GOVERNMENT ARTS COLLEGE (Autonomous),

(Re-accredited with 'A' Grade by NAAC and Affiliated to Bharathidasan University, Tiruchirappalli)

KARUR - 639 005.

UG
COURSE STRUCTURE

Course Structure under CBCS System

(Applicable to the Candidates admitted from the Academic Year **2021 – 2022** onwards)

B.Sc.,

COMPUTER SCIENCE

GOVERNMENT ARTS COLLEGE (Autonomous),

KARUR - 639 005

Course structure under CBCS system

UNDERGRADUATE COURSES

ABOUT THE DEPARTMENT OF COMPUTER SCIENCE

1. Computer Science Department was started in the academic year 1988-89.
2. It is notable that the Computer Science Course (B.Sc) with co-education (1988-89) in Tamil Nadu was first started in our college only.
3. In the academic year 2007-2008 another B.Sc Computer Science (Shift II) was started as Per the Tamil Nadu Government Order.
4. In the academic year 2004-2005 Post Graduate Course (M.Sc) was started.
5. The sanctioned strength is 60 (30 + 30) for under graduate Programmes and 30 for post graduate Programme.
6. Research Programmes such as M.Phil and Ph.D was started in the year 2011-2012 academic years.
7. Full time and Part time research Programmes are offered and it was approved by Government of Tamil Nadu and Bharathidasan University, Tiruchirapalli, with sanctioned strength of 25 for M.Phil and 16 for Ph.D.
8. The Department is functioning successfully with eight regular staff members and four guest lecturers.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

VISION

It is our vision to persuade every mind in this temple of learning to tirelessly seek the truth to face the challenges of the times and honestly participate in the establishment of universal peace, progress and love.

MISSION

It is our mission to create in everyone an honest searching mind to be ready for value-based creative citizenship for regional, national and global peace and progress.

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE

VISION

To establish as the best conductive environment for quality, academic and research oriented UG and PG education in computer science and to groom the student for an exhaustive technological society making them to acclimatize towards serving the society.

MISSION

- To promulgate best quality professional training at the UG and PG level with the prominence on basic principles of computer science.

- To authenticate nationally and internationally recognize research centers and expose the students to broad research experience.

- To delicate the students with the mandatory skills to resolve the complex technological problem of modern society and also to accomplish there with a schema for promoting collaborative and multi-disciplinary activities.

What is Credit system?

Weightage to a course is given in relation to the hours assigned for the course. The following Table shows the correlation between credits and hours. However, there could be some flexibility because of practical, field visits, tutorials and nature of project work.

For UG courses, a student must earn a minimum of **140 (+4)** credits as mentioned in the table below. The total number of minimum courses offered by a department is given in the course pattern.

UNDER GRADUATE COURSEPATTERN (2021 ONWARDS)

PART	SEMESTER	SPECIFICATION	NO. OF COURSES	HOURS	CREDITS	TOTAL CREDITS
I	I - IV	Part I	4	22	12	24
II	I - IV	Part II	4	22	12	
III	I - VI	Core courses Theory	8	46	41	96
	I - VI	Core Course Practical	6	23	20	
	I - IV	Allied Course	8	28	20	
	V - VI	Elective Course	3	17	15	
IV	I - V	Value Education Environmental Studies Soft Skills Development	3	6	6	18 + (4)
	I - III	Value Added Course (CLP)	2	4	2	
		Extra Credit Course (MOOC)	1	-	2	
	III - IV	Non Core Elective	2	4	4	
	IV - V	Skill Based Elective - Theory	2	7	8	
V	VI	Gender Education	1	1	1	2
		Extension Activities	1	-	1	
TOTAL				**180**	**140 (+4)**	**140 (+4)**

Course Pattern

The Undergraduate degree course consists of five vital components. They are as follows:

Part - I: Language (Tamil)

Part - II: General English

Part - III: Core Course (Theory) Allied, Core Electives)

Part - IV: Value Education, Value Added Course, Extra Credit Course, Environmental Studies, Non Core Elective and Soft Skills Development.

Part - V: Gender Education and Extension Activities (NSS, NCC, Sports and Games, PEC, FAPA, YRC, RRC, RC, LC and CC).

Core Courses

A core course is the course offered by the parent department related to the major subjects, components like theories, practical's, Project work, field visits and etc.

Noncore elective

Noncore elective Core should be shared by the various Departments of college. This course should be opted by all the students belonging to the particular Department. Each department of the respective college should allocate themselves the schedule and the units of the course.

Core Elective

The core elective course is also offered by the parent department. The objective is to provide choice and flexibility within the department. There are THREE core electives. They are offered in different semesters according to the choice of the college.

Extra Credit Courses

In order to facilitate the students gaining extra credits, the extra credit courses are given. There are two extra credit courses - Massive Open Online Courses (MOOC) and Skill-based Course - offered in the III and V Semesters respectively. According to the guidelines of UGC, the students are encouraged to avail this option of enriching by enrolling themselves in the MOOC provided by various portals such as SWAYAM, NPTEL, etc. Skill based course is offered by the department apart from their regular class hours.

Value Education Courses

There are four courses offered in the first semesters for the First year students.

Non-Major Elective / Skill Based Elective

These courses are offered in two perspectives as electives "Within college".

Subject Code Fixation

The following code system (11 characters) is adopted for Under Graduate courses:

Year of Revision	UG Code of the Dept	Semester	Specification of Part	Running number in the part
↓	↓	↓	↓	↓
21	U21	*x*	*x*	*xx*
21	UCS	1	x	1

For example:

I B.Sc – Programming in 'C',

The code of the paper is **U21 CS 1C1.**

Thus, the subject code is fixed for other subjects.

EXAMINATION

Continuous Internal Assessment (CIA):

UG - Distribution of CIA Marks	
Passing Minimum: 40 Marks	
THEORY CIA MAXMIMUM = 25	THEORY CIA MINIMUM = 10
PRACTICAL CIA MAXIMUM = 40	PRACTICAL CIA MINIMUM = 16

End - Semester Tests

Centralized - Conducted by the office of Controller of Examinations.

Semester Examination

Testing with Objective and Descriptive questions.

Section - A: 10 Questions x 2 Marks = 20 Marks (No Choice - Two questions from each unit)

Section - B: 5 Questions x 5 Marks = 25 Marks (Either… or Type - One pair from each unit)

Section - C: 3 Questions x 10 Marks = 30 Marks (3 Out of 5 - One question from each unit)

Duration of Examination:

3- Hours examination for courses.

Grading System

1. Grading

Once the marks of the CIA and the end-semester examination for each of the courses are available, they will be added. The marks thus obtained, will then be graded as per the scheme provided in Table 1.

From the second semester onwards the total performance within a semester and the continuous performance starting from the first semester are indicated by **Semester Grade Point Average (GPA)** and **Cumulative Grade Point Average (CGPA),** respectively. These two are calculated by the followingformulae

$$\text{GPA} = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i} \qquad \text{WAM (Weighted Average Marks)} = \frac{\sum_{i=1}^{n} C_i M_i}{\sum_{i=1}^{n} C_i},$$

Where, 'C_i' is the Credit earned for the Course - i,

'G_i' is the Grade Point obtained by the student for the Course 'i'.

'M' is the marks obtained for the course 'i', and

'n' is the number of Courses **Passed** in that semester.

CGPA: Average GPA of all the Courses starting from the first semester to the current semester.

2. Classification of Final Results

i) For each of the three parts, there shall be separate classification on the basis of the CGPA, as indicated in the following Table - 2.

ii) For the purpose of Classification of Final Results, the Candidates who earn CGPA 9.00 and above shall be declared to have qualified for the Degree as 'Outstanding'. Similarly, the candidates who earn the CGPA between 8.00 - 8.99, 7.00 - 7.99, 6.00 - 6.99 and 5.00 - 5.99 shall be declared to have qualified for their Degree in the respective programmes as 'Excellent', 'Very Good', 'Good' and 'Above Average' respectively.

iii) Absence from an examination shall not be taken as an attempt.

Table - I - Grading of the Courses

Marks Range	Grade Point	Corresponding Grade
90 and above	10	O
80 and above but below 90	9	A+
70 and above but below 80	8	A
60 and above but below 70	7	B+
50 and above but below 60	6	B
40 and above but below 50	5	C
Below 40	0	RA

Table – 2 – Final Result

CGPA	Classification of Final Results	Corresponding Grade
9.00 and above	O	Outstanding
8.00 to 8.99	A+	Excellent
7.00 to 7.99	A	Very Good
6.00 to 6.99	B+	Good
5.00 to 5.99	B	Above Average
4.00 to 4.99	C	Average
Below 4.00	RA	Re - Appearance

Credit based weighted Mark System is adopted for individual semesters and cumulative semesters in the column 'Marks Secured' (for 100).

Declaration of Result:

Mr./Ms. _____ has successfully completed the Under Graduate in _____ programme. The candidate's Cumulative Grade Point Average (CGPA) in Part - III is _____ and the class secured is _____ by completing the minimum of 140 credits. The candidate has acquired _____ (if any) extra credits offered by the parent department courses.

PROGRAM OUTCOME:

At the end of the program the students will be able to:

- Provides a good platform for learning fundamentals of computers.

- Identifying, analysing problems provides effective solutions for industry needs.

- Awareness is created to enrich the computational efficiency.

- An ability to use appropriate techniques, skills, and tools necessary for computing practice.

- An ability to communicate and engage effectively with diverse stakeholders.

PROGRAMME SPECIFIC OUTCOME:

After completion of the Specific Programme, the student will:

- Apply basic business skills, terminologies and principles in problem solving scenarios through various hands on experiences.

- Pursue higher studies and research by exploring the various motivation factors in the computing discipline associated with the program to function efficiently and effectively in the modern and challenging society.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR–639005

(**Re-Accredited with 'A' Grade by NAAC and Affiliated to Bharathidasan University, Tiruchirappalli.**)

B.Sc., COMPUTER SCIENCE COURSE STRUCTURE UNDER CBCS SYSTEM

(For the candidates admitted from the year 2021-2022 onwards)

SEMESTER	PART	COURSE	COURSE TITLE	COURSE CODE	INSTR.HOURS WEEK	CREDIT	EXAM HOURS	MARKS INT	MARKS ESE	TOTAL
I	I	Tamil - I	Tamil - I	U21L1T1	5	3	3	25	75	100
	II	English - I	English - I	U21L1E1	5	3	3	25	75	100
	III	Core Course - I	Programming in 'c'	U21CS1C1	6	5	3	25	75	100
		Core Course - II	'C' Programming Lab	U21CS1C2P	3	3	3	40	60	100
		First Allied Course - I	Applied Mathematics - I	U21MM1A1	5	3	3	25	75	100
		First Allied Course - II	Applied Mathematics - II	-	2	-	-	-	-	-
	IV	Value Education	Value Education	U21VE1	2	2	3	25	75	100
		SAP	Fundamentals of Information Technology	-	2	-	-	-	-	-
					30	**19**				**600**
II	I	Tamil - II	Tamil - I	U21L2T2	5	3	3	25	75	100
	II	English - II	English - II	U21L2E2	5	3	3	25	75	100
	III	Core Course - III	OOP with C++	U21CS2C3	6	5	3	25	75	100
		Core Course - IV	C++ Programming Lab	U21CS2C4P	3	3	3	40	60	100
		First Allied Course - II	Applied Mathematics - II	U21MM2A2P	2	4	3	25	75	100
		First Allied course - III	Applied Mathematics - III	U21MM2A3	5	3	3	25	75	100
	IV	Environmental Studies	Environmental Studies	U21ES2	2	2	3	25	75	100
		SAP	Office Automation	-	2	(2)	-	-	-	-
					30	**23**				**700**
III	I	Tamil - III	Tamil - III	U21L3T3	6	3	3	25	75	100
	II	English - III	English - III	U21L3E3	6	3	3	25	75	100
	III	Core Course - V	Programming in Java	U21CS3C5	6	5	3	25	75	100
		Core Course - VI	Java Programming Lab	U21CS3C6P	3	3	3	40	60	100
		Second Allied Course - I	Applied Physics - I	U21PH3A4	5	3	3	25	75	100
		Second Allied Course - II	Applied Physics - II	-	2	-	-	-	-	-
	IV	Non Core Elective - I	Quantitative Aptitude - I	U21MM3N1	2	2	3	25	75	100
		Extra Credit Course	Massive open online Course (MOOC) Course		-	2	-	-	-	-
					30	**19**				**600**

Part		Course	Title	Code	Hours	Credit	Exam	Int	Ext	Total
IV	I	Tamil - IV	Tamil - IV	**U21L4T4**	6	3	3	25	75	100
	II	English - IV	English IV	**U21L4E4**	6	3	3	25	75	100
	III	Core Course - VII	Relational DataBase Management System	**U21CS4C7**	5	5	3	25	75	100
		Core Course - VIII	RDBMS Lab	**U21CS4C8P**	2	3	3	40	60	100
		Second Allied Course - II	Applied Physics - II Practical	**U21PH4A5P**	2	4	3	40	60	100
		Second Allied Course - III	Applied Physics - III	**U21PH4A6**	5	3	3	25	75	100
	IV	Skill Based Elective - I	Web Designing	**U21CS4S1**	2	4	3	25	75	100
		Non Core Elective - II	Quantitative Aptitude - II	**U21MM4N2**	2	2	3	25	75	100
					30	**27**				**800**
V	III	Core Course - IX	ASP.NET Programming	**U21CS5C9**	6	5	3	25	75	100
		Core Course - X	ASP.NET programming lab	**U21CS5C10P**	6	4	3	40	60	100
		Core Course - XI	Operating System	**U21CS5C11**	6	5	3	25	75	100
		Elective Course - I	Microprocessor and its Application	**U21CS5E1**	5	4	3	25	75	100
	IV	Skill Based Elective - II	Design and Analysis of Algorithms	**U21CS5S2**	5	3	3	25	75	100
		Skill Based Elective - III	PHP	**U21CS5S3**	2	3	3	25	75	100
		Soft Skills Development	Soft Skills Development	**U21SSD3**	2	2	3	25	75	100
					30	**26**				**700**
VI	III	Core Course - XII	Python Programming	**U21CS6C12**	6	5	3	25	75	100
		Core Course - XIII	Python Programming Lab	**U21CS6C13P**	6	4	3	40	60	100
		Core Course - XIV	Computer Graphics	**U21CS6C14**	5	5	3	25	75	100
		Elective Course - II	Software Engineering	**U21CS6E2**	6	5	3	25	75	100
		Elective Course - III	Data Communication and Networks	**U21CS6E3**	6	5	3	25	75	100
	V		Gender Education	**U21EA4**	1	1	3	25	75	100
		Extension Activities	Extension Activities (NSS / NCC / RRB / YRC / FINE ARTS / Environmental Education / Population Education club / Leo club / Consumer club / Sports & Games)			1				
					30	**26**				**600**
	I	**TOTAL**			**180**	**140 + (4)**				**3900**

*SAP: Special Assistance Programme   *MOOC: Massive Open Online Course

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CREDIT: 5	COURSE CODE: U21CS1C1

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – I SEMESTER – CORE COURSE- I
(For the candidates admitted from the year 2021-22 onwards)

PROGRAMMING IN C

COURSE OBJECTIVES :
1. To permit the students to understand the concept in C Language.
2. To motivate the students to build logical thinking ability.
3. Students will be able to develop logics which will help them to create programs, applications in C.
4. By Learning the basic programming students can easily switch over to any other language in future.

UNIT - I	**Overview of C:** History of C–Basic Structure of C Programs. **Constants, variables and data types:** Introduction - Keywords and Identifiers - Constants - Variables - Data types -Declaration of Variables. **Operators and Expressions**: Introduction-Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators - Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Type Conversions in expressions - Mathematical functions.
UNIT - II	**Managing Input &Output Operations:** Reading and Writing a character- Formatted input and output. **Decision making and branching:** IF, IF-ELSE, Nest in go IF-ELSE-ELSE-IF-Ladder - Switch-? : Operator - GO TO .**Decision Making and Looping:** The WHILE Statement, The DO Statement -The FOR statement.
UNIT - III	**Arrays:** One dimensional Arrays - Two dimensional Arrays. **Character Array and Strings:** Introduction - Declaring &Initializing String Variables - Reading Strings from terminal - Writing Strings to screen - Comparison of two Strings - String Handling Functions. **User Defined Functions:** Introduction - Definition of Functions - Return values and their types - Function calls and declaration - No Arguments and No Return values - Arguments but No Return values - Arguments with Return values - No Arguments but Return a value - Nesting of Functions - Recursion - Passing Arrays to Functions.
UNIT - IV	**Structures and Unions:** Introduction - Defining a structure - Declaring structure variables - Accessing Structure members - Structure Initialization - Arrays within structure - Unions. **Pointers:** Introduction - Understanding Pointers - Accessing the address of a variable - Declaring Pointer variables–Initializing Pointer Variables - Accessing variable through its Pointers - Pointers and Arrays.
UNIT - V	**File Management:** Introduction - Defining, Opening and Closing file - Input Output Operations on files - Random Access to Files. **The Preprocessor:** Introduction - Macro Substitution.

TEXT BOOK :
1. E Balagurusamy , "Programming in ANSIC", Tata McGraw Hill, New Delhi, 5th Edition.

REFERENCE BOOKS :
1. Byron S Gottfried, Schaum 'soutlineseries, "Programming with C" -Tata Mc Graw Hill publications.
2. Yashawanth Kanetkar, "Let Us C", BPB publications.

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COURSE OUTCOMES:

1. To demonstrate an understanding of computer programming language concepts.
2. To determine the solutions for Mathematical and Scientific Problem.
3. Able to implement the algorithms and draw flow charts for solving Mathematical and Engineering problems.
4. To Develop Software interfaces.
5. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointer declarations, initialization, operations on pointers and their usage.

Nature of Course				
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	3	4	4	4	3.57
CO2	3	4	3	3	4	3	4	3.42
CO3	4	3	4	3	3	3	3	3.28
CO4	3	4	4	4	3	4	4	3.71
CO5	4	3	4	4	3	3	3	3.42
MEAN OVER ALL								3.48

Result: The Score for this course is 3.48(High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: D. ANNALAKSHMI

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GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., COMPUTER SCIENCE – I SEMESTER – CORE COURSE- II

(For the candidates admitted from the year 2021-22 onwards)

C PROGRAMMING LAB

COURSE OBJECTIVES :

1. To understand the concept in C Language.
2. To build logical operations.
3. To Create own programming

LIST OF PROGRAMS

1. Program to calculate area of rectangle.

2. Program to swap two numbers without using temporary variables.

3. Program to reverse given number.

4. Program to uses witch statement. Display week days using switch statement.

5. Program to find factorial of a given number using recursive function.

6. Program to add two numbers using pointers.

7. Program to find the maximum number in an array using pointers.

8. Program for matrix manipulation

    (a) Addition of two matrix.

    (b) Multiplication of two matrix.

9. (A) Program to show call by value. (b) Program to show call by reference.

10. Program to prepare mark sheet using structure.

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COURSE OUTCOMES:

Students must able to:

1. Understand the basic structure of C program.

2. Understand the running process of C program.

3. Learn efficient programming language.

4. Analyze the concepts of structure and functions.

5. Work on open-source projects.

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean Score Of course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	3	4	4	4	3.57
CO2	3	4	3	3	4	3	4	3.42
CO3	4	3	4	3	4	4	3	3.57
CO4	3	4	4	4	3	4	4	3.71
CO5	4	3	4	4	3	3	3	3.42
MEAN OVER ALL SCORE								3.53

Result: The Score for this course is 3.53(High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: D. ANNALAKSHMI

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GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE - II SEMESTER - SAP
(For the candidates admitted from the year 2021-22 onwards)

FUNDAMENTAL OF INFORMATION TECHNOLOGY (SAP)

COURSE OBJECTIVES :
1. To learn about basic concepts of the computer.
2. To gain the knowledge about function and components of a computer.
3. To analyze the types of computer software and features.
4. To explain database and network concepts.
5. To explain how to use the internet and multimedia tools.

UNIT - I	**(Chapter 1, 2)** Introduction to Computers: Introduction, Types of Computers - Characteristics of Computers - Word Length, Speed, Storage, Accuracy, Versatility, Automation, Diligence. Classification of Digital Computer Systems: Introduction - Microcomputer - Personal Computers, Workstations, Portable Computers - Minicomputer - Mainframe – Supercomputer - Network Computers.
UNIT - II	**(Chapter 3, 6)** Anatomy of a Digital Computer: Functions and Components of a Computer - Central Processing Unit - Control Unit, Arithmetic - Logic Unit - Memory. Memory Units: Introduction - RAM - ROM - PROM - EPROM - EEPROM.
UNIT - III	**(Chapter 10, 13)** Introduction to Computer Software: Operating System - Utilities - Compilers & Interpreters - Word Processors - Spreadsheets - Presentation Graphics - Database Management Systems - Image Processors. General Software Features and Trends: Introduction - Ease of Use - Graphical User Interface - More Features - Requirement of more Powerful Hardware - Multi-Platform Capability - Network Capabilities - Compatibility with other Software - Object Linking and Embedding - Group work Capabilities - Mail Enabling - Web Enabling.
UNIT - IV	**(Chapter 15, 18)** Introduction to Database Management System: Introduction - History of Information - Quality of Information - What is a Database? – Why a Database? - Characteristics of Data in a Database - What is a Database Management System? - Why DBMS? Computer Networks: Introduction - Overview of a Network - Communication Processors - Communication Media - Tele Communication Software - Types of Networks - Network Protocols - Network Architecture.
UNIT - V	**(Chapter 21, 24)** Internet and World Wide Web: Introduction - What's Special about Internet - Internet Access - Internet Protocols - Internet Addressing - The World Wide Web - Web Pages & HTML - Web Browsers - Searching the Web?. Introduction to Multimedia: Multimedia in Entertainment - Multimedia in Software Training - Multimedia in Education and Training - Multimedia on the Web - Multimedia in office Work - Multimedia Servers and Database.

TEXT BOOK :
1. Alexis Leon, Mathews Leon - "Fundamentals of Information Technology" - Vikas Publishing House PVT Ltd., New Delhi 1999.

REFERENCE BOOK :
1. V. Raja ram by Fundamentals of computer.

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COURSE OUTCOMES:

1. To understand the computer basis.

2. To understand and be able to explain components in the computer.

3. To use appropriate software in the real world.

4. To develop a web page and connect to the backend databases with the network.

5. To know how to create a web page and a presentation of multimedia.

Nature of Course			
Knowledge and skill		Employability oriented	
Skill oriented		Entrepreneurship oriented	

MAPPING

Course Outcome	Programme outcome					Programme specific outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	4	3	3	3	4	3	3.28
CO2	3	3	4	4	3	4	3	3.42
CO3	4	3	3	3	3	3	4	3.28
CO4	4	3	4	3	4	3	3	3.42
CO5	4	3	4	3	3	4	4	3.57
MEAN OVERALL SCORE								3.4

Result: The Score for this course is 3.4 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER:D.ANNALAKSHMI

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CREDIT: 5	COURES CODE: U21CS2C3

<table>
<tr><td colspan="2">GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE - II SEMESTER - CORE COURSE- II
(For the candidates admitted from the year 2021-22 onwards)

OOP WITH C++</td></tr>
<tr><td colspan="2">COURSE OBJECTIVES :
  1. To understand how C++ improves C with object-oriented features.
  2. To learn the syntax and semantics of the C++ programming language.
  3. To understand the concept of data abstraction and encapsulation.
  4. To analyze how to overload functions and operators in C++.
  5. To develop simple applications using inheritance and files.</td></tr>
<tr><td>UNIT - I</td><td>Principles of Object-Oriented Programming: Object-Oriented Paradigm - Basic Concepts of Object - Oriented Programming - Benefits of OOP - Applications of OOP - Simple C++ Program - Structure of C++ Program - Tokens Expressions And Control Structures: Tokens - Keywords - Identifiers and Constants - Data types - Constants - Variables - Operators in C++ - Scope Resolution Operator - Memory Management Operators - Manipulators - Control Structure.</td></tr>
<tr><td>UNIT - II</td><td>Functions in C++: The Main Function - Function Prototyping - Call by Reference - Return by Reference - Inline Functions - Default Arguments - Function Overloading - Classes and Objects: Specifying a Class - Defining Member Functions - Making an Outside Function Inline - Nesting of Member Functions - Private Member Functions - Arrays within a Class - Memory Allocation for Objects - Static Data Members - Static Member Functions - Arrays of Objects - Objects as a Function Arguments - Friend Functions - Returning Objects.</td></tr>
<tr><td>UNIT - III</td><td>Constructors and Destructors: Constructors - Parameterized Constructors - Multiple Constructors in a Class - Constructors with Default Arguments - Copy Constructor – Destructors - Operator Overloading and Type Conversions: Defining Operator Overloading - Overloading Unary Operators - Overloading Binary Operators - Rules for Overloading Operators</td></tr>
<tr><td>UNIT - IV</td><td>Inheritance - Extending Classes: Introduction - Defining Derived Classes - Single Inheritance - Making a Private Member Inheritable - Multilevel Inheritance - Multiple Inheritance - Ambiguity Resolution in Inheritance - Hierarchical Inheritance - Hybrid Inheritance.</td></tr>
<tr><td>UNIT - V</td><td>Managing Console I/O Operations: C++ Streams - C++ Stream Classes - Unformatted I/O Operations - Formatted Console I/O Operations - Working with Files: Introduction - Classes for File Stream Operations - Opening and Closing a File - Detecting end-of-file - More about Open(): File Modes.</td></tr>
<tr><td colspan="2">TEXT BOOK:

  1. E. Bala guru samy, Object oriented Programming with C++, 4th Edition Tata McGraw - Hill Publications, 2009.</td></tr>
<tr><td colspan="2">REFERENCE BOOKS :

  1. Robert Lahore, Object Oriented Programming in C++, 4th Edition, 2009.

  2. Herbert Scheldt, C++ the Complete Reference, Tata McGraw Hill, 3rd Edition, 2001.</td></tr>
</table>

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E – REFERENCE:

1. https://www.spoken-tutorial.org
2. https://www.tutorialspoint.com/cplusplus/index.htm
3. https://www.w3schools.com/cpp/

COURSE OUTCOMES:

CO1: To understand the procedural and object oriented paradigm by using the concepts of classes, Function, data, objects and streams.

CO2: Able to make use of objects, classes and function for developing programs.

CO3: To understand dynamic memory management techniques using constructors, destructors, etc.

CO4: To identify the principles of inheritance and its types and develop applications using it.

CO5: Able to use various object oriented concepts to solve different problems using files.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme outcomes					Programme specific outcomes		Mean score of course outcomes
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	4	3	4	4	3.57
CO2	4	4	3	4	4	3	4	3.71
CO3	3	4	4	4	3	4	4	3.71
CO4	4	3	4	3	4	3	3	3.43
CO5	4	4	4	3	4	4	4	3.86
MEAN OVERALL SCORE								3.66

Result: The Score for this course is 3.66 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: A. RUKMANI – DR. C. JAYANTHI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., COMPUTER SCIENCE – II SEMESTER – CORE COURSE- III

(For the candidates admitted from the year 2021-22 onwards)

C++ PROGRAMMING LAB

COURSE OBJECTIVES :

1. To impart knowledge of object oriented programming principles and implement them in C++.

2. Enable to differentiate procedure oriented and object-oriented concepts.

3. To explain the importance of data hiding in object oriented programming.

4. To equip with the knowledge of Inheritance so that learner understands the need of inheritance.

PROGRAMMES:

1. Write a C++ program using Control Structure.

2. Write a C++ program using Function Overloading.

3. Write a C++ program for Nesting of Member Function.

4. Write a C++ program to create a Student Class.

5. Write a C++ program to implement Constructors.

6. Write a C++ program using Operator Overloading.

7. Write a C++ program to implement Multilevel Inheritance.

8. Write a C++ program to implement Multiple Inheritance.

9. Write a C++ program using Input /Output Operations.

10. Write a C++ program to implement Files.

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COURSE OUTCOMES:

Students must able to:

CO1: Define the different programming paradigm such as procedure oriented and object oriented. Programming methodology and conceptualize elements of OO methodology.

CO2: Identify the concepts of inheritance and its types and develop applications using overloading Features.

CO3: Discover the usage of I/O operation and Files.

MAPPING

Course outcomes	Programme outcomes					Programme specific outcomes		Mean score of course outcomes
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	4	3	3	3	3.29
CO2	3	4	3	4	4	4	3	3.57
CO3	4	3	4	4	4	3	4	3.71
Mean Overall Score								3.52

Result: The Score for this course is 3.52 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: A. RUKMANI – Dr. C. JAYANTHI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 2	
	GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005 **B.SC., COMPUTER SCIENCE – II SEMESTER – SAP** (For the candidates admitted from the year 2021-22 onwards) **OFFICE AUTOMATION(SAP)**

COURSE OBJECTIVES :

1. To learn the preparation of documents and presentations with office automation tools.
2. To know how to create documents that demonstrate proficiency in the use of word processing, spreadsheet, database, and presentation applications.
3. To understand the tools in Microsoft office package.

UNIT - I	MS Word - Starting Word - Parts of Word Window - Mouse and Keyboard Operations - Menus, Commands, Tool bars and their Icons - Creating Word Documents - Editing Word Documents - Inserting Objects-Formatting Documents - Working with Tables - Mail Merge.
UNIT - II	MS Excel - Introduction-Entering and Editing text, Numbers, Formulas and Date-Menus Commands, Toolbars and their Icons - Inserting rows and columns-Building Worksheets - Creating and formatting charts.
UNIT - III	MS PowerPoint: Introduction - Menus, Toolbar and Navigating in PowerPoint.
UNIT - IV	MS Access: Introduction - Starting MS Access - Creating a New Data Base - Creating a Data base through Table Wizard–Creating a New Table-Rename Columns - Saving the Database – Relationship - Creating Table through Design View - Relationship – Query - Form–Report -Exiting MS Access.
UNIT - V	**Case Study**: Prepare your bio-data using MS Word - Prepare your class time table using MS Excel - Prepare a PowerPoint presentation about a product - Create a database and perform query operation.

TEXT BOOK :

   Sanjay Saxena, MS Office 2000 - Vikas Publishing House.

REFERENCE BOOK :

   Microsoft Office 365 - Connect and Collaborate Virtually Anywhere, Anytimeby Katherine Murray.

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COURSE OUTCOMES:

Students must able to:

1. Analyze the usage of Microsoft office package.

2. Able to prepare the documents and presentation work.

3. Ability to develop the database using Microsoft Access.

Nature of Course			
Knowledge and skill		Employability oriented	
Skill oriented		Entrepreneurship oriented	

MAPPING

Course Outcome	Programme outcome					Programme specific outcome		Mean score of course outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO	3	3	4	3	4	4	4	3.57
CO	3	4	3	3	4	3	4	3.42
CO	4	3	4	3	3	3	3	3.28
MEAN OVER ALL SCORE								3.42

Result: The Score for this course is 3.42(High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER:D.ANNALAKSHMI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – III SEMESTER – CORE COURSE- V
(For the candidates admitted from the year 2021-22 onwards)

PROGRAMMING IN JAVA

COURSE OBJECTIVES:
1. To knowledge of object-oriented paradigm in the Java programming language.
2. To understand the fundamentals of object-oriented programming in java, including defining Classes.
3. To implement and gain knowledge in arrays, functions and exception handling.
4. To understand the principles of inheritance, packages and interfaces.
5. To read and write data using Java streams.

UNIT - I	**Java Evolution:** Java history - Java features - How Java differs from C and C++ - Web Browsers - Java environment - **Overview of Java Language:** Introduction - Simple Java Program - Java Program Structure - Java Tokens - Implementing a Java Program - Java Virtual Machine - Command Line Arguments - **Constants, Variables and Data Types:** Constants - Variables - Data Types - Declaration of Variables - Scope of Variables - Type Casting.
UNIT - II	**Decision Making and Branching** - **Decision Making and Looping** - **Classes, Objects and Methods:** Defining a Class - Fields Declaration - Methods Declaration - Creating Objects - Accessing Class Members - Constructors - Method Overloading - Nesting of Methods - Inheritance: Extending a Class - Overriding Methods - Visibility Control.
UNIT - III	**Arrays, Strings and Vectors:** One-dimensional Arrays - Creating an Array – Two - dimensional Arrays - Strings - Vectors – **Interface:** Defining Interfaces - Extending Interfaces – Implementing Interfaces – Accessing Interface Variables – **Packages:** Java API Packages - Using System Packages – Naming Conventions - Creating Packages - Accessing a Package - Using a Package - Adding a Class to a Package - Hiding Classes.
UNIT - IV	**Multithreaded Programming:** Creating Threads - Extending the Thread Class - Stopping and Blocking a Thread - Life Cycle of a Thread - Using Thread Methods - Thread Priority - Implementing the Run able Interface - **Managing Errors and Exceptions**: Types of Errors - Exceptions - Syntax of Exception Handling Code - Multiple Catch Statements - Using Finally Statement.
UNIT - V	**Applet Programming:** Introduction - How Applets Differ from Applications – Preparing to Write Applets - Building Applet Code - Applet Life Cycle - Creating an Executable Applet - Designing a Web Page - Applet Tag - Running the Applet – Passing Parameters to Applets - More about Applet Tag - **Managing I/O Files:** Concept of Streams - Stream classes - Byte Stream Classes - Character Stream Classes - Using Streams.

TEXT BOOK :
1. E. Balagurusamy, Programming with Java: A primer – 5th Edition, Tata McGraw Hill, 2015.

REFERENCE BOOKS:
1. Herbert Scheldt, Java 2, The complete Reference, Tata McGraw Hill, 4th Edition 2001.
2. Herbert Scheldt - Java: The Complete Reference, McGraw Hill Education, Oracle Press 10th Edition, 2018
3. John R. Hubbard – Programming with Java - 2nd Edition, TMH.

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E – REFERENCES:

1. www.spoken-tutorial.org

2. www.nptel.ac.in

3. https://www.w3schools.in/java-tutorial/

COURSE OUTCOMES:
Students must able to:

CO1: Gain knowledge about basic java language syntax and semantics to write java programs.

CO2: Demonstrate the concepts of inheritance and overriding methods.

CO3: Propose the use of certain technologies by implementing them in the Java programming

Language   to solve the problem.

CO4: Develop Java programs using multithreaded programming and exception handling.

CO5: Able to design web page using applet codes.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcomes	Programme outcomes					Programme specific outcomes		Mean score of course outcomes
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	4	3	4	4	3	4	4	3.71
CO2	4	3	3	4	4	3	4	3.57
CO3	3	3	3	4	3	4	4	3.43
CO4	4	3	4	3	4	4	3	3.57
CO5	4	4	4	3	4	4	4	3.86
MEAN OVERALL SCORE								3.63

Result: The Score for this course is 3.63 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: A. RUKMANI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 3	COURES CODE:U21CS3C6P

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., COMPUTER SCIENCE – III SEMESTER – CORE COURSE - VI

(For the candidates admitted from the year 2021-22 onwards)

JAVA PROGRAMMING LAB

COURSE OBJECTIVES:

1. To gain knowledge about basic java language syntax and semantics to write java programs.

2. To write Java code using advanced Java features.

3. To practice the basic concepts, branching and looping statements and strings.

4. To it provides the syntax of programming language Java for solving the real world problem.

PROGRAMMES:

1. Program to implement Looping Statements.

2. Program to implement Classes and Constructors.

3. Program to implement Inheritance.

4. Program to implement Method Overriding.

5. Program to implement String Handling.

6. Program to implement Interfaces.

7. Program to develop User defined Packages in Java.

8. Program to implement Multi Threading.

9. Program to implement Exception Handling Mechanism in Java.

10. Program to implement Applet.

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COURSE OUTCOMES:

Students must able to:

CO1: Able to write java application programs using OOP principles with proper program

Structuring.

CO2: Identify Java code utilities in classes and inheritance.

CO3: Develop applications using strings, interfaces and packages.

CO4: Construct Java programs using multithreaded programming, exception handling and applet.

MAPPING

Course Outcomes	Programme outcomes					Programme specific outcomes		Mean score of Outcomes
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	4	3	4	4	3.57
CO2	4	3	3	3	4	3	4	3.43
CO3	3	3	3	4	3	4	4	3.43
CO4	4	3	4	3	4	4	3	3.57
Mean Overall Score								3.5

Result: The Score for this course is 3.5 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: A. RUKMANI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

	GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005 **B.SC., COMPUTER SCIENCE - IV SEMESTER - CORE COURSE- VII** (For the candidates admitted from the year 2021-22 onwards) **RELATIONAL DATABASE MANAGEMENT SYSTEM**

COURSE OBJECTIVES:

1. To describe the discipline of database management systems.
2. To give a basic foundation of relational model of data.
3. To understand the basic knowledge of SQL in detail.

UNIT - I	**Introduction to Files and Database Systems:** Introduction - Database System versus file systems - View of Data -Database Languages - Database System Structure - Data Models - E-R Model - Extended E-R features.
UNIT - II	**Relational Model:** SQL - Data Definition - Queries in SQL - Nested Sub queries - Modification of the database - Views - Joined Relations - Embedded SQL - Dynamic SQL - Security and Authorization-**Normalization:** Types of Normalization.
UNIT - III	**Data Storage and Query Processing:** File Organization–Organization of Record in files - Operations on files - Heap files - Sorted files - Hashing techniques - Dynamic Hashing - Indexing-B+ Tree Index files - B tree Index files.
UNIT - IV	**Structured Query Language:** Interactive SQLpart1-Table fundamentals - Viewing Data in the Tables - Eliminating Duplicate Rows - Sorting data in a Table - Creating a Table from a Table - Inserting data into a Table from another Table-Delete Operations -Updating the contents of a Table - Modifying the Structure of Tables - Renaming Tables -Truncating Tables-Data Constraints - Types of Data Constraints: Primary Key - Foreign Key - Unique Key - Null Value Constraints - Not Null Constraints - Check Constraints.
UNIT - V	**Interactive SQL Part-III:** Computations done on Table Data - Oracle Functions–Date Conversion Functions - Date Functions–Grouping Data From Tables in SQL- Sub queries - **Advance SQL:** Views.

TEXT BOOKS :

1. **Unit I, II, III-**D Menaga, S Venkata Lakshmi, "Database Management Systems" Sri Krishna Hi Tech Publishing Company Private Limited.
2. **Unit IV&V –**"SQL,PL/SQL the Programming Language of ORACLE"3rd Revised Edition , IVANBAYROSS, BPB Publications

REFERENCE BOOKS:

1. A. Silberschatz, H.Korth, S.Sudarshan, "Data base system and concepts" , 5th Edition MCGraw-Hill, 2005.
2. C J Date, "An Introduction to Database Systems" 7th Edition Pearson Education -2003.
3. Ramon A Mata Toledo, Pauline K Cushman, "Schaum's Outline of Fundamentals of SQL Programming", Tata MCGraw Hill publishing Company Limited.

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E-RESOURCES:

https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm

https://www.manipalprolearn.com/rdbms-tutorial

https://www.codecademy.com/articles/what-is-rdbms-sql

https://www.guru99.com/difference-dbms-vs-rdbms.html

COURES OUTCOMES:

Students must able to:

1. Understand database system concepts.

2. Knowing the Structure of Data using Data Models.

3. Understand Normalization Concept.

4. Proficient in SQL.

5. Understand query languages for creating and editing databases.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcomes					Programme Specific Outcome		Mean score of course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO	3	3	3	3	4	4	4	3.4
CO	2	4	3	4	4	3	4	3.4
CO	4	3	4	3	4	4	3	3.5
CO	3	4	4	4	3	4	4	3.7
CO	4	3	3	4	3	3	3	3.2
MEAN OVER ALL SCORE								3.4

Result: The Score for this course is 3.48(High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: D. ANNALAKSHMI – DR. C. JAYANTHI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 3	COURES CODE:U21CS4C8P

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., COMPUTER SCIENCE – IV SEMESTER – CORE COURSE- VIII

(For the candidates admitted from the year 2021-22 onwards)

RDBMS LAB

COURSE OBJECTIVES:

1. To provide the basic concepts of the Database Systems including Data Models, Storage Structure and Normalization.

2. To write queries in SQL to retrieve any type of information from a database.

PROGRAMMES:

 SQL statements for creating, listing, dropping, checking, updating tables.

1. Designing ER diagrams for different case studies:

    a. Banking Enterprise

    b. Library Management System

2. Creates a new database, table and display the structure of a table.

3. Experiments on the use of keys.

4. Record Manipulation using Insert, Delete, Update and Drop.

5. To perform AGGREGATION Functions.

6. Create a table and perform ORDER BY operation.

7. Queries with comparison and JOIN operations.

8. Queries to find values on different conditions and constraints.

9. Create multiple tables and perform Nested sub queries.

10. To implement the VIEW concept.

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COURES OUTCOMES:

Students must able to:

1. Students can understand how to retrieving, updating, inserting and removing data?
2. To gain the knowledge of sorting and filtering data.
3. To demonstrate key constraints.
4. Able to know grouping data.
5. To create own sub-queries and views.

MAPPING

Course Outcome	Programme Outcome					Programme specific Outcome		Mean score of course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	3	4	4	4	3.57
CO2	3	3	3	3	4	3	4	3.28
CO3	4	3	4	3	4	4	3	3.57
CO4	3	4	3	3	3	4	4	3.42
CO5	4	3	4	3	3	3	3	3.28
MEAN OVERALL SCORE								3.42

Result: The Score for this course is 3.42(High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: D. ANNALAKSHMI – Dr. C. JAYANTHI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 4	COURES CODE:U21CS4S1

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., COMPUTER SCIENCE – IV SEMESTER – SKILL BASED ELECTIVE - I

(For the candidates admitted from the year 2021-22 onwards)

WEB DESIGNING

COURSE OBJECTIVES:

1. To learn the various HTML tags and design simple web pages.
2. To develop the web pages using cascading style sheets.

UNIT - I	(Chapter 4, 5)
	Introduction to HTML: Designing a Home Page - History of HTML - HTML Generations - HTML Documents - Anchor Tag - Hyperlinks. **Head and Body Section:** Header Section - Title - Links - Colourful Pages - Comment Lines.
UNIT - II	(Chapter 6, 7)
	Designing the Body Section: Heading Printing - Aligning the Headings - Horizontal Ruler - Paragraph - Images and Pictures. **Ordered and Unordered Lists:** Lists - Unordered Lists - Heading in a List - Ordered Lists - Nested Lists
UNIT - III	(Chapter 8)
	Table Handling: Tables - Table Creation in HTML - Width of the Table and Cells - Cells Spanning Multiple Rows/Columns - Colouring Cells.
UNIT - IV	(Chapter 9)
	DHTML and Style Sheets: Defining styles - Elements of Styles - Linking a style sheet to an HTML Document - In-line Styles - External Style Sheets - Internet Style Sheets - Multiple Style.
UNIT - V	(Chapter 10, 12)
	Frames: Frameset Definition - Frame Definition - Nested Framesets. **Forms:** Action Attribute - Method Attribute - Enctype Attribute.

TEXT BOOK :

   C. Xavier, "World Wide Web design with HTML Tata McGraw Hill Education Private
   Limited, New Delhi.

REFERENCE BOOKS:

1. H.M. Deitel, P.J. Deitel, "Internet and World Wide Web - How to Program", 3rd Edition, Pearson Publication, 2006.
2. Raj Kamal, "Internet and Web Technologies", 7th Reprint, Tata McGraw Hill Education, 2007.

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COURES OUTCOMES:

1. To create simple static web pages.

2. To understand the concept of table, frames, and forms to implement the web pages.

3. To design and develop web pages using cascading style sheets.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme specific Outcome		Mean score of course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	4	4	3	3	3	4	3	3.42
CO2	4	4	4	3	4	3	4	3.71
CO3	4	3	3	4	3	3	4	3.42
MEAN OVERALL SCORE								3.51

Result: The Score for this course is 3.51 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: V. KARTHIKEYAN

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 5	COURES CODE:U21CS5C9

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – V SEMESTER – CORE COURSE - IX
(For the candidates admitted from the year 2021-22 onwards)
ASP.NET PROGRAMMING

COURSE OBJECTIVES:

1. To explain how to create dynamic Web pages by using **ASP.NET**.

2. To create a user interface on an **ASP.NET** page by using standard Web server controls.

3. To create a user control and a custom server control and add them to an **ASP.NET** page.

UNIT - I	**(Chapter 1,2)** **The .NET Frame Work:** The .NET Programming Framework - The Common Languages Runtime - The .NET Class Library - ASP .NET, Visual studio .NET. Learning the .NET Languages: The .NET Languages - Data types - Declaring Variables, Scope and Accessibility - Conditional Structure - Loop Structure - function and Subroutines.
UNIT - II	**(Chapter 3,6,7)** **Types, Objects and Namespace:** The Basic about classes - Understanding Name Spaces and Assemblies. **Web Form Fundamentals:** Server Controls - HTML Control Classes - Web Controls - Web control Classes - Auto Post Back and Web Controls Events.
UNIT - III	**(Chapter 8,9)** **Using Visual Studio .NET:** Starting a Visual Studio .NET project - the Web Form Designer - Writing Code - Visual Studio .NET Debugging. **Validation and Rich Controls:** The Calendar Control - The AdRotator, Validation - Validation Controls - validator Process – Validation Classes.
UNIT - IV	**(Chapter 13)** **ADO .NET Data Access:** About the ADO.Net - SQL Basics - The SQL Select update, Interest, and Delete statements - Accessing Data the Easy Way - Creating a Connection - Defining a Select Command - Using a Command with a Data Reader - Updating Data.
UNIT - V	**(Chapter 14)** **Data Binding:** Introducing Data Binding - Single Value Data Binding - Repeated Value Data binding - Data Binding with Databases.

TEXT BOOKS :

1. Matthew Macdonald, "The Complete Reference ASP.NET" – TMH Co Ltd.,

REFERENCE BOOKS:

1. Francise, ASP and ASP.Net Rescue - Thomson Damer Learning.

2. Waither, ASP.Net 3.5 Unleased - Pearson Education.

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COURES OUTCOMES:

Students must able to:

1. Learn to develop the web service program using visual studio.

2. Develop dynamic web applications, create and consume web services.

3. Use appropriate data sources and data bindings in ASP.NET web application.

4. Understand web application configuration and demonstrate the ability to manage basic configuration issues.

5. Learn to use the database concept.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean score of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	4	3	2	3	4	3	3.14
CO2	2	3	4	3	3	3	3	3.14
CO3	3	3	3	4	3	3	4	3.28
CO4	4	3	3	3	3	3	3	3.14
CO5	3	3	3	3	3	3	3	3.0
MEAN OVERALL SCORE								3.14

Result: The Score for this course is 3.14 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: A. SARASWATHI – V. KARTHIKEYAN

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005 **B.SC., COMPUTER SCIENCE – V SEMESTER – CORE COURSE - X** (For the candidates admitted from the year 2021-22 onwards) **ASP.NET PROGRAMMING LAB**
COURSE OBJECTIVES: 1. To learn how to create websites using Asp.Net. 2. To implement the advanced web controls using Asp.Net. 3. To learn to use Asp.Net web and server controls. 4. To design web applications using ADO.Net. 5. To learn how to create dynamic web pages using PHP concepts. 6. To connect web pages with a database.
PROGRAMMES: 1. Develop a web page using Ad Rotator Control. 2. Design a web page involving Calendar Control. 3. Apply appropriate validation techniques in the web form using Validation Controls. 4. Create an ASP.Net web form using Web and Server controls. 5. Create a web application using ADO.Net that performs basic data manipulations: (i) Insert (ii) Update (iii) Delete (iv) Select 6. Write a program using Conditional Statements in PHP. 7. Write a program using Function in PHP. 8. Create a PHP program using classes. 9. Write a PHP program to perform file read, write, open and close operations. 10. Write a PHP program using My SQL.

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COURES OUTCOMES:
Students must able to:

1. Apply .NET concepts to design and develop web applications.

2. Create a basic website using Asp.Net controls.

3. **Applying different data manipulations in ADO.Net.**

4. Create dynamic web pages in PHP.

5. **Develop the web page and connect to the backend databases.**

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean score of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	4	3	3	3	4	3	3.28
CO2	3	3	4	3	3	4	3	3.28
CO3	4	3	3	4	3	3	4	3.42
CO4	4	3	3	3	4	3	3	3.28
CO5	4	4	4	3	3	4	3	3.57
MEAN OVERALL SCORE								3.37

Result: The Score for this course is 3.37 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: A. SARASWATHI – V. KARTHIKEYAN

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – V SEMESTER – CORE COURSE - XI
(For the candidates admitted from the year 2021-22 onwards)

OPERATING SYSTEM

COURSE OBJECTIVES:

1. To know the objectives and functions of operating system.

2. To determine the process, threads, and memory management techniques in operating system.

3. To define the scheduling and its types. To manage the file concept in operating system.

UNIT - I	**(Chapter - 2)**
	Operating system objectives and function - operating system and user/computer interface, operating system as a resources manager. The Evolution of operating system - serial processing sample batch system, time sharing system.
UNIT - II	**(Chapter – 3 & 4)**
	Process description and control process control - What is a process? - Process states - process description - process control - execution of the operating system - security issues. Threads: processes and threads - types of threads
UNIT - III	**(Chapter – 5:5.2 & 6)**
	Concurrency - principles of concurrency. Deadlock: Principles of deadlock - deadlock prevention - deadlock detection - Deadlock Avoidance - An Integrated deadlock strategy.
UNIT - IV	**(Chapter – 7 & 8)**
	Memory management: Memory management requirements - memory partitioning - Paging - Segmentation - Virtual memory: Hardware and control structures - Operating system software.
UNIT - V	**(Chapter – 9 & 12)**
	Scheduling - Types of processor scheduling - scheduling algorithms. File management: Overview - file organization and access - file directories - record blocking – file sharing - secondary storage management - file system security.

TEXT BOOK :

William Stallings, Operating systems internals and design principles by Ninth edition, Pearson India education services Pvt Ltd.

REFERENCE BOOK:

1. Dental H.M. "An Introduction to Operating Systems", Addison Wesley Publishing Co.1998.

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COURSE OUTCOMES:
Students must able to:
1. Understand the basic concept of operating system.

2. Able to know the process and threads in operating system.

3. Learn the memory management techniques.

4. They gain knowledge of scheduling algorithms and deadlock concept.

5. They become be familiar file management concept.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	2	3	3	4	3	3	4	3.14
CO2	3	3	4	3	4	4	3	3.42
CO3	2	3	4	3	3	3	4	3.14
CO4	3	4	3	4	3	3	3	3.28
CO5	2	3	3	3	3	4	3	3.00
MEAN OVERALL SCORE								3.2

Result: The Score for this course is 3.2 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: M. SHIVASHANKAR

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 5	COURES CODE:U21CS5E1

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – V SEMESTER – ELECTIVE COURSE - I
(For the candidates admitted from the year 2021-22 onwards)
MICROPROCESSOR AND ITS APPLICATION

COURSE OBJECTIVES:

1. To acquire the basic knowledge of microprocessors.

2. To impart how to format instruction and data.

3. To learn to write an assembly language programs.

4. To familiarize the students with the programming and interfacing of microprocessors.

5. To provide strong foundation for designing real world applications using microprocessors.

UNIT - I	Evolution of Microprocessors - Single-chip Microcomputer - Memory - Buses - Memory Address Capacity of CPU - Intel 8085 - Block diagram of Intel 8085 - Pin configuration.
UNIT - II	Instruction set of Intel 8085 - Instruction and Data Formats - Addressing Modes - Status Flags - Intel 8085 Instructions - Programming of Microprocessors - Stacks and Subroutines - Micro Programming.
UNIT - III	Assembly Language Programming - Simple Examples - Addition and Subtraction - Complements - Shift - Masking - Finding Max and Min Number in an array - Arranging a series of numbers - Multi byte Addition and Subtraction.
UNIT - IV	Peripheral devices and interfacing - Address Space Partitioning - Memory and I/O Interfacing - Data Transfer Schemes - Interfacing Devices and I/O Devices - I/O Ports - Programmable Peripheral Interface.
UNIT - V	Microprocessor Applications - Delay Subroutines - Interfacing of 7 segment LED Displays - Water Level Indicator - Microprocessor Based Traffic Control.

TEXT BOOK :

Badri Ram, "Fundamentals of Microprocessors and Microcomputers" - Fifth revised and enlarged edition -Dhanpat Rai publication - 2001.

REFERENCE BOOK:

Microprocessor Architecture, programming and application with the 8085/8080A - Romesh S. Ganokar - Penram International Publishers India 1997.

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COURES OUTCOMES:
Students must able to:

CO1: Understand the basic concepts of memory and buses.

CO2: Learning the operation of Intel 8085 microprocessor's internal architecture and its performance.

CO3: Apply knowledge and demonstrate programming proficiency using the various

Addressing modes and data transfer instructions of the target microprocessor.

CO4: Design electrical circuitry to the Microprocessor I/O ports in order to interface the

Processor to external devices.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	4	4	4	3	4	4	4	3.86
CO2	3	4	3	4	4	4	4	3.71
CO3	3	4	3	3	4	3	4	3.43
CO4	3	3	4	4	3	4	4	3.57
Mean Overall Score								3.64

Result: The Score for this course is 3.64 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: Dr. A. VINAYAGAM – A. RUKMANI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 4	COURES CODE:U21CS5S2

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE - V SEMESTER - SKILL BASED ELECTIVE - II
(For the candidates admitted from the year 2021-22 onwards)

DESIGN AND ANALYSIS OF ALGORITHMS

COURSE OBJECTIVES:

1. To know the definition and basics of algorithm.

2. To determine the specifications and functions of algorithm.

3. To analyze the methods of algorithm.

UNIT - I	(Chapter - I & II)
	Introduction: Algorithm definition and specification - Performance analysis - Elementary Data structures: Stacks and Queues -Trees - Dictionaries - Priority queues - Sets and Disjoint set union - Graphs - Basic Traversal and Search techniques.
UNIT - II	(Chapter – III)
	Divide and Conquer: General method - Binary search - Finding the Maximum and Minimum - Merge sort - Quick sort - Selection - Strassen's Matrix Multiplication.
UNIT - III	(Chapter – IV)
	The Greedy Method: The General Method - Knapsack problem - Tree Vertex Splitting - Job Sequencing with Deadlines - Minimum cost spanning trees - Optimal storage on tapes - Optimal merge patterns - Single source shortest path.
UNIT - IV	(Chapter – V)
	Dynamic programming: The general method - Multistage graphs - All pair's shortest paths - Single source shortest paths - Optimal binary search trees - String editing - 0/1 Knapsack - Reliability Design - The Traveling salesman problem - Flow shop scheduling.
UNIT - V	(Chapter – VII)
	Back tracking: The general method - The 8-Queens Problem - Sum of subsets - Graph coloring - Hamiltonian Cycles - Knapsack problem.

TEXT BOOK :

Ellis Horowitz, Sartaj Sahni, S.Rajasekaran, "Fundamentals of Computer Algorithms", Galgotia,2003.

REFERENCE BOOKS:

1. S. Lakshmivarahan, Sundarshan, K. Dhall, "Analysis and Design of Parallel Algorithms".

2. Alfred V.Aho, John E. Hopcroft, Jeffrey D.Ullman, "Data Structures and Algorithms".

3. Wiley, Goodrich "Data Structures & Algorithms in Java", 3rd edition.

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COURES OUTCOMES:

Students must able to:

1. A set of steps to accomplish or complete a task that is described precisely enough that a computer Can run it. For the analysis, we frequently need basic mathematical tools.

2. Divide the problem instance into two or smaller instances of the same problem, solve the smaller Instances recursively, and assemble the solutions to form a solution of the original instance.

3. A Generalized Greedy Algorithm with Applications in Optimization. Since carousel Greedy is Very fast, it can be used to solve very large problems.

4. The algorithm is a dynamic programming algorithm which solves both the problem of Minimizing system execution time.

5. Here, a symbolic execution framework is utilized to achieve test target coverage for control System software. The framework does not ensure optimal feasible paths after backtracking.

Nature of Course			
Knowledge and skill		Employability oriented	
Skill oriented		Entrepreneurship oriented	

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	2	3	4	3	4	3	4	3.28
CO2	3	3	2	3	4	3	4	3.14
CO3	2	3	4	3	3	3	3	3.00
CO4	3	4	4	4	3	4	4	3.71
CO5	2	3	3	4	3	3	3	3.00
Mean Overall Score								3.23

Result: The Score for this course is 3.23 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: M. SHIVASHANKAR – K. NACHIMUTHU

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT:3	COURES CODE:U21CS5S3

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – V SEMESTER – SKILL BASED ELECTIVE- III
(For the candidates admitted from the year 2021-22 onwards)

PHP

COURSE OBJECTIVES:

1. Open Source, Easy and fast maintenance.
2. Superior performance, greater scalability, reliability.
3. Compatible with operating system like IIS, Apache etc.
4. Platforms independent and runs on Linux, Windows, or Unix.
5. Large amount of databases are supported.

UNIT - I	PHP Introduction: PHP Basics - Introduction to PHP programming - Introduction to variables - Operators -Constants.
UNIT - II	Control structures: Conditional statements - Conditional loops – Nested control Statement. Arrays: Initializing Arrays - Working With Arrays. Functions: Introduction to Functions - Passing Arguments to Functions - Returning Values from Functions.
UNIT - III	Understanding Classes: Classes – Constructor - Cookies - Introduction - The Scope of a Cookie – Implementing Cookies in PHP. Handling Files: Working With Files.
UNIT - IV	Handling Data Storage: An Introduction to Database Concept - Database Management System - Database Normalization - Advantage and Disadvantage of using Web Databases - MYSQL Database Programming: Creating Databases – Creating Tables - Viewing the Table in a Database - Viewing Table Structure – Entering Data in to a Table - Viewing Data in Table – Modifying the Data in a Table – Deleting a Data from a Table .
UNIT - V	Using PHP with SQL Databases (MYSQL): Connecting to a Database - Creating a Database in Mysql – Selecting a Database - Creating a Table in a Database - Inserting Records in a Table- Retriving Information from a Table - Updating Information in a Table.

TEXT BOOK :

"PHP PROFESSIONAL PROJECTS" – Ashish Wilfred, meeta gupta and kartik bhatnagar with NIIT, PHI publication (Prentice – Hall India)

REFERENCE BOOKS:

1."PHP, MY SQL and Apache" – Julie c.meloni pearson education.

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COURSE OUTCOMES:
Students must able to:

1. Learn to develop PHP programs.
2. Create dynamic web pages in PHP.
3. To know about various control structures.
4. Gain the knowledge about database.
5. Understand the query structure and its usage.

Nature of Course			
Knowledge and skill		Employability oriented	
Skill oriented		Entrepreneurship oriented	

MAPPING

Course Outcome	Programme Outcome					Programme specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	4	3	3	3	4	3	3.28
CO2	3	3	4	3	3	4	3	3.28
CO3	4	3	3	4	3	3	4	3.42
CO4	4	3	3	3	4	3	3	3.28
CO5	4	4	4	3	3	4	3	3.57
MEAN OVERALL SCORE								3.37

Result: The Score for this course is 3.37 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER:

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 5	COURES CODE:U21CS6C12

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – VI SEMESTER – CORE COURSE - XII
(For the candidates admitted from the year 2021-22 onwards)

PYTHON PROGRAMMING

COURSE OBJECTIVES:
1. To understand the basic components of computer programming using the Python language.
2. To demonstrate the Python program with development environment.

UNIT - I	**Introduction to Computer and Python Programming:** Overview of Programming Languages - History of Python - Installing Python - Executing Python Programs - Commenting in Python - Internal Working of Python - Python Implementation. **Basics of Python Programming:** Introduction - Python Character Set - Tokens - Python Core Data Types - The print () Function - Assigning Value to a variable - Multiple Assignments - Then put () Function - eval () Function - Formatting Numbers and Strings-Python inbuilt Functions.
UNIT - II	**Operators and Expressions:** Introduction–Operators and Expressions - Arithmetic Operators - Bitwise Operators - The Compound Assignment Operator. **Decision Statements:** Introduction - Boolean type - Boolean Operator–Decision Making Statements - if statements - else if Statements– Nested if Statements - Multi way if-elf-else Statements. **Looping Control Statements:** Introduction - The while Loop - The range () Function -The for Loop - Nested Loops - The break Statement - The continue Statement.
UNIT - III	**Functions:** Introduction - Syntax and Basics of a Function - Use of a Function - Parameters and Arguments in a Function-The Local and Global Scope of a Variable - The return Statement– Recursive Functions -The Lambda Function .**Strings:** Introduction- Tester Class - Basic Inbuilt Python Functions for String -The String Operators - String Operations–Lists: Introduction -Creating Lists - Accessing Elements of a List - The List Operator - List Methods.
UNIT - IV	**Object Oriented Programming :**Class, Objects and Inheritance: Introduction - Defining Classes-The Self Parameter and Adding Methods to a Class - Display Class Attributes and Methods - Special Class Attributes - Accessibility - Method Overloading in Python - Operator Overloading - Inheritance - Types of Inheritance–The Object Class - Multilevel Inheritance - Multiple Inheritance - Using super() - Method Overriding.
UNIT - V	**Tuples, Sets and Dictionaries:** Introduction to Tuples - Creating Tuples - The tuple () Function - Inbuilt Functions for Tuples - Operations on Tuples - Passing Variable Length Arguments to Tuples - Lists and Tuples - Sort Tuples - Traverse Tuples from a List - The zip () Function - Sets - Dictionaries - Introduction - Creating Dictionaries - Adding and Replacing Values - Retrieving Values - Formatting Dictionaries - Deleting Items - The Methods of Dictionary Class - Nested Dictionaries.

TEXT BOOK :
1. Ashok Namdev Kamthane, Amit Ashok Kamthane, "Programming and Problem Solving With PYTHON".

REFERENCE BOOKS:
1. Martin CBrown, "The Complete Reference Python", MC Graw Hill Education, Indian Edition.
2. PeterNorton, AlexSamvel, DavidAitel, Eric, Leonard Richardson, Jason Diamondm Aretha Parker, Michael Roberts, "Beginning Python" Wiley dream tech Publication.

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E-RESOURCES
https://www.programiz.com/python-programming
https://www.python.org/about/gettingstarted/
https://www.learnpython.org/

COURES OUTCOMES:

1. To understand why **Python** is a useful scripting language for developers.
2. To learn how to design and program **Python** applications.
3. To learn how to identify **Python** object types.
4. To understand how to use lists, tuples, and dictionaries in **Python** programs.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	3	4	4	4	3.57
CO2	3	4	3	3	4	3	4	3.42
CO3	4	3	4	3	4	4	3	3.57
CO4	3	4	3	3	3	4	4	3.42
MEANOVERALLSCORE								3.49

Result: The Score for this course is3.49 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: D. ANNALAKSHMI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 4	COURES CODE: U21CS6C13P

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., COMPUTER SCIENCE – VI SEMESTER – CORE COURSE- XIII

(For the candidates admitted from the year 2021-22 onwards)

PYTHON PROGRAMMING LAB

COURSE OBJECTIVES:

1. To understand the basics in Python programming.

2. To analyze the basic object oriented program design and development in Python Programming.

LIST OF PROGRAMS:

1. Write a Program to Convert Celsius To Fahrenheit.

2. Write a program to convert decimal to binary.

3. Write a program to use decision making statements.

4. Write a program to calculate the factorial of the given numbers using for loop.

5. Write a program using functions to check whether a number is odd or even.

6. Write a program to perform string operations.

7. To implement class in Python.

8. To demonstrate the concept of Multiple Inheritance.

9. Write a program to traverse tuples from a list.

10. To perform some commonly used Dictionary operations.

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E-RESOURCES

https://www.guru99.com/python-tutorials.html

https://www.w3schools.com/python/python_intro.asp

https://www.programiz.com/python-programming

COURES OUTCOMES:

1. To learn and understand **Python programming** basics and paradigm.

2. To learn **Python** looping, control statements and string manipulations.

3. To problem solving and programming capability.

MAPPING

Course Outcome	Programme Outcome					Programme Specific Outcome		Mean score of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	3	3	4	3	4	3.28
CO2	4	3	4	3	4	4	3	3.57
CO3	4	3	4	3	3	4	3	3.42
MEAN OVERALL SCORE								3.42

Result: The Score for this course is 3. 42(High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: D. ANNALAKSHMI

CHAIRMAN – BOS   **CONTROLLER OF EXAMINATIONS**

CREDIT: 5	COURES CODE:U21CS6C14

GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – VI SEMESTER – CORE COURSE - XIV
(For the candidates admitted from the year 2021-22 onwards)

COMPUTER GRAPHICS

COURSE OBJECTIVES:
1. To learn about the concepts used in computer graphics.
2. Understand the various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling and clipping.
3. To describe the importance of viewing and projections.

UNIT - I	(Chapter 2, 3, 4)
	Overview of Graphics System: Video Display Devices. **Output Primitives:** Points and Lines - Line-Drawing Algorithms - Loading Frame Buffer - Line Function - Circle-Generating Algorithms. **Attributes of Output Primitives:** Line Attributes -Area- Fill Attributes - Character Attributes.
UNIT - II	(Chapter 5, 6)
	Two Dimensional Geometric Transformations Basic Transformations - Matrix Representations and Homogenous Coordinates - Composite Transformations - Other Transformations. **Two Dimensional Viewing:** The Viewing Pipeline - Window-To-View port Coordinate Transformation - Clipping Operations: Point Clipping - Cohen Sutherland Line Clipping - Text Clipping.
UNIT - III	(Chapter 9, 10)
	Three Dimensional Concepts: 3D Display Methods. **Three Dimensional Object Representations**: Polygon Surfaces - Curved Lines and Surfaces– Quadri Surfaces - Super Quadrics - Blobby Objects - Spline Representations.
UNIT - IV	(Chapter 11, 12)
	Three Dimensional Geometric and Modelling Transformations: Translation - Rotation - Scaling - Other Transformations. **Three Dimensional Viewing:** Viewing Pipe Line - Projections: Parallel Projection - Perspective Projection.
UNIT - V	(Chapter 13)
	Visible-Surface Detection Methods: Classification of Visible-Surface Detection Algorithms - Back-Face Detection - Depth-Buffer Method - A-Buffer Method - Scan-Line Method - Depth - Sorting Method– BSP-Tree Method - Area-Subdivision Method.

TEXT BOOK :
M. Pauline Baker "COMPUTER GRAPHICS"– 2nd Edition, by Donald Hearn,

REFERENCE BOOKS:
1. W.M. Newman and RF. Sproull- Principle of Interactive Computer Graphics - McGraw Hill International Edition-1979.
2. John f. Hughes, Andries Van Dam, Morgan Mc guire, David F. Sklar, James D. Foley, Steven K. Feiner, Kurt Akeley, "Computer Graphics Principles and Practice" 3rdEdition, Pearson Education, 2014.

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COURSE OUTCOMES:

1. To impart the knowledge of core concepts of computer graphics.

2. To elucidate the mathematical fundamentals of the concept of computer graphics.

3. To the students can analyze and apply the algorithms and techniques for thane wear.

4. To understand different graphics systems and applications of computer graphics.

5. To comprehend and analyze the fundamentals of animation, virtual reality, underlying technologies.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcomes	Programme Outcomes					Programme Specific Outcomes		Mean score of Course Outcomes
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	4	3	2	3	2	3	2.8
CO2	2	3	4	3	3	3	2	2.8
CO3	3	3	3	2	3	3	3	2.8
CO4	4	3	3	3	3	3	3	3.1
CO5	3	2	3	3	3	3	3	2.8
Mean Overall Score								2.86

Result: The Score for this courseis2.86 (Moderate Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: Dr. A. SARASWATHI – V. KARTHIKEYAN

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GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005
B.SC., COMPUTER SCIENCE – VI SEMESTER – ELECTIVE COURSE- II
(For the candidates admitted from the year 2021-22 onwards)
SOFTWARE ENGINEERING

COURSE OBJECTIVES:

1. To knowledge of basic software engineering methods and practices, and their appropriate Application.
2. To a general understanding of software process models and understanding of software requirements.
3. To understanding of the role of project management including planning, scheduling, risk Management, etc.
4. To describe software measurement and software risks.
5. Able to understand quality control and how to ensure good quality software.

UNIT - I	**Software Process:** A generic process model - Process assessment and improvement - Prescriptive process models - Specialized process models - The unified process - Personal and Team process models - Process technology - Product and Process. **Agile Development:** What is agility - Agility and the cost of change - What is an agile process - Extreme programming.
UNIT - II	**Modeling:** Requirements engineering - Establishing the Groundwork - Eliciting requirements - Developing use cases - Building the Requirements model - Negotiating Requirements - Validating Requirements. **Requirements Modeling:** Requirements analysis - Scenario based modeling - UML models that supplement the use case - Data modelling concepts - Class-based modeling.
UNIT - III	**Design Concepts:** Design within the context software engineering – The design process – Design concepts – The design model.
UNIT - IV	**Quality Management:** What is quality - Software quality - The software quality dilemma - Achieving software quality. **Software Quality Assurance:** Background issues - Elements of software quality assurance - SQA Tasks, Goals and Metrics - Formal approaches to SQA - Statistical software quality assurance –Software Reliability - The ISO 9000 Quality standards - The SQA plan.
UNIT - V	**Managing Software Projects:- Risk Management:** Reactive versus Proactive risk strategies - Software risks - Risk identification - Risk projection - Risk refinement - Risk mitigation, monitoring and management - The RMMM Plan. **Maintenance and Reengineering:** Software maintenance - Software supportability - Reengineering - Business process Reengineering - Software Reengineering - Reverse Engineering - Restructuring - Forward Engineering - The Economics of Reengineering.

TEXT BOOK :

Roger. S. Pressman, "Software Engineering – A Practitioner's Approach", McGraw Hill 7th Edition.

REFERENCE BOOK:

Richard E. Fairley, **"Software Engineering Concepts"**, McGraw Hill edition.

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COURSE OUTCOMES:

Students must able to:

CO1: Learn about the software and software engineering activities.

CO2: Find out how to choose the software process models based on their problem.

CO3: Plan the project estimation work and know how to design the software package by using modern Engineering activities.

CO4: They become skilled at risk management system and software maintenance work.

CO5: They gain knowledge of software and able to solve the problem by developing the software Package.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcomes	Programme Outcomes					Programme Specific Outcomes		Mean Score Of Course Outcomes
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	4	3	4	4	3.57
CO2	4	4	3	4	4	3	4	3.71
CO3	3	3	3	4	3	4	4	3.43
CO4	4	3	4	3	4	3	3	3.43
CO5	4	4	4	3	4	4	4	3.86
Mean Overall Score								3.60

Result: The Score for this course is 3.60 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: Dr. A. VINAYAGAM

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	GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005 **B.SC., COMPUTER SCIENCE – VI SEMESTER – ELECTIVE COURSE- III** (For the candidates admitted from the year 2021-22 onwards) **DATA COMMUNICATION AND NETWORKS**

COURSE OBJECTIVES:

1. To know the basics of data communication and networks.

2. To understand the physical layer and its functions.

3. To realize the data link layer address in and error detection and correction concepts.

4. To understand how the network layer, provide services and its routing algorithms.

5. To know about the transport layer protocols and client-server side programming in application layer.

UNIT - I	**(Chapter – 1, 2)** Introduction: Data Communications - Networks - Network types. Network models: Protocol layering - TCP/IP protocol suite -The OSI model.
UNIT - II	**(Chapter – 3, 4, 7)** Introduction to physical layer: Data and Signals - Transmission impairment - Digital transmission: Transmission modes. Transmission of Media: Guided Media–Unguided Media.
UNIT - III	**(Chapter – 9, 10, 17)** Introduction to data link layer: Introduction - Link-layer addressing. Error Detection and Correction: Introduction - Block coding - cyclic codes - checksum - Connecting devices.
UNIT - IV	**(Chapter – 18, 19, 20)** Introduction to network layer: Network layer services - packet switching - network layer performance. Network layer protocols: Internet protocol (IP) - Mobile IP. Unicast routing: Introduction - Routing algorithms.
UNIT - V	**(Chapter – 23, 24, 25)** Introduction to transport layer: Introduction - Transport-layer protocols. Transport layer protocols: user datagram protocol - Transmission control protocol. Introduction to application layer: Client-server programming.

TEXT BOOK :

Behrouz A. "Data Communications and Networking 5E"- For ouzan fifth edition, Tata McGraw
Hill Education (India) Edition 2013.

REFERENCE BOOKS:

1. Barry Nance, "Introduction to Networking"- Fourth Indian Eastern Economy Edition.

2. AndrewS.Tanenbaum, "Computer Networks"- 4th Edition Eastern Economy Edition, 2003.

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COURSE OUTCOMES:
Students must able to:

1. Learn the basics of data communication and networking.

2. Know about the physical layer and its connectivity.

3. Capable thinking of the data link layer functions.

4. Able to learn the network layer services, protocols and routing algorithm.

5. Identify working principle of transport layer and application layer.

Nature of Course			
Knowledge and skill		Employability oriented	
Skill oriented		Entrepreneurship oriented	

MAPPING

Course Outcome	Programme Outcome					Programme specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	3	4	3	4	3	3	3.28
CO2	3	3	2	4	3	3	3	3.00
CO3	2	3	4	3	3	3	4	3.14
CO4	3	4	3	4	3	4	3	3.42
CO5	2	3	3	2	3	3	4	2.85
MEAN OVERALL SCORE								3.14

Result: The Score for this course is 3.14 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: M. SHIVASHANKAR

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 639005.
COMPUTER LITERACY PROGRAMME (CLP)

1. Introduction to Computer.

2. Elements of Computer Hardware and Software.

3. Introduction to Operating System - Windows, Linux.

4. Personal Productivity Software.

   MS Office – Ms Word, MS Excel, MS PowerPoint, MS Access

5. Introduction to Multimedia.

6. Introduction to Desktop Publishing Software.

7. Introduction to Networking Concepts.

8. Introduction to Internet and its Application.

9. Using E - Mail and FTP.

10. Creating Web Pages (HTML).

11. Introduction to Management Information System (MIS).

12. Introduction to Programming Languages.

13. Introduction to Tamil Word Processor, Tamil Browser, and Tamil E – Mail Access.

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GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005

B.SC., MATHEMATICS - III SEMESTER – NON CORE ELECTIVE - I

(For the candidates admitted from the year 2021-22 onwards)

FUNDAMENTAL OF INFORMATION TECHNOLOGY

COURSE OBJECTIVES :
1. To learn about basic concepts of the computer.
2. To gain the knowledge about function and components of a computer.
3. To analyze the types of computer software and features.
4. To explain database and network concepts.
5. To explain how to use the internet and multimedia tools.

UNIT - I	**(Chapter 1, 2)**
	Introduction to Computers: Introduction, Types of Computers - Characteristics of Computers - Word Length, Speed, Storage, Accuracy, Versatility, Automation, Diligence. Classification of Digital Computer Systems: Introduction - Microcomputer - Personal Computers, Workstations, Portable Computers - Minicomputer - Mainframe – Supercomputer - Network Computers.
UNIT - II	**(Chapter 3, 6)**
	Anatomy of a Digital Computer: Functions and Components of a Computer - Central Processing Unit - Control Unit, Arithmetic - Logic Unit - Memory. Memory Units: Introduction - RAM - ROM - PROM - EPROM - EEPROM.
UNIT - III	**(Chapter 10, 13)**
	Introduction to Computer Software: Operating System - Utilities - Compilers & Interpreters - Word Processors - Spreadsheets - Presentation Graphics - Database Management Systems - Image Processors. General Software Features and Trends: Introduction - Ease of Use - Graphical User Interface - More Features - Requirement of more Powerful Hardware - Multi-Platform Capability - Network Capabilities - Compatibility with other Software - Object Linking and Embedding - Group work Capabilities - Mail Enabling - Web Enabling.
UNIT - IV	**(Chapter 15, 18)**
	Introduction to Database Management System: Introduction - History of Information - Quality of Information - What is a Database? – Why a Database? - Characteristics of Data in a Database - What is a Database Management System? - Why DBMS? Computer Networks: Introduction - Overview of a Network - Communication Processors - Communication Media - Tele Communication Software - Types of Networks - Network Protocols - Network Architecture.
UNIT - V	**(Chapter 21, 24)**
	Internet and World Wide Web: Introduction - What's Special about Internet - Internet Access - Internet Protocols - Internet Addressing - The World Wide Web - Web Pages & HTML - Web Browsers - Searching the Web?. Introduction to Multimedia: Multimedia in Entertainment - Multimedia in Software Training - Multimedia in Education and Training - Multimedia on the Web - Multimedia in office Work - Multimedia Servers and Database.

TEXT BOOK :
1. Alexis Leon, Mathews Leon - "Fundamentals of Information Technology" - Vikas Publishing House PVT Ltd., New Delhi 1999.

REFERENCE BOOK :
1. V. Raja ram by Fundamentals of computer.

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COURSE OUTCOMES:
Students must able to:

1. To understand the computer basis.

2. To understand and be able to explain components in the computer.

3. To use appropriate software in the real world.

4. To develop a web page and connect to the backend databases with the network.

5. To know how to create a web page and a presentation of multimedia.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	3	4	3	3	3	4	3	3.28
CO2	3	3	4	4	3	4	3	3.42
CO3	4	3	3	3	3	3	4	3.28
CO4	4	3	4	3	4	3	3	3.42
CO5	4	3	4	3	3	4	4	3.57
MEAN OVERALL SCORE								3.4

Result: The Score for this course is 3.4 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER:

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GOVERNMENT ARTS COLLEGE (AUTONOUMOUS), KARUR - 639005	
B.SC., MATHEMATICS – IV SEMESTER – NON CORE ELECTIVE - II	
(For the candidates admitted from the year 2021-22 onwards)	
WEB DESIGNING	

COURSE OBJECTIVES:

1. To learn the various HTML tags and design simple web pages.
2. To develop the web pages using cascading style sheets.

UNIT - I	**(Chapter 4, 5)** **Introduction to HTML:** Designing a Home Page - History of HTML - HTML Generations - HTML Documents - Anchor Tag - Hyperlinks. **Head and Body Section:** Header Section - Title - Links - Colourful Pages - Comment Lines.
UNIT - II	**(Chapter 6, 7)** **Designing the Body Section:** Heading Printing - Aligning the Headings - Horizontal Ruler - Paragraph - Images and Pictures. **Ordered and Unordered Lists:** Lists - Unordered Lists - Heading in a List - Ordered Lists - Nested Lists
UNIT - III	**(Chapter 8)** **Table Handling:** Tables - Table Creation in HTML - Width of the Table and Cells - Cells Spanning Multiple Rows/Columns - Colouring Cells.
UNIT - IV	**(Chapter 9)** **DHTML and Style Sheets:** Defining styles - Elements of Styles - Linking a style sheet to an HTML Document - In-line Styles - External Style Sheets - Internet Style Sheets - Multiple Style.
UNIT - V	**(Chapter 10, 12)** **Frames:** Frameset Definition - Frame Definition - Nested Framesets. Forms: Action Attribute - Method Attribute - Enctype Attribute.

TEXT BOOK :

1. **C. Xavier, "World Wide Web design with HTML** Tata McGraw Hill Education Private Limited, New Delhi.

REFERENCE BOOKS:

1. H.M. Deitel, P.J. Deitel, "Internet and World Wide Web - How to Program", 3rd Edition, Pearson Publication, 2006.
2. Raj Kamal, "Internet and Web Technologies", 7th Reprint, Tata McGraw Hill Education, 2007.

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COURSE OUTCOMES:
Students must able to:

1. To create simple static web pages.

2. To understand the concept of table, frames, and forms to implement the web pages.

3. To design and develop web pages using cascading style sheets.

Nature of Course			
Knowledge and skill	✓	Employability oriented	✓
Skill oriented	✓	Entrepreneurship oriented	✓

MAPPING

Course Outcome	Programme Outcome					Programme specific Outcome		Mean Score Of Course Outcome
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	
CO1	4	4	3	3	3	4	3	3.28
CO2	4	4	4	3	4	3	4	3.42
CO3	4	3	3	4	3	3	4	3.28
MEAN OVERALL SCORE								3.51

Result: The Score for this course is 3.51 (High Relationship)

Mapping Scale

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High

COURSE DESIGNER: V.KARTHIKEYAN

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