**TITLE OF THE COURSE** Data Structures using C					
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C	
Pre-requisites:	C programming	3	1	-	3	

Syllabus:

UNIT I: [13 Hrs.]

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Atomic Type, Difference between Abstract Data Types, Data Types, and Data Structures, Refinement Stages.

Principles of Programming and Analysis of Algorithms: Software Engineering, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big 'O'

Notation, Algorithm Analysis, Structured Approach to Programming, Recursion, Tips and Techniques forWriting Programs in 'C'.

UNIT II: [13 Hrs.]
Arrays: Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers.

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Atomic Linked List, Linked List in Arrays, Linked List versus Arrays.

UNIT III: [13 Hrs.]
Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks throughArrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion.

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues,Double Ended Queues- Deques, Priority Queues, Application of Queues.

UNIT IV: [12 Hrs.]
Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree.

UNIT V: [10 Hrs.]
Searching and sorting: Sorting – An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

Text books:

1. "Data Structures using C", ISRD group Second Edition, TMH
2. "Data Structures through C", Yashavant Kanetkar, BPB Publications

Reference books:

1. Classic Data Structures Debasis Samanta. Second edition
2. Data Structures and algorithms GAV PAI

Web Links:

1. https://nptel.ac.in/courses/106/102/106102064/
2. https://nptel.ac.in/noc/courses/noc18/SEM1/noc18-cs25/
3. https://www.geeksforgeeks.org/data-structures/

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc.   Semester-II

DATA STRUCTURES

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Section - A

Answer any 5 questions   **5X2 = 10M**

1. Explain about Abstract Data Types.

2. Define linear and non-linear data structures.

3. Explain Atomic Linked List.

4. What are the applications of stacks?

5. What is priority queue?

6. Explain about binary search tree.

7. Define sorting. What are the advantages and disadvantages of merge sort?

8. Briefly explain various representations of Graphics.

Section - B

Answer following question   **5X10 = 40M**

9. What are primitive and non-primitive data structures with an example?

(OR)

10. Explain different approaches to designing an algorithm.

11. Explain different types of arrays.

(OR)

12. What is linked list? Explain different types of linked lists in data structures.

13. What is stack? Write ADT. Explain various operations of stack.

(OR)

14. What is a Deque? What are the different techniques used to represent Deque? Explain.

15. Write about different tree traveling techniques and write an algorithm for traveling techniques.

(OR)

16. Explain different applications and properties of binary tree.

17. Write about various Graph Travelling techniques.

(OR)

18. What is searching? Explain Linear Search Algorithm with example.

	Government College (Autonomous) Rajahmundry				
Course Code CSC-156P	**TITLE OF THE COURSE** **DATA STRUCTURES USING C**	**Program & Semester** I B.Sc. (II Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming	0	0	3	2

Objectives:

1. The purpose of this course is to introduce to students to the field of programming in Data structures using C language.

2. To enhance their analyzing and problem solving skills and use the same for writing programs in Data Structures using C.

List of Experiments/Syllabus:

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
    - Add an element at the begging of an array
    - Insert an element at given index of array
    - Update a element using a values and index
    - Delete an existing element
2. Write a program using stacks to convert a given infix expression to postfix
3. Write Programs to implement the Stack operations using an array
4. Write Programs to implement the Stack operations using Liked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Liked List.
7. Write a program for Binary Search Tree Traversals
8. Write a program to search an item in a given list using the following Searching Algorithms
    - Linear Search
    - Binary Search.

9. Write a program for implementation of the following Sorting Algorithms

- Bubble Sort
- Insertion Sort
- Quick Sort

10. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstra's algorithm

11. Write a program to implement Depth First Search graph traversals algorithm

12. Write a program to implement Breadth First Search graph traversals algorithm

Reference books:

1. Classic Data Structures Debasis Samanta. Second edition
2. "Data Structures Using C" Balagurusamy E. TMH

Virtual Lab Links:

1. https://cse01-iiith.vlabs.ac.in/

2. https://ds1-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry		Program & Semester II BSC (III Sem)			
Course Code CS157	**TITLE OF THE COURSE** DATA BASE MANAGEMENT SYSTEMS					
Teaching	Hours Allocated: 60 (**Theory**)		L	T	P	C
Pre-requisites:	Basic Computer Knowledge		3	1	-	3

Course Objectives:

1. The objective of the course is to introduce the design and development of databases with specialemphasis on relational databases.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the drawbacks of file systems and advantages of DBMS.
CO2	Apply Entity-Relationship model to design a database.
CO3	Understand Relational algebra, TRC, DRC techniques to represent a query.
CO4	Apply SQL commands to create and retrieve the database.
CO5	Apply PL/SQL triggers to make the database event driven.
CO6	Create a database for any data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I: **[13 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: [13 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 modeling.

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, relational calculus, tuple relational calculus, domain relational Calculus (DRC), Functional dependencies and normal forms up to 3rd normal form.

UNIT IV: [12 Hrs.]

Structured Query Language**:** Introduction, History of SQL Standard, 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.

UNIT V [10 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.

Text books:

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
2. Database Management Systems by Raghu Ramakrishnan, McGrawhill

Reference books:Deitel&Deitel. Java TM: How to Program, PHI(2007) (Unit V)

1. Principles of Database Systems by J. D. Ullman
2. Fundamentals of Database Systems by R. Elmasri and S. Navathe
3. SQL: The Ultimate Beginners Guide by Steve Tale.

Web Links:

1. https://onlinecourses.nptel.ac.in/noc21_cs04/preview
2. https://nptel.ac.in/courses/106/106/106106095/

CO-PO Mapping:

(**1: Slight [Low];**   **2: Moderate[Medium];**   **3: Substantial[High],**   **'-' : No Correlation)**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
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3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc   Semester-III

Database Management System

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Section - A

Answer any 5 question   **5X2 = 10M**

1. Explain disadvantages of file processing system?

2. Explain the concept of entity and entity set with suitable example.

3. Explain about various attribute classification.

4. What are the advantages of Relational algebra? Explain.

5. Explain various types of keys.

6. Explain the selection command with an example.

7. Explain sub queries.

8. Explain structure of PL/SQL.

Section - B

Answer following question   **5X8 = 40M**

9. With a neat diagram, explain the architecture of a DBMS.

(OR)

10. Explain about Data Models.

11. Explain about Specialization and Generalization in EER model.

(OR)

12. What is ER-Modeling? Write advantages and disadvantages of ER-Modelling.

13. What is Functional Dependency? Explain difference between 3NF and BCNF?

(OR)

14. What is relational model? Write about key features of relational model.

15.What is SQL? Explain different types of commands in SQL.

(OR)

16. What is Nested Queries? How to create them? Discuss it with relevant example.

17. Explain steps in creating a PL/SQL Program.

(OR)

18. Explain about Triggers and types of triggers.

|	**Government College (Autonomous)** **Rajahmundry**				
Course Code CSC 157P	**TITLE OF THE COURSE** DBMS Lab	**Program & Semester** II B.Sc. (III Sem)			
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Basic computer knowledge	0	0	3	2

Objectives:

1. Design & develop database for large volumes & varieties of data with optimized data processing techniques

List of Experiments/Syllabus:

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

Relational Database Schema - COMPANY
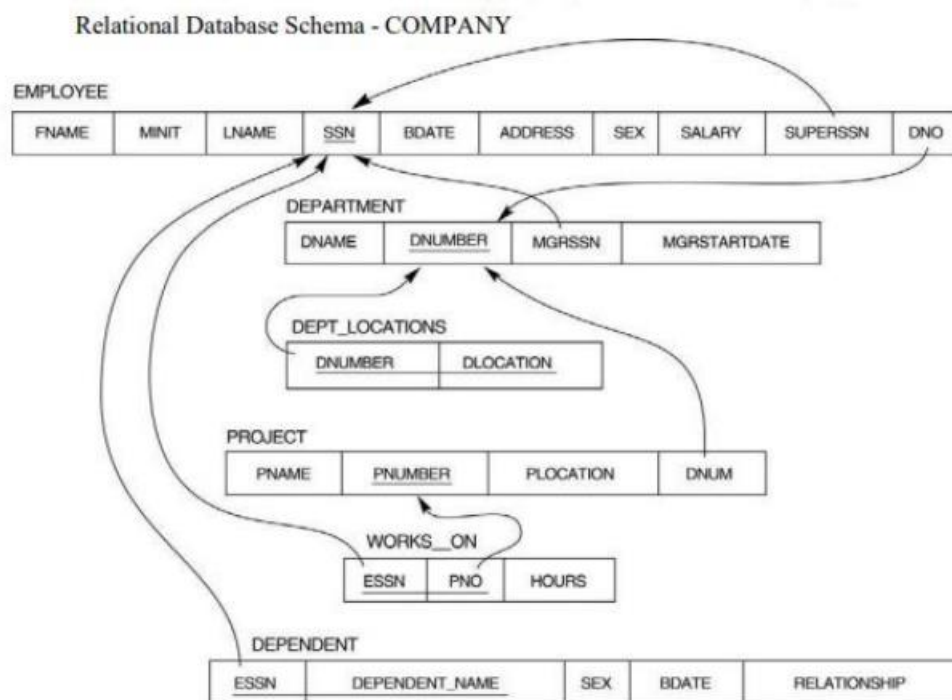
Questions to be performed on above schema

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 and60,000(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 'ProductX' 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.

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, andthe 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

Employeetable.

Reference books:

1. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php

	Government College (Autonomous) Rajahmundry			
Course Code CSC158	**TITLE OF THE COURSE** Object Oriented Programming Using JAVA	**Program & Semester** II BSC (IV Sem)		
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	C Programming	3	1	-	3

Course Objectives:

1. To introduce the fundamental concepts of Object-Oriented programming and to design & implement object-oriented programming concepts in Java.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the concepts of Object-Oriented Programming.
CO2	Apply decision making and Iterative statements to develop a program.
CO3	Develop application using Inheritance, Interfaces and polymorphism techniques.
CO4	Develop multithreaded applications.
CO5	Handle exceptions in an application.
CO6	Develop GUI application using applets.
CO7	Connect Java with database through JDBC.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I:

Fundamentals of Object-Oriented Programming: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP,

Applications of OOP Overview of JAVA Language: Introduction, Java Features, Simple java program structure, difference between C,C++ and Java, Java and Internet, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments Constants, Variables and Data Types : Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, symbolic Constants, Type casting, Getting Value of Variables, Standard Default values.

UNIT–II:

OPERATORS AND EXPRESSIONS: Arithmetic operators, Relational operators, logical operators, Assignment Operators, Increment and decrement operators, Conditional operators, Bitwise operators,
Special Operators, Arithmetic operators, Precedence of Arithmetic operators.

DECISION MAKING & BRANCHING: Introduction, Decision making with If statement, Simple if statement, If Else statement, Nesting of if else statements, the else if ladder, the switch statement, the conditional operator. DECISION MAKING &LOOPING :Introduction, The While statement, the Do-While statement, the for statement, Jumps in loops CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, static members, Nesting of methods, visibility controls

UNIT–III:

Inheritance : Inheritance and Types of Inheritances, Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes. ARRAYS, STRINGS AND VECTORS: Arrays, One-Dimensional Arrays, Creating an Array, Two-dimensional Arrays, Strings, Vectors, Wrapper classes.
Interfaces: Multiple Inheritance: Introduction, defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables.

UNIT–IV:

Multithreaded programming:

Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Life cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the „Runnable" Interface

Managing errors and exceptions: Types of Errors: Compile-time errors, Run-time Errors, Exceptions, Exception handling, Multiple catch statements, Using finally statement Packages: creating Packages, Accessing a Package, Using a Package, Adding class to a Package.

UNIT V:

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

Applets: Creating an Applet, Uses of Applets, <APPLET> tag, A Simple Applet, An Applet with Swing Components, Animation in Applets, A Simple Game with an Applet, Applet Parameters.

Java Database Connectivity:

Introduction, JDBC Architecture, Installing MySQL and MySQL Connector/J, JDBC Environment Setup, Establishing JDBC Database Connections, Result Set Interface, Creating JDBC Application

Text books:

1. Core Java: An Integrated Approach, Authored by Dr. R. Nageswara Rao &Kogent LearningSolutions Inc.
2. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-HillCompany.

Reference books:Deitel&Deitel. Java TM: How to Program, PHI(2007) (Unit V)

1. John R. Hubbard, Programming with Java, Second Edition, Schaum's outlineSeries, TMH.

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

Web Links:

1. https://nptel.ac.in/courses/106105191

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc   Semester-IV

Object Oriented Programming using Java

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Section - A

Answer any 5 question   **5X2= 10M**

1. Explain about JVM.

2. Explain about factory methods.

3. Explain about 'this' keyword with example.

4. Explain about Type casting.

5. Define Abstract class and Abstract method.

6. Explain Zipping and Unzipping files.

7. How to terminate a thread.

8. Explain JDBC.

Section - B

Answer following question   **5X10 = 40M**

9. Explain Looping statements in JAVA.

(OR)

10. Explain operators and types of operators.

11. Explain Inheritance and types of Inheritance.

(OR)

12. Explain constructors and types of constructors with an example.

13. Describe Interface? Critically explain and define Accessing Interface variable.

(OR)

14. Explain concept of Exception handling.

15. Explain the concept of Creating a file using File Writer using an example program.

(OR)

16. Discuss Thread Life Cycle.

17. Define Applet. Explain how to create an Applet.

(OR)

18. Explain the procedure to connect Oracle Database using jdbc-odbc driver.

	Government College (Autonomous) Rajahmundry				
Course Code CSC158P	**TITLE OF THE COURSE** OBJECT ORIENTED PROGRAMMING USING JAVA LAB	**Program & Semester** II B.Sc. (IV Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	C programming	0	0	3	2

Objectives:

1. The purpose of this course is to introduce to students to the field of programming in Object Oriented Programming.
2. To enhance their analyzing and problem-solving skills and use the same for writing programs in JAVA.

List of Experiments/Syllabus:

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 works 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
    e. Divided by Zero

     f. Array Index Out of Bound

     g. File Not Found

     h. Arithmetic Exception

     i. User Defined Exception

11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square andTriangle.

12. Write a program to create ***Book (ISBN,Title, Author, Price, Pages, Publisher)***structureand store book details in a file and perform the following operations

     j. Add book details

     k. Search a book details for a given ISBN and display book details, if available

     l. Update a book details using ISBN

     m. Delete book details for a given ISBN and display list of remaining Books

1.

Reference books:

1. Deitel&Deitel. Java TM: How to Program, PHI(2007) (Unit V)
2. Java Complete Reference. Herberth Schildt

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/java-iitd/index.html

2. https://java-iitd.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry				
Course Code CSC159	**TITLE OF THE COURSE** Operating System	**Program & Semester** II B.Sc. (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Computer knowledge	3	1	-	3

Course Objectives:

1. To understand the structure and organization of the file system.
2. To understand what a process is and how processes are synchronized and scheduled.
3. To understand different approaches to memory management.
4. Students should be able to use system calls for managing processes, memory and the file system

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand objectives and functions of Operating System.
CO2	Validate various process scheduling algorithms.
CO3	Validate various Memory management techniques.
CO4	Understand File management and I/O management techniques.
CO5	Develop an application using Android development Framework.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I:

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, 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:

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT III:

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, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT IV:

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

UNIT V:

File and I/O Management, OS security : Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, security Policy Mechanism, Protection, Authentication and Internal Access Authorization

Android:

Introduction to Android Operating System, Android Development Framework Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

Text books:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and GregGagne (7thEdition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)

Reference books:

1. Principles of Operating Systems by NareshChauhan, OXFORD University Press

2. Operatingsystems-InternalsandDesignPrinciples,W.Stallings,6thEdition, Pearson.

3. Modern Operating Systems, Andrew S Tanenbaum 3rd EditionPHI.

4. OperatingSystemsAconcept-basedApproach,2ndEdition,D.M.Dhamdhere, TMH.

5. Principles of Operating Systems, B. L. Stuart, Cengage learning, IndiaEdition.

6. Operating Systems, A. S. Godbole, 2nd Edition,TMH

Web Links:

1. https://nptel.ac.in/courses/106/105/106105214/

2. https://nptel.ac.in/courses/106/106/106106144/

3. https://nptel.ac.in/courses/106/106/106106147/

4. https://www.tutorialspoint.com/operating_system/index.htm

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc   Semester-III

Database Management System

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Answer any 5 question   **5X2 = 10M**

1. Write about Resource Abstraction.

2. Write about the process and the process state.

3. Explain threading issues.

4. Explain about process Synchronization.

5. Discuss some necessary and sufficient conditions for deadlock.

6. Explain about Virtual memory.

7. Explain about shared memory.

8. Write about file types.

Section - B

Answer following question   **5X10 = 40M**

9. Explain various types of Operating Systems.

(OR)

10. What is Operating System? Explain functions of Operating System.

11. Explain in detail about Process Scheduling.

(OR)

12. Explain system view of the process and resources.

13. Explain about deadlock Detection and recovery.

(OR)

14. Discuss classical process synchronization problems.

15. Explain the following

Segmentation

Fixed and variable partitions.

(OR)

16. Explain in detail about Demand-paging.

17. Explain Authentication and Internal Access Authorization.

(OR)

18. Explain Android Development Framework.

	Government College (Autonomous) **Rajahmundry**				
Course Code CSC159P	**TITLE OF THE COURSE** Operating Systems Lab	**Program & Semester** II B.Sc. (IV Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming skills	0	0	3	2

Objectives:

1. To use Linux operating system for study of operating system concepts.

2. To write the code to implement and modify various concepts in operating systems

List of Experiments/Syllabus:

1. Usage of following commands

   Ls,pwd,tty,cat,who,who am I,rm, mkdir,rmdir,touch,cd.

2. Usage of following commands Cal,cat(append),cat(concatenate),mv,cp,man,date.

3. Usage of following commands Chmod,grep,tput(clear,highlight),bc.

4. Write a program to implement Round Robin CPU Scheduling algorithm

5. Simulate SJF CPU Scheduling algorithm

6. Write a program the FCFS CPU Scheduling algorithm

7. Write a program to Priority CPU Scheduling algorithm

8. Simulate Sequential file allocation strategies

9. Simulate Indexed file allocation strategies

10. Simulate Linked file allocation strategies

11. Simulate MVT and MFT memory management techniques

12. Simulate Single level directory File organization techniques

13. Simulate Two level File organization techniques

14. Simulate Hierarchical File organization techniques

15. Write a program for Bankers Algorithm for Dead Lock Avoidance

16. Implement Bankers Algorithm Dead Lock Prevention.

17. Simulate all Page replacement algorithms.

FIFO

LRU

LFU

18. Simulate Paging Techniques of memory management

Reference books:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

	Government College (Autonomous) Rajahmundry				
Course Code CSC160	**TITLE OF THE COURSE** Web Interface Designing	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Programming fundamentals	3	1	-	3

Course Objectives:

1. Understand and appreciate the web architecture and services.
2. Gain knowledge about various components of a website.
3. Demonstrate skills regarding creation of a static website and an interface to dynamic website.
4. Learn how to install word press and gain the knowledge of installing various plugins to use in their websites

Course Outcomes:

On Completion of the course, the students will be able to-

CO1	Apply various elements in HTML to create static web pages.
CO2	Create forms Gain knowledge about various components of a website.
CO3	Use Java script to validate forms.
CO4	Illustrates how to install word press and gain the knowledge of installing various plugins to use in their websites

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I   [14 hours]

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, blocks and classes,

HTML CSS, HTML frames, file paths, layout, symbols, HTML responsive.

UNIT – II   [14 hours]

HTML forms: HTML form elements, input types, input attributes, HTML5, HTML graphics, HTML media – video, audio, plug INS, you tube. HTML API'S: Geo location, 2rag/drop, local storage, HTML SSE. CSS: CSS home, introduction, syntax, colours, back ground, borders, margins, padding, height/width, text, fonts, icons, tables, lists, position, over flow, float, CSS combinators, pseudo class, pseudo elements, opacity, tool tips, image gallery, CSS forms, CSS counters, CSS responsive.

UNIT – III   [12 hours]

Client side Validation: 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.

UNIT – IV   [10 hours]

Word press: Introduction to word press, servers like wamp, bitnami e.tc, 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.

UNIT – V   [10 hours]

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.

Text 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.

Reference books:

1. An Introduction to HTML and JavaScript: for Scientists and Engineers, David R. Brooks. Springer, 2007

2. Schaum's Easy Outline HTML, David Mercer, Mcgraw Hill Professional.

3. Word press for Beginners, Dr.Andy Williams. 7. Professional word press, Brad Williams, David damstra, Hanstern.

Web Links:

1. http://www.codecademy.com/tracks/web
2. http://www.w3schools.com
3. https://www.w3schools.in/wordpress-tutorial/
4. http://www.homeandlearn.co.uk

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc.   Semester-V

Web Interface Designing

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Answer any 5 question   **5X2 = 10M**

1. What are the differences between web applications and desktop applications?

2. Write the structure of HTML document.

3. Write a short note on HTML Graphics.

4. Write about HTML video plug in.

5. Write a short note on Roll Over Button.

6. String manipulation functions in Java Script.

7. Explain about shared memory.

8. Write a short note on how to work with media-Adding in wordpress.

Section - B

Answer following question   **5X8 = 40M**

9. Explain Cascading Style sheets in HTML.

(OR)

10. Explain about HTML Tables and Frames.

11. Explain in detail about HTML API's.

(OR)

12. Explain about HTML media.

13. Explain about operators in Java script.

(OR)

14. Explain about Data validation in java script.

15. Explain about various shortcuts in text formatting.

(OR)

16. Explain in Installing and configuration of word press.

17. Explain about extending wordpress with plug-ins.

(OR)

18. Explain about protecting word press website from hackers.

	Government College (Autonomous) Rajahmundry				
Course Code CSC160P	**TITLE OF THE COURSE** Web Interface Designing	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	Basic Programming skills	0	0	3	2

Objectives:

1. Create a basic website with the help of HTML and CSS.

2. Acquire the skill of installing word press and various plugins of Word press.

3. Create a static website with the help of Word press.

4. Create an interface for a dynamic website.

5. Apply various themes for their websites using Word press.

List of Experiments/Syllabus: HTML and CSS:

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

2. 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

3. Create an HTML document which consists of:

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

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

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

6. Create a menu form using html.

7. Style the menu buttons using css.

8. Create a form using HTML which has the following types of controls:

   Text Box (b) Option/radio buttons (c) Check boxes (d) Reset and Submit buttons

9. Embed a calendar object in your web page.

10. Create an applet that accepts two numbers and perform all the arithmetic operations on them.

11. Create nested table to store your curriculum.

12. Create a form that accepts the information from the subscriber of a mailing system.

13. Design the page as follows:
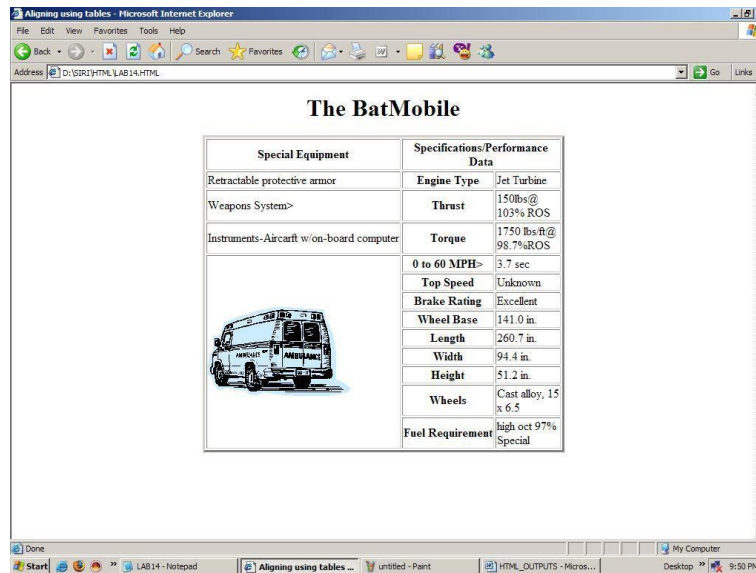
14. Create a help file as follows:
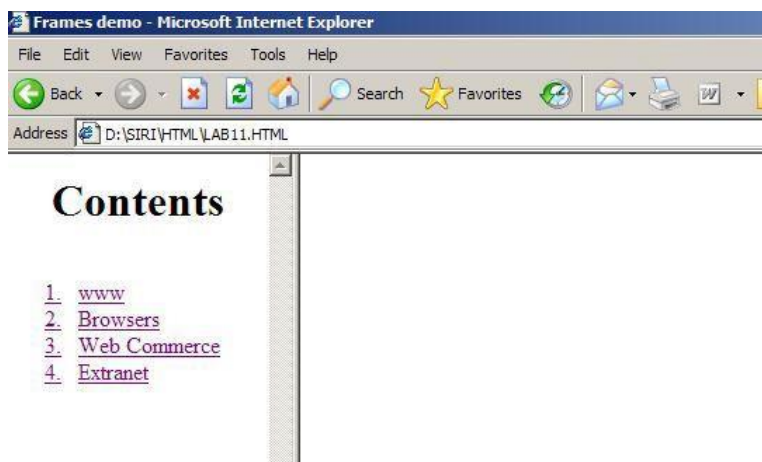
15. Create a webpage containing your bio data (assume the form and fields).

16. Write a html program including style sheets.

17. Write a html program to layers of information in web page.

18. Create a static webpage.

19. Word press:

   Installation and configuration of word press.

   Create a site and add a theme to it. 20 Create a child theme

   Create five pages on COVID – 19 and link them to the home page. .

   Create a simple post with featured image.

   Add an external video link with size 640 X 360.

   Create a user and assign a role to him.

   Create a login page to word press using custom links

20. Create a website for your college.

Reference books:

1. Chris Bates, Web Programming Building Internet Applications, Second Edition, Wiley (2007)

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

	Government College (Autonomous) Rajahmundry	**Program & Semester** III B.Sc. (V Sem)			
Course Code CSC161	**TITLE OF THE COURSE** Web Applications Development using PHP & MYSQL				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic programming skills	3	1	-	3

Course Objectives:

1. Write simple programs in PHP.

2. Understand how to use regular expressions, handle exceptions, and validate data using PHP.

3. Apply In-Built functions and Create User defined functions in PHP programming.

4. Write PHP scripts to handle HTML forms.

5. Write programs to create dynamic and interactive web based applications using PHP and MYSQL.

6. Know how to use PHP with a MySQL database and can write database driven web pages.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the building blocks of PHP.
CO2	Use String, Date and Time functions in an application.
CO3	Create and validate forms using PHP.
CO4	Write PHP scripts to handle HTML forms.
CO5	Use files and images in an application.
CO6	Create dynamic and interactive web-based applications using PHP and MYSQL.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I: [10 hours]

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, Saving state between Function calls with the static statement, more about arguments.

UNIT-II: [10 hours]

Working with 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.

UNIT-III: [10 hours]

==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.

UNIT-IV: [10 hours]

==Working with Files and Directories:== Including Files with inclue(), 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.

UNIT V: **[**10 hours]

MySQL Versus MySQLi 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.

Text books:

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, PearsonEducation (2007).
2. Steven Holzner , PHP: The Complete Reference, McGraw-Hill

Reference books:

1. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014
2. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

Web Links:

1. http://www.codecademy.com/tracks/php
2. http://www.w3schools.com/PHP
3. http://www.tutorialpoint.com

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc.   Semester-V

Web Application Development using PHP and MYSQL

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Section - A

Answer any 5 question   **5X2 = 10M**

1. Write a short note on variables in PHP.

2. How to define functions in PHP/

3. Write a short note on creating objects in PHP.

4. Write about arrays in PHP.

5. Write a short note how to combine PHP and HTML code.

6. How to set cookies with PHP.

7. Explain about popen() command in PHP.

8. Explain Record addition mechanism in PHP.

Section - B

Answer following question   **5X10 = 40M**

9. Explain loops in PHP.

(OR)

10. Explain about building blocks of PHP.

11. Explain about date and time functions in PHP.

(OR)

12. Explain about array related functions in PHP.

13. Explain Forms in PHP.

(OR)

14. Explain about Cookies in PHP.

15. Explain about how to work with PHP.

(OR)

16. Explain about how to create, validate file in PHP.

17. Explain about creating database tables and record addition mechanism in MYSQL.

(OR)

18. Explain about record deletion mechanism and adding sub entities to a record.

	Government College (Autonomous) Rajahmundry				
Course Code CSC161P	**TITLE OF THE COURSE** Web Applications Development using PHP & MySQL Lab	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming skills	0	0	3	2

Objectives:

1. Objective of this course is to enhance the students programming skill to make Dynamic websites.

LIST OF EXPERIMENTS

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
16. Registration of Users.
17. Insert the details of the Users.
18. Modify the Details.

19. Transaction Maintenance.
20. No of times Logged in
21. Time Spent on each login.
22. Restrict the user for three trials only.
23. Delete the user if he spent more than 100 Hrs of transaction.
24. Write a PHP script to connect MySQL server from your website.
25. 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.
26. Write a program to edit name of customer to "Kiran" with cust-no =1, and to delete record with cust-no=3.
27. 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.
28. Create a dynamic web site using PHP and MySQL.

Reference books:

1. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

	Government College (Autonomous) Rajahmundry				
Course Code CSC162	**TITLE OF THE COURSE** Internet of Things	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Computer Networks	3	1	-	3

Course Objectives:

1. Students will be explored to the interconnection and integration of the physical world and the cyber space.
2. To Developing IOT's with cloud.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the fundamentals of IoT.
CO2	Understand various concepts of sensor networks and wireless sensor networks.
CO3	Understand various applications of IoT.
CO4	Analyze IP based protocols for IOT.
CO5	Apply sensors and actuators with Aurdiono.
CO6	Develop IOT applications.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus

UNIT - I   **[13 hours]**
Fundamentals of IoT: Introduction, Definitions & 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, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

UNIT - II   **[13 Hours]**

Sensors Networks: Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components

Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

UNIT – III   **[12 hours]**

Wireless Technologies for IoT:

 WPAN Technologies for IoT: IEEE 802.15.4, Zigbee,HART, NFC, Z-Wave, BLE, Bacnet And Modbus.

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

UNIT – IV   **[12 Hours]**

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.

UNIT - V   **[10 Hours]**

Developing IOT's:

Implementation of IoT with Arduino, Connecting and using various IoT Cloud Based

Platforms such as Blynk, Thingspeak, AWS IoT, Google Cloud IoT Core etc. Cloud Computing, Fog Computing, Privacy and Security Issues in IoT.

Text books:

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-onApproach)", 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

Web Links:

1. https://onlinecourses.nptel.ac.in/noc22_cs53/preview

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc.   Semester-V

Internet Of Things

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Section - A

Answer any 5 question   **5X2 = 10M**

1. Write a short note on characteristics of IOT.

2. What are identifiers in IOT.

3. Explain about connecting nodes in IOT.

4. Write a short note on actuators.

5. Write a short note on Zigbee.

6. Write a short note on Z-Wave.

7. Explain about Interfacing Arduino with LCD.

8. Explain about Interfacing of Temperature Record sensor with Arduino.

Section - B

Answer following question   **5X8 = 40M**

9. Explain about applications of IOT.

10. Explain about IOT architectures.

11. Explain about RFID principals and components.

12. Explain about Aurduino IDE and Board types.

13. Explain about WPAN Technologies for IoT.

14. IP based Protocols for IoT IPv6.

15. Explain about Arduino Uno Architecture.

16. Explain about Interfacing of Actuators with Arduino.

17. Explain about connecting and using IoT Cloud Based Platform Blink.

18. Explain about Privacy and Security issues in IoT.

	Government College (Autonomous) Rajahmundry				
Course Code CSC162P	**TITLE OF THE COURSE** Internet of Things	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	Basic Programming skills	0	0	3	2

Objectives:

1. Acquire the skills to design a small IoT device.
2. Connect various sensors, actuators, etc to Arduino board.
3. Connect the things to Internet
4. Design a small mobile app to control the sensors.
5. Deploy a simple IoT device.

List of experiments:

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 Blynk App and Connect to Temperature, magnetic Sensors.

Reference books:

1. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press.

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

	Government College (Autonomous) Rajahmundry				
Course Code CSC163	**TITLE OF THE COURSE** Application Development Using Python	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Programming skills	3	1	-	3

Course Objectives:

1. Demonstrate proficiency in handling Strings and File Systems.

2. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand and appreciate the web architecture and services.
CO2	Examine Python syntax and semantics and be fluent in the use of Python flow controland functions.
CO3	Demonstrate proficiency in handling Strings and File Systems.
CO5	Interpret the concepts of Object-Oriented Programming as used in Python.
CO6	Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus

UNIT - I   **[13 hours]**

Python basics, Objects- Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types

Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers,

Operators, Built-in Functions, Related Modules

Sequences - Strings, Lists, and Tuples, Mapping and Set Types

UNIT – II [13 hours]

Files: File Objects, File Built-in Function [open()], File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules

Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Why Exceptions (Now)?, Why Exceptions at All?, Exceptions and the sys Module, Related Modules

Modules: Modules and Files, Namespaces, Importing Modules, Importing Module Attributes, Module Built-in Functions, Packages, Other Features of Modules

UNIT – III [12 hours]

Regular Expressions: Introduction, Special Symbols and Characters, Res and Python

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

UNIT – IV [12 hours]

GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs

Web Programming: Introduction, Wed Surfing with Python, Creating Simple Web Clients, Advanced Web Clients, CGI-Helping Servers Process Client Data, Building CGI Application, Advanced CGI, Web (HTTP) Servers

UNIT – V [10 hours]

Database Programming:

Introduction, Python Database Application Programmer's Interface (DBAPI), Object Relational Managers (ORMs), Related Modules

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Text 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.

Reference books:

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.

2. Learning Python, Mark Lutz, O' Really.

3. Web sources suggested by the teacher concerned and the college librarian includingreading material.

Web Links:

1. https://nptel.ac.in/courses/106106182

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc.   Semester-V

Internet of Things

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Section - A

Answer any 5 question   **5X2 = 10M**

1. Write a short note on Python Objects.

2. Write a short note integer and floating point real numbers.

3. Write a short note on Command-line Arguments in python.

4. Write about PersistentStorage Modules in python.

5. Write a short note on Thread Module.

6. Explain about Global Interpreter Lock.

7. Explain about Tkinter and Python Programming.

8. Explain about Object Relational Managers.

Section - B

Answer following question   **5X10 = 40M**

9. Explain about Built-in Functions in python.

(OR)

10. Explain about Lists and Tuples in python.

11. Explain about Exception handling in python.

(OR)

12. Explain about File Built-in Methods in python.

13. Explain about Threads and Processes in python.

(OR)

14. Explain about thread modules in python.

15. Explain about Python GUI related modules.

(OR)

16. Explain about how to build CGI Application in python.

17. Explain about Python Database Application Programmer's Interface (DBAPI).

(OR)

18. Explain about Object Relational Managers (ORMs), Related Modules.

	Government College (Autonomous) Rajahmundry				
Course Code CSC163P	**TITLE OF THE COURSE** Application Development Using Python	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	Basic Programming skills	0	0	3	2

Objectives:

1. Implement simple programs in Python
2. Implement programs related to various data structures like lists, dictionaries, etc.
3. Implement programs related to files.
4. Implement applications related to databases, Web services and IOT.

List of Experiments:

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 :

3. Grade A: Percentage >=80

4. Grade B: Percentage>=70 and <80 Grade C: Percentage>=60 and <70 Grade D: Percentage>=40 and <60 Grade E: Percentage<40

5. Write a python program to display the first n terms of Fibonacci series.

6. Write a python program to calculate the sum and product of two compatible matrices.

7. Write a function that takes a character and returns True if it is a vowel and False otherwise.

8. Write a menu-driven program to create mathematical 3D objects

- curve
- sphere
- cone
- arrow
- ring
- Cylinder.

9. Write a python program to read n integers and display them as a histogram.

10. Write a python program to display sine, cosine, polynomial and exponential curves.

11. 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.

12. 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 $t >= 0$.

13. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:

$P(t) = (15000(1+t))/(15+e)$

14. 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.

15. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:

velocity wrt time $(v = u + at)$

distance wrt time ($s = u*t + 0.5*a*t*t$)

distance wrt velocity (s=(v*v-u*u)/2*a)

16. Write a program that takes two lists and returns True if they have at least one common member.

17. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.

18. Write a program to implement exception handling.

19. Try to configure the widget with various options like: bg="green", family="times", size=20.

20. Write a Python program to read last 5 lines of a file.

21. Design a simple database application that stores the records and retrieve the same

22. Design a database application to search the specified record from the database.

23. Design a database application to that allows the user to add, delete and modify the records.

Reference books:

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.

Virtual Lab Links:

1. https://python-iitk.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry		Program & Semester III B.Sc. (V Sem)		
Course Code CSC164	TITLE OF THE COURSE Data Science				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Database Management Systems	3	1	-	3

Course Objectives:

1. Enhance the Programming skills of Python towards data science.
2. Provide knowledge on probability and statistics.
3. Analyze the data using machine learning algorithms.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand and appreciate the web architecture and services.
CO2	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
CO3	Demonstrate proficiency in handling Strings and File Systems.
CO4	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
CO5	Interpret the concepts of Object-Oriented Programming as used in Python.
CO6	Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I   **[**10 hours]

Introduction: The Ascendance of Data, What is Data Science? , Finding key Connectors, Data Scientists You May Know, Salaries and Experience, Paid Accounts, Topics of Interest, Onward.
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 Sciencester!

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

Linear Algebra: Vectors, Matrices

UNIT-II [10 hours]

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.

UNIT-III [10 hours]

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

UNIT-IV [10 hours]

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, Fittingthe Model, Interpreting the Model, Goodness of Fit.

UNIT-V [10 hours]

Logistic Regression: The Problem, The Logistic Function, Applying the Model, Goodness ofFit 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: ClusteringColors, Bottom-up Hierarchical Clustering.

Text books:

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

Reference books:

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

Web Links:

1. https://www.edx.org/course/analyzing-data-with-python

CO-PO Mapping:

(1: Slight [Low];   2: Moderate[Medium];   3: Substantial[High],   '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc.   Semester-V

Data Science

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Answer any 5 question   **5X2 = 10M**

1. Write a short note on The Zen of Python.

2. Write a short note Generators in python.

3. Write a short note on Correlation and Causation.

4. Write about P-hacking.

5. Write a short note on JSON.

6. Write a short on Cleaning and Munging.

7. Explain about curse of Dimensionality.

8. Explain about Perceptron.

Section - B

Answer following question   **5X10 = 40M**

9. Explain about Vectors and Matrices

(OR)

10. Explain about various visualization techniques in python.

11. Explain about Statistical hypothetical testing.

(OR)

12. Explain about Gradient descent algorithms.

13. Explain about Over fitting and Under fitting Data.

(OR)

14. Explain about Feature Extraction and Selection.

15. Explain about K-Nearest neighbors.

(OR)

16. Explain about Multiple regressions.

17. Explain about Decision tree Induction algorithm.

(OR)

18. Explain about Logistic regression algorithm.

|	**Government College (Autonomous) Rajahmundry**				
Course Code	**TITLE OF THE COURSE**	**Program & Semester** III B.Sc. (V Sem)			
CSC164P	**Data Science Lab**				
Teaching	Hours Allocated: 40 (**Lab**)	L	T	P	C
Pre-requisites:	Python Programming	0	0	3	2

Objectives:

1. Apply data science solutions to real world problems.
2. Implement the programs to get the required data, process it and present the outputs using Python language.
3. Execute statistical analyses with Open source Python software.

List of Experiments

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

Distribution of Exam 1 Grades
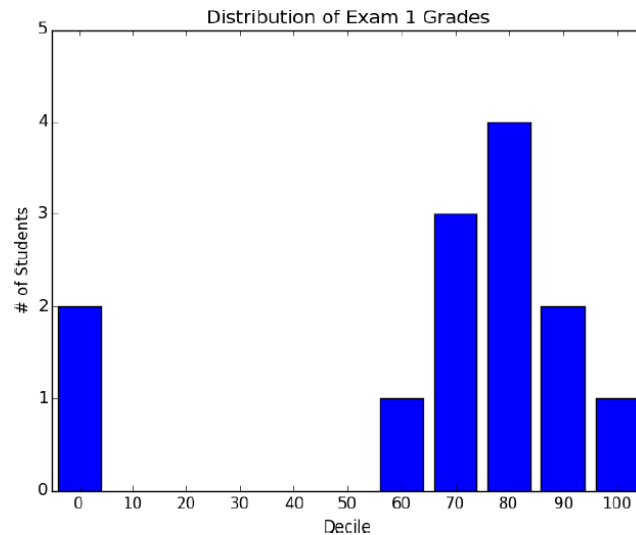
3. Write a Python program to create a time series chart by taking one year month wise stock data in a CSV file

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.

Reference books:

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

Virtual Lab Links:

1. https://www.iiitmk.ac.in/DAVirtalLab/#work

![logo]	**Government College (Autonomous) Rajahmundry**				
Course Code CSC165	**TITLE OF THE COURSE** **Python for Data Science**	**Program & Semester** III B.Sc. (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic programming skills	3	1	-	3

Course Objectives:

1. Identify the need for data science and solve basic problems using Python built-in data types and their methods.
2. Design an application with user-defined modules and packages using OOP concept
3. Employ efficient storage and data operations using NumPy arrays.
4. Apply powerful data manipulations using Pandas.
5. Do data pre-processing and visualization using Pandas

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the need for data science and solve basic problems using Python built-in datatypes and their methods.
CO2	Understand Object Oriented concepts in Python.
CO3	Apply Numpy methods to process the data in an array.
CO4	Summarize and Compute Descriptive Statistics using Pandas.
CO5	Apply powerful data manipulations using Pandas.
CO6	Use data pre-processing and visualization using Pandas

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I   [13 hours]

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.

UNIT – II   [10 hours]

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.

UNIT – III   [10 hours]

NumPy Basics: Arrays and Vectorized Computation- The NumPy ndarray- Creating ndarrays- Data Types for ndarrays- Arithmetic with NumPy 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.

UNIT – IV   [10 hours]

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

UNIT –V [10 hours]

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.

Text 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 Links:

1. https://www.edx.org/course/python-basics-for-data-science
2. https://www.edx.org/course/analyzing-data-with-python
3. https://www.coursera.org/learn/python-plotting?specialization=data-science-python
4. https://www.programmer-books.com/introducing-data-science-pdf/
5. https://www.cs.uky.edu/~keen/115/Haltermanpythonbook.pdf

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc.   Semester-V

Python for Data Science

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs.   **Max Marks: 50 M**

Answer any 5 question   **5X2 = 10M**

1. Write a short note on Lists and tuples.

2. Write a short note Operators in Python.

3. Write a short note on Files in Python.

4. Write a short note on constructors in python.

5. Write a short note on Indexing and slicing in Python.

6. Write a short note on numpy arrays.

7. Write a short note on sorting and ranking.

8. Explain about String functions in pandas.

Section - B

Answer following question   **5X10 = 40M**

9. Explain about loop control statements in Python.

(OR)

10. Explain about functions in Python.

11. Explain Exceptional handling in Python.

(OR)

12. Explain about Inheritance in Python.

13. Explain about Mathematical and statistical methods.

(OR)

14. Explain about Arithmetic in numpy arrays.

15. Explain about Summarizing and Computing Descriptive Statistics.

(OR)

16. Explain about Data Frame and its functionalities.

17. Explain about Data cleaning techniques in Pandas.

(OR)

18. Explain about plotting data with pandas.