



**GOKUL
GLOBAL
UNIVERSITY**

Approved By Govt. of Gujarat
(Recognized by UGC under Section 22 & 2(f) of 1956)
(Gujarat Private State University Act 4 of 2018)

MCA



— Faculty of Computer Science & Applications —
Gokul College of Computer Science & Applications



University Campus, State Highway-41, Sidhpur - 384151, Dist. Patan, Gujarat, INDIA
E: dean.fac.compsci@gokuluniversity.ac.in W: www.gokuluniversity.ac.in M: +91 95124 00808

PROGRAMME OUTCOME

On completion of MCA degree, the post graduates will be able to:

PO 1. Computational Knowledge: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

PO 2. Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PO 3. Design /Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex computing problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

PO 6. Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

PO 7. Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

PO 8. Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.



PO 9. Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PO 10. Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.

PO 11. Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO 12. Innovation and Entrepreneurship: Identify a timely opportunity and use innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.



PROGRAM SPECIFIC OUTCOMES

PSO 1. Advanced Software Development Proficiency: Demonstrate proficiency in advanced programming languages, software engineering principles, and practices for building scalable and reliable software systems.

PSO 2. Research and Innovation: Engage in research activities, contribute to knowledge in the field of computer applications, and demonstrate innovative thinking.





MCA SEM 1 SUBJECTS					
Subject code	Name of subject	Course Credit	Internal Marks	External Marks	Total Marks
FCAM110301	Communication Skills	04	30	70	100
FCAM110302	Introduction to Programming Language	04	30	70	100
FCAM110303	Internet & web designing	04	30	70	100
FCAM110304	Digital Electronics	04	30	70	100
FCAM110305	Practical -Introduction to Programming Language	04	30	70	100
FCAM110306	Practical - Internet & web designing	04	30	70	100
	Total	24	180	420	600

MCA SEM 2 SUBJECTS					
Subject code	Name of subject	Course Credit	Internal Marks	External Marks	Total Marks
FCAM120307	Data Communications & Networking	04	30	70	100
FCAM120308	Object Oriented Technology (JAVA)	04	30	70	100
FCAM120309	Web Development & Database Management System	04	30	70	100
FCAM120310	Operating System	04	30	70	100
FCAM120311	Practical -Object Oriented Technology (JAVA)	04	30	70	100
FCAM120312	Practical-Web Development & Database Management System	04	30	70	100
	Total	24	180	420	600





MCA SEM 3 SUBJECTS					
Subject code	Name of subject	Cours e Credit	Interna l Marks	Externa l Marks	Total Mark s
-	Elective - 1	04	30	70	100
FCAM13030 2	Web Development using PHP	04	30	70	100
FCAM13030 3	Mobile Applications Development	04	30	70	100
-	Elective - 2	04	30	70	100
FCAM13030 5	Practical -Web Development using PHP	04	30	70	100
FCAM13030 6	Practical -Mobile Applications Development	04	30	70	100
	Total	24	180	420	600
FCAM13030 1	Elective - 1 Software Engineering				
FCAM13030 7	Elective - 1 Mobile Testing & Automation				
FCAM13030 4	Elective - 2 Computer Security				
FCAM13030 8	Elective - 2 Data Mining And Data Ware Housing				

MCA SEM 4 SUBJECTS					
Subject code	Name of subject	Cours e Credit	Interna l Marks	Externa l Marks	Total Marks
FCAM140301	System Development Project	24	200	400	600
	Total				600





MCA SEMESTER - I

Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	I
Course title :	Communication skills	Course code :	FCAM110301
Course type :	Theory	Course credit :	04
Pre-requisite :	Basic Knowledge of English Language		
Rationale :	To make the students confident and make them aware about their personality development.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Students will develop their confidence.
2. Students will understand the importance of personality development and self awareness.
3. Students understand the importance of language and learn different techniques of interview, presentation etc.

Course Outcome:

1. Demonstrate the ability to articulate ideas clearly and confidently in spoken form.
2. Develop active listening skills, enabling them to comprehend and respond appropriately to various communication cues.
3. Enhance their written communication skills, producing clear, concise, and organized written documents.
4. Evaluate the effectiveness of different communication methods.
5. Implement learned communication techniques in real-world scenarios.
6. Apply effective communication strategies in digital environments, including email, video conferencing, and social media.





Content

Unit	Theory of Communication	Credit	Weightage
I	Communication – Meaning and Objectives, Process and Importance, Barriers Methods of Communication - Verbal and Non-Verbal Horizontal, Grapevine Steps of Effective Communication	1	25 %
II	Grammar Parts of Speech Subject Verb Agreement Indirect speech Auxiliaries and Modals Questions and Negatives	1	25 %
III	Business Communication Application for Job, Loan, Leave, Demanding Original Documents from Office Business Letters for Inquiry, reply, Quotation, Placing of Order, Complaint, Adjustment ,Comprehension ,Paragraph Writing	1	25 %
IV	Listening and Speaking <ul style="list-style-type: none">● Importance of Listening● Listening Process● Barriers of Listening● Speech preparation● Guidelines for Effective Speaking● Group discussion● Interview – types and preparation	1	25 %





Reference Books:

1. Communication Skills – Vithal Patel
2. English Grammar Composition and Effective Business Communication- Pink and Thomas – S. Chand

Suggested Readings:

1. Story books to increase vocabulary.
2. Listen to Motivational videos.
3. Read interesting areas in English News Papers.

Online Resources:

1. <https://learnenglish.britishcouncil.org/grammar-reference>
2. <https://en.m.wikipedia.org/communication>

Course Outcomes Communication Skills FCAM1103 01	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	P O- 1	P O- 2	P O- 3	P O- 4	P O- 5	P O- 6	P O- 7	P O- 8	P O- 9	P O- 10	P O- 11	P O- 12	PS O- 1	PS O- 2
CO-1						2	3		3		3			
CO-2									3	1				
CO-3		2										2		
CO-4									3					
CO-5									3	2				
CO-6	1					2	3							





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	I
Course title :	Introduction To Programming Language	Course code :	FCAM110302
Course type :	Theory	Course credit :	04
Prerequisite :	Basic Knowledge of Computer		
Rationale :	To introduce students the essentials of computer Programming and programming methodology using C language		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
4	0	0	Mid	CE	70	100
			15	15		

Course Objective :

1. Students will understand how to formulate a computing problem to an executable computer program using the C language.
2. Students will understand about compiler based programming languages
3. Students will learn concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.

Course Outcome:

1. Design and implement C programs to solve complex problems.
2. Describe the purpose and usage of basic c concept, control flow statements, looping and branching statements, array.
3. Analyze and predict the output of more complex C programs and identify and correct logical errors in C code.
4. Recognize and recall C language syntax and keywords, data types and their characteristics, variables, control flow statements, looping, array to create logical program structures and their usage.
5. Assess the quality of code in terms of readability, maintainability, and adherence to coding standards.

Content



Unit	Description in detail	Credit	Weightage
I	<p>Introduction to Programming Concepts of Algorithm and Flowcharts, problem solving examples using algorithm and flowchart, Types of Programming languages, Characteristics of higher level language, Compiler and Interpreter</p> <p>Overview of C Introduction Importance of C, Sample C programs, Basic structure of C programs, Programming style, executing of C program</p> <p>Constants, Variables and data Types Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants</p>	1	25 %
II	<p>Operators and Expression Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associativity, Mathematical functions.</p> <p>Input & Output Operators Introduction, reading a character, writing a character, formatted input, formatted output.</p>	1	25 %
III	<p>Branching and Looping Introduction Decision making with Simple IF statement, IF ELSE statement, Nesting of IF ELSE statements, The ELSE IF ladder, The switch statement, the ternary (? :) Operator, the GOTO statement. Iterative Statement Introduction WHILE statement, the DO statement, The FOR statement, Jumps in loops Break and continue</p>	1	25 %
IV	<p>Array & String Introduction, One-dimensional, arrays, Two-dimensional arrays, Initialization of two- dimensional arrays, Concept of Multidimensional arrays</p> <p>Handling of Character strings Introduction, Declaring and initializing string variables, Reading strings from terminal, Writing strings to screen, Arithmetic operations on characters, Putting string together, String Operations: String Copy, String Compare, String Concatenation And String Length, String Handling functions, Table of strings</p>	1	25 %



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Reference Books:

1. Programming in C, Balagurusamy – TMH
2. C: How to Program, Deitel & Deitel - PHI
3. C Programming Language, Kernigham & Ritchie - TMH

Suggested Readings:

1. Mastering Turbo C, Kelly & Bootle - BPB



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2. C Language Programming – Byron Gottfried - TMH
3. Let us C, Yashwant Kanetkar - BPB Publication

Online Resources:

1. <https://www.w3schools.com/>
2. <https://www.tutorialspoint.com/>
3. <https://www.programiz.com/>
4. <https://www.cprogramming.com/>

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
Introduction To Programming Language FCAM110302														
CO-1	2	1				3	3							
CO-2	3					3	3							
CO-3		3	3			2	3						3	
CO-4	2					3	3							
CO-5	1												3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	I
Course title :	Internet & Web Design	Course code :	FCAM110303
Course type :	Theory	Course credit :	04
Prerequisite :	Basic knowledge of internet		
Rationale :	Students will develop an understanding of information design web pages and usability as it applies to interactive media projects.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Learn about E-Services like E-Banking, E-Learning etc.
2. Understanding the basic concept of HTML tags.
3. Learn the language of the web: HTML and CSS.
4. Develop skills in analyzing the usability of a web site.

Course Outcome:

1. Demonstrate proficiency in creating well-structured web pages using HTML for content and CSS for styling.
2. Remember fundamental principles of web design, including HTML tags, CSS properties, and basic scripting concepts.
3. Apply web design principles to create a basic website, implement interactive features using JavaScript.
4. Evaluate the reliability of internet sources and assess the effectiveness of security measures in a network.

Content



Unit	Description in detail	Credit	Weightage
I	<p>Introduction to Internet Introduction, Evaluation of Internet, Internet Service, Computer Networks, Internet, URL (Uniform Resource Locator), Internet Service Provider, Intranet, Extranet, Virtual Private Network, World Wide Web, Search Engines, News groups, Electronic Mail, Web Portal, Chat, Video Conferencing, FTP, Remote Login, E-Commerce, E-Learning, E-Governance, E-Banking Difference between Internet, Intranet, Extranet, Internet Protocols (TCP, IP, UDP, FTP, HTTP), ISP (Internet Service Provider), E-mail, E-Learning, E-Banking, E-Governance, Social Networking, Instant Messaging, Audio and Video Conferencing, Data Encryption & Decryption, Concepts of Digital Signature, Concepts about Firewall Security</p>	1	25 %
II	<p>HTML HTML tag, Web Page and its Types, Publishing HTML Pages, Basic Tags. HTML document Structure, adding text in Newline
, Creating heading: <H1> to <H6>, Creating a paragraph<P>--</P>, Creating a Horizontal ruler<HR>--</HR>, Scrolling text <marquee>--</marquee>, Linking to other page :< a> and <link> tags, Text fomenting tags, Font tag with attribute, Working with List tags and , Creating Table: Related tags with attribute, Creating HTML Form with adding controls, Frame and frameset tag, Putting Graphics on a Web page, Custom Background and colors.</p>	1	25 %
III	<p>Introduction to Cascading Style Sheet Concepts of workbook, Defining Style with HTML tags, Features of Style sheet, Types of Style Sheets: External, Internal, and Inline, Style Properties, Style Class & ID Selector.</p>	1	25 %
IV	<p>Introduction to Java Script Writing First Java Script, HTML and Java script, Variables: Rules for variable names, declaring the variable, assign a value to a variable, Scope of variable, Using Operators, Control Statements, JavaScript loops. Types of JavaScript: External, Internal. JavaScript Functions: Defining a Function, Returning value from function, User Define Function.</p>	1	25 %



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Reference Books:

1. Internet and Web Design Based on DOEACC III Revised syllabus ‘O’ Level - Macmillan India Ltd
2. Teach Yourself HTML 4 in 4 Hours By Dick Oliver – Tech Media 4th Edition
3. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Suggested Readings:

1. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff



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Online Resources:

1. https://www.tutorialspoint.com/internet_technologies/internet_overview.htm
2. <https://www.w3schools.com/html/>
3. <https://www.w3schools.com/w3css/default.asp>
4. <https://www.geeksforgeeks.org/javascript/>

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
Internet & Web Design FCAM110303														
CO-1	1		2		3	2	3						3	
CO-2	2		3			3	3							
CO-3	1		3		2		2				2		2	
CO-4	2									1				





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	I
Course title :	Digital Electronics	Course code :	FCAM110304
Course type :	Theory	Course credit :	04
Prerequisite :	The students should have a basic Understanding of Digital computer Organization and Architecture of Microprocessors		
Rationale :	It gives information to students which gives the means of interconnectivity for a computer's hardware components as well as the mode of data transfer and processing exhibited.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. To understand the structure, function and characteristics of a computer system.
2. To identify and compare different methods for computer I/O.
3. Identify and understand the Number system.

Course Outcome:

1. Recall fundamental concepts and terminology related to computer system architecture.
2. Interpret the purpose and functionality of different components in a computer system.
3. Apply knowledge of computer system architecture to solve problems or design simple systems.
4. Combine knowledge of computer system architecture to design innovative solutions.





Content

Unit	Description in detail	Credit	Weightage
I	Digital & Analog systems, Logic levels and pulse waveforms, digital computer, Major parts of computer, Hardware, Software - Application and System Software Computer generations First generation, Second generation, Third generation, Fourth generation, Fifth generation Supercomputers, Mainframes, Mini Computers, Palmtop PC, Laptop PC, Personal Computer, Workstations, Mainframe, Supercomputer. Dos, Windows, Linux	1	25 %
II	Communication devices -Modem, NIC, Switch, Hub Keyboard, Mouse, Light pen, Joystick, Scanner, Voice input system, Touch Monitor - CRT terminals (Monitor / VDU) Non – CRT terminals, LCD, Plasma display, LED Printer - Dot matrix printer, Ink jet printer, Laser printer, Line printer, Plotter Magnetic memory - Magnetic disk, Hard disk, Floppy disk, Semiconductor memory - RAM, ROM, Flash memory Optical memory - CD, CD-ROM, CD-RAM, DVD, DVD-ROM, DVD-RAM Cache memory, Physical & Virtual memory	1	25 %
III	Number system - Binary, decimal, octal, hexadecimal Conversion - Binary to decimal, decimal to binary, octal to decimal , decimal to octal, octal to binary, binary to octal, hexadecimal to binary, binary to hexadecimal, hexadecimal to Decimal, decimal to hexadecimal, hexadecimal to octal, octal to hexadecimal Binary arithmetic – Addition, subtraction (simple method)	1	25 %
IV	Logic gates - AND, OR, NOT, NAND, NOR, Exclusive-OR, Exclusive-NOR Data Processing circuit - Decoder, Encoder	1	25 %





Reference Books:

1. Fundamentals of computers – By. V. Rajaraman PHI Publication
2. How computer work: Ron White – Tech media
3. O-Level (Information Technology) - By V.K.Jain (Module- M1.1)
4. Computer Fundamentals: Pradeep K. Sinha & Priti Sinha (BPB)
5. Fundamentals of computers – By. Anand Kumar PHI Publication

Suggested Books:

1. Fundamentals of computers – By. Anand Kumar PHI Publication

Online Resources:

1. <https://edu.gcfglobal.org/en/computerbasics/what-is-a-computer/1/>
2. https://www.tutorialspoint.com/digital_circuits/digital_circuits_logic_gates.htm
- 3.

https://www.tutorialspoint.com/computer_fundamentals/computer_number_system.htm

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
Digital Electronics FCAM11030 4														
CO-1	3				3	1	3							
CO-2	3				1	3				2				
CO-3	2		1	1										1
CO-4	2		2											





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	I
Course title :	Practical -Introduction To Programming Language	Course code :	FCAM110305
Course type :	Practical	Course credit :	04
Pre-requisite :	Basic Knowledge of Computer		
Rationale :	To introduce students the essentials of computer Programming and programming methodology using C language		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Students will understand how to formulate a computing problem into an executable computer program using the C language.
2. Students will understand about compiler based programming languages
3. Students will learn concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.

Course Outcome:

1. Design and implement C programs to solve complex problems.
2. Describe the purpose and usage of basic c concept, control flow statements, looping and branching statements, array.
3. Analyze and predict the output of more complex C programs and identify and correct logical errors in C code.
4. Recognize and recall C language syntax and keywords, data types and their characteristics, variables, control flow statements, looping, array to create logical program structures and their usage.
5. Assess the quality of code in terms of readability, maintainability, and adherence to coding standards.





Content

Practical:

1. Write a C program to display "Gokul University" on the screen.
2. Write a C program to find the area of circle using the formula $\text{Area} = \pi * r * r$.
3. Write a C program to find the area of rectangle, cube and triangle. (Formula are: Rectangle = $l * b * h$, triangle = $(I * b) * 0.5$, cube = $L * L * L$)
4. Write a C program to evaluate simple interest $I = P * R * N / 100$.
5. Write a C program to enter a distance into K.M and convert it in to meter, feet, inches and Centimeter
6. Write a C program to interchange two numbers.
7. Write a C program to convert Fahrenheit into centigrade
8. Write a C program for summation, subtraction, multiplication, division of two number using Arithmetic operator
9. Write a C program to find out the largest value from given three numbers using conditional Operator
10. Write a C program to find the maximum number from given three numbers.
11. Write a C program to find that the enter number is Negative, or Positive or Zero.
12. Write a C program to Checked whether entered char is capital, small, digit or any special Character
13. Write a C program to find out the max. and min. number from given 10 numbers.
14. Write a C program to find the sum of digits of accepted numbers.
15. Write a C program to find the sum of the first 100 odd numbers. And even numbers.
16. Write a C program to display the first 25 Fibonacci nos.
17. Write a C program to check if the accepted number is a prime number or not.
18. Write a C program to display the first' 100 prime numbers.
19. Write a C program to find factorial of accepted numbers.
20. Write a C program to print accepted no and its reverse number.
21. Write a C program to convert decimal numbers into equivalent hexadecimal numbers.
22. Write a C program to display the first 5 Armstrong numbers.
23. Write a C program to arrange the accepted numbers in ascending order and descending order.
24. Write a C program to find whether the accepted string is palindrome or not.
25. Write a C program to convert a given line into upper case or lower case.
26. Write a C program to count no of word, character, line and space from given text.
27. Write a C program to display the following output on the screen.

1

12

123



1234

28. Write a C program to display the following output on the screen.

```
0
 1 1
1 0 1
0 1 0 1
1 0 1 0 1
```

29. Write a C program to display the following output on the screen.

```
1
 2 2
3 3 3
4 4 4 4
```

30. Write a C program to find maximum & minimum value from the given array



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3. C Programming Language, Kernigham & Ritchie - TMH

Suggested Readings:

1. Mastering Turbo C, Kelly & Bootle - BPB
2. C Language Programming – Byron Gottfried - TMH



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3. Let us C, Yashwant Kanetkar - BPB Publication

Online Resources:

1. <https://www.w3schools.com/>
2. <https://www.tutorialspoint.com/>
3. <https://www.programiz.com/>
4. <https://www.cprogramming.com/>

Course Outcomes Practical - Introduction To Programming Language FCAM110305	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
CO-1	2	1				3	3							
CO-2	3					3	3							
CO-3		3	3			2	3						3	
CO-4	2					3	3							
CO-5	1												3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	I
Course title :	Practical - Internet & Web Design	Course code :	FCAM110306
Course type :	Practical	Course credit :	04
Pre-requisite :	Basic knowledge of internet		
Rationale :	Students will develop an understanding of information design web pages and usability as it applies to interactive media projects.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Learn about E-Services like E-Banking,E-Learning etc.
2. Understanding the basic concept of HTML tags.
3. Learn the language of the web: HTML and CSS.
4. Develop skills in analyzing the usability of a web site.
5. Develop basic programming skills using Javascript.

Course Outcome:

1. demonstrate proficiency in creating well-structured web pages using HTML for content and CSS for styling.
2. Remember fundamental principles of web design, including HTML tags, CSS properties, and basic scripting concepts.
3. Apply web design principles to create a basic website. Implement interactive features using JavaScript.
4. Evaluate the reliability of internet sources. Assess the effectiveness of security measures in a network..





Content

Practical:

1. Develop an HTML document for a web page of your favorite teacher. Design the page With an attractive background color, text color and background image.
2. Develop an HTML document for a web page of your favorite National Leader. Design the page with an attractive color combination, with suitable headings and horizontal rules.
3. Write an HTML document with an example of Ordered List and Unordered List.
4. Write an HTML document with an example of Ordered List and Unordered List Using Nested list.
5. Write an HTML document with an example of Table format to print your Bio-Data.
6. Write an HTML document to create a complex Table like Telephone Bill, Mark sheet, Time-table.
7. Write the Frameset tags and Frame tags for the following frameset.

Physics.html	Welcome.html	Maths.html
Chemistry.html		Computer.html
Biology.html		
Zoology.html	Heading.html	Account.html

8. Develop a complete web page using Frames and Frameset which gives the Information about Hospital.
9. Write an HTML code for designing the subscription form of mail account in the e-mail Website with appropriate fields.
10. Write an example of External Stylesheet.
11. Write an HTML program which contains Inline Style sheets for <p>, <h1> and <body>tags.
12. Write an HTML program which contains an Internal Style sheet for <p>, <h1> and <body>tags.
13. Describe yourself on a webpage and experiment with colors in bicolor, text, and link, try out different sizes and also the other tags you studied so far, such as the rules tag as well.
14. Write HTML code to develop a web page having background in blue and title "Well come to my home page" in red other color.
15. Create an HTML document of giving details of your name, age, telephone no, address and enrolment no, aligned in proper order.
16. Calculate a web page that provides links to five different web page or to entirely different websites.
17. Write a HTML code for making table to containing different option for different questions.





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Which is your favorite
color

Blue
Red
Green
Yellow

Which is your favorite
games

Cricket
Football
Hockey
Chess

Which is your favorite
City

Surat
Baroda
Siddhpur
Ahmedabad

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(Gujarat Private State University Act 4 of 2018)

18. Create form to fill information student.
19. Create a JavaScript code to display any message.
20. Create a JavaScript code using Arithmetic Operator, Assignment Operator, Comparison Operator, Logical Operator and String Operator.
21. Create a JavaScript code using Control Statement.
22. Create a JavaScript code to display $5*1=5$, $5*10=50$ using for loop.
23. Create a JavaScript code using User Defined Function which will calculate the area of circle.
24. Write a JavaScript code to change the background color of the webpage.
25. Write a JavaScript code to display Factorial of the given number.

Reference Books:

1. Internet and Web Design Based on DOEACC III Revised syllabus 'O' Level - Mac Millan India Ltd
2. Teach Yourself HTML 4 in 4 Hours By Dick Oliver – Tech Media 4th Edition
3. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Suggested Readings:

1. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Online Resources:



— Faculty of Computer Science & Applications —
Gokul College of Computer Science & Applications



University Campus, State Highway-41, Sidhpur - 384151, Dist. Patan, Gujarat, INDIA

E: dean.fac.compsci@gokuluniversity.ac.in W: www.gokuluniversity.ac.in M: +91 95124 00808



1. https://www.tutorialspoint.com/internet_technologies/internet_overview.htm
2. <https://www.w3schools.com/html/>
3. <https://www.w3schools.com/w3css/defaultT.asp>
4. <https://www.geeksforgeeks.org/javascript/>

Course Outcomes Practical - Internet & Web Design FCAM110306	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO-1	1		2		3	2	3						3	
CO-2	2		3			3	3							
CO-3	1		3		2		2				2		2	
CO-4	2									1				



MCA SEMESTER -II

Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	II
Course title :	Data communication & networking	Course code :	FCAM120307
Course type :	Theory	Course credit :	04
Pre-requisite :	The students should have a basic Understanding of computer Network ,Models and Layer.		
Rationale :	It gives information to students which gives the means of interconnectivity for a computer's hardware components as well as the mode of data transfer and processing exhibited.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. To understand the data and database management of computer system.
2. To identify and compare different method for computer I/O.
3. Identify and understand the models.

Course Outcome:

1. Recall basic terms and concepts related to computer networks, such as protocols, OSI model layers, and network topologies.
2. Interpret the principles behind networking protocols and technologies.
3. Apply networking knowledge to solve problems or configure network devices.
4. Assess the security, performance, and efficiency of computer networks.
5. Design and implement computer networks based on specific requirements





Content

Unit	Basic concepts of Database Systems	Credit	Weightage
I	Introduction of Computer Networks, Uses of Computer Networks, Advantage & Disadvantage of Computer Networks Transmission mode: Simplex communication, Half-duplex and Full-duplex Introduction of Internet & Intranet, Baseband & Broadband Transmission	1	25 %
II	<ul style="list-style-type: none">✓ Network Hardware: PAN (Personal Area Network) , LAN (Local Area Network), MAN (Metropolitan Area Network), WAN (Wide Area Network)✓ The Internet (network of all networks)✓ Network Topology: Linear bus, Ring, Star, tree, mesh & Hybrid.✓ Reference Model: OSI Reference Model & TCP/IP Reference Model, Comparison of OSI reference model✓ Connecting Devices: Repeater, HUB, Switch, Bridge, Router, and Gateway.✓ The Telephone System – its structure, the local loop, transmission Impairments Introduction of Modem, Introduction of Communication satellites.	1	25 %
III	Guided Media - Twisted Pair, coaxial cable, Fiber optics. Unguided transmission media - Radio wave, micro wave and infrared, Multiplexing – FDM, TDM, WDM. Switching – Circuit switching, Message Switching, Packet switching.	1	25 %
IV	Design Issues - Framing, Error control, Flow control, Error detection and correction. Elementary data link protocols - Simplex, stop and wait, sliding window protocol - Go Back N, Selective repeat. The Medium Access Control Sublayer: The channel allocation problem, Multiple Access protocols – CSMA/CD, CSMA/CA	1	25 %

Reference Books:



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University Campus, State Highway-41, Sidhpur - 384151, Dist. Patan, Gujarat, INDIA

E: dean.fac.compsci@gokuluniversity.ac.in W: www.gokuluniversity.ac.in M: +91 95124 00808

1. Data Communication & Networking by Behrouz A. Forouzan, Tata McGraw Hill Edition
2. Computer network, Andrew S. Tanenbaum, fourth edition, Pearson
3. TCP/IP Protocol Suit by Behrouz A. Forouzan, Tata McGraw Hill Edition.

Suggested Books:

1. Computer network, Andrew S. Tanenbaum, fourth edition, Pearson

Online Resources:

1. https://www.tutorialspoint.com/computer_fundamentals/computer_networking.htm
- 2.

https://www.tutorialspoint.com/data_communication_computer_network/data_communication_computer_network_tutorial.pdf

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Data communications & Networking FCAM120307														
CO-1	3					3	3							
CO-2						3								
CO-3			1		2		2			2			1	1
CO-4	3					2				2				
CO-5			2		1									



Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	II
Course title :	Object oriented Technology(JAVA)	Course code :	FCAM120308
Course type :	Theory	Course credit :	04
Pre-requisite :	Basic knowledge of Object oriented Technology(JAVA).		
Rationale :	Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is objected-oriented. This allows you to create modular programs and reusable code.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective:

1. To learn how to extend Java classes with inheritance and dynamic binding.
2. To learn how to implement object-oriented designs with Java.
3. To learn how to design a graphical user interface (GUI) with Java Swing.

Course Outcome:

1. Demonstrate a solid understanding of fundamental Object-Oriented Programming (OOP) principles, including encapsulation, inheritance, and polymorphism.
2. Learn to read from and write to files in Java and understand the concept of object.
3. Introduced to common design patterns and apply them to solve recurring design problems in Java applications.
4. Create application in Java enterprise development.





Content

Unit	Description in detail	Credit	Weightage
I	<p>Basic concepts of JAVA The Byte-code, Features of Java, IDE for Java, Object-Oriented Programming in Java, Java Program Structure and Java's Class Library.</p> <p>Data Types, Variables, and Operators: The Simple Data Types, Literals, Variables, Type Conversion and Casting, Automatic Type Promotion in expressions, Java Operators, Operator Precedence.</p> <p>Selection Statements: Control Statements – if and switch, Scope of Variable, Iterative Statements – for, while, do.... While, Jump Statements.</p> <p>Defining Classes: Definition of a Class, Definition of Methods, Constructors, Creating Objects of a Class, Assigning Object Reference Variables, The Variable this, Defining and Using a Class, Automatic Garbage Collection.</p>	1	25 %
II	<p>Arrays and Strings: Arrays, Arrays of Characters, String Handling Using String Class, Operations on String Handling Using String Buffer Class.</p> <p>Extending Classes and Inheritance: Using Existing Classes, Class Inheritance, Choosing Base Class, Access Attributes, Polymorphism, Multiple Levels of Inheritance, Abstraction through Abstract Classes, Using Final Modifier, The Universal Super class-Object Class.</p> <p>Packages & Interfaces: Understanding Packages, Defining a Package, Packaging up Your Classes, Adding Classes from a Package to Your Program, Understanding CLASSPATH, Standard Packages, Access Protection in Packages, Concept of Interface.</p> <p>Exception Handling: The Idea behind Exceptions, Types of Exceptions, Dealing with Exceptions, Exception Objects, Defining Your Own Exceptions</p> <p>Multithreading Programming: The Java Thread Model, Understanding Threads, The Main Thread,</p>	1	25 %





	Creating a Thread, Creating Multiple Threads, Thread Priorities, Synchronization, Inter-thread communication, Deadlocks		
III	<p>Input/output in Java : I/O Basic, Byte and Character Structures, I/O Classes, Reading Console Input Writing Console Output, Reading and Writing on Files, Random Access Files, Storing and Retrieving Objects from File, Stream Benefits.</p> <p>Creating Applets in Java:</p> <ul style="list-style-type: none"> Applet Basics, Applet Architecture, Applet Life Cycle, Simple Applet Display Methods, Requesting Repainting, Using the Status Window, The HTML APPLET Tag Passing Parameters to Applets. 	1	25 %
IV	<p>Working with Graphics and Texts : Working with Graphics, Working with Color, Setting the Paint Mode, Working with Fonts, Managing Text Output Using Font Metrics, Exploring Text and Graphics.</p> <p>Working with AWT Controls, Layout Managers and Menus: Control Fundamentals, Labels, Buttons, Check Boxes and Check Box Groups, Choice Controls, Lists, Scroll Bars, Text Field and Text Area Controls, Understanding Layout Managers, Flow Layout Manager, Border Layout Manager, Grid Layout Manager, Using Insets Manager, Card Layout Manager, Menu Bars and Menus, Dialog Boxes, File Dialog</p> <p>Handling Events in Java : Two Event Handling Mechanisms, The Delegation Event Model, The Event Handling Process, Event Classes, Sources of Events, Event Listener Interfaces, Using the Delegation Event Model, Adapter Classes</p>	1	25 %

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(Recognized by UGC under Section 22 & 2(f) of 1956)
(Gujarat Private State University Act 4 of 2018)

Reference Books:

1. Teach Yourself JAVA, Josheph O’Neil & Herb Schildt, Tata McGraw Hill
2. JAVA 2 UNLEASHED, Tech Media Publications.
3. JAVA 2(1.3) API Documentations.
4. Programming with JAVA: A printer, Balagurusamy,2nd Edition, Tata McGraw Hill

Suggested Readings:

1. Java: A Beginner’s Guide.Author: Herbert Schildt





Online Resources:

1. <https://www.geeksforgeeks.org/introduction-to-java/>
2. https://www.w3schools.com/java/java_intro.asp

Course Outcomes Object oriented Technology(JAVA) FCAM120308	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO- 2
CO-1	3				2	2	3							2
CO-2	3						3							
CO-3		2	3		1		3							
CO-4							3	3				3	3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	II
Course title :	Web Development & Database Management System	Course code :	FCAM120309
Course type :	Theory	Course credit :	04
Pre-requisite :	Basic knowledge of Database management System.		
Rationale :	Student will learn to use data manipulation language to query, update, and manage a database. Student will understand essential DBMS concepts such as: database security, integrity, concurrency, storage strategies etc. The students will get the hands on practice of using SQL and PL/SQL concepts.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective:

1. Learn new ways to query and model data.
2. Become familiar with the expanding role of database technology.
3. To learn SQL functions and PL/SQL Program in SQL plus.

Course Outcome:

1. Recall database terminology, concepts, and data modeling techniques.
2. Interpret the principles of database design, query optimization, and transaction management.
3. Apply database design principles to create and optimize databases. Implement complex queries and transactions.
4. Analyze database structures, query performance, and troubleshoot issues.
5. Assess the security, scalability, and reliability of database systems.
6. Design and implement a comprehensive database system for a specific application or organization.





Content

Unit	Description in detail	Credit	Weightage
I	Basic concepts of Database Systems Client/server architecture Relational and other models Relational model concepts and constraints, relational algebra, queries in relational algebra. Database Design using RDBMS Functional dependency & normalization. Schema design and normal forms. Database design process and tools	1	25 %
II	Interactive SQL Part – I <ul style="list-style-type: none">✓ Introduction to SQL,✓ Logging into SQL * Plus,✓ Naming rules and Conventions,✓ Data Types✓ Creating a Table,✓ Inserting,✓ Viewing data in the tables✓ Sorting data in a table, Delete operations, Updating contents of a table✓ Modifying the structure of tables, Renaming, Truncating and Destroying tables, Dropping a column from a table Constraints (I/O and Business rule constraints), Computations on table data.	1	25 %
III	Interactive SQL Functions Functions Aggregate : AVG, MIN, COUNT, COUNT(*), MAX, SUM Numeric : ABS, POWER, ROUND, SQRT, EXP, GREATEST, LEAST, MOD, TRUNC, FLOOR, CEIL String: LOWER, INITCAP, UPPER, SUBSTR, ASCII, INSTR, TRANSLATE, LENGTH, LTRIM, RTRIM, TRIM, LPAD, RPAD Conversion: TO_NUMBER, TO_CHAR(NUMBERCONVERSION), TO_CHAR(DATECONVERSION), TO_DATE	1	25 %





	<p>Date function: ADD_MONTHS, LAST_DAY, MONTHS_BETWEEN, NEXT_DAY</p> <p>Advance Queries:</p> <ul style="list-style-type: none"> Group by Clause, Having Clause, EXISTS/ NOT EXISTS operator, Sub query, Different Types of Joins, Set Operators <p>Sql Performance Tuning</p> <ul style="list-style-type: none"> Index, View, Sequence, Setting environment using SET command <p>Security Management using SQL</p> <ul style="list-style-type: none"> Granting and revoking permissions, revoking privileges given 		
IV	<p>PL/SQL</p> <p>Variable declaration</p> <p>Control Structure</p> <ol style="list-style-type: none"> Condition structure. Iterative structure. <p>Cursor</p> <ol style="list-style-type: none"> Implicit Explicit <p>Store Procedure, Trigger, View, Function</p> <p>Exceptions.</p> <ol style="list-style-type: none"> Predefine exceptions. Users define exceptions. Handling Raised exceptions 	1	25 %

Reference Books:

1. Database System Concepts: – Henry F. Korth & Abraham Silberschatz –McGraw Hill Education
2. Introduction to Database System C. J. Date (7 Edition) Low Price Edition





3. Database System Concepts, A.Silberschatz, Henry Korth and S.Sudarshan,McGraw-Hill, 1997

Suggested Readings:

- 1. SQL, PL/SQL: The Programming Language of Oracle(3nd, 4rd edition)By Ivan Bayross-BPB

Online Resources:

- 1. https://www.w3schools.com/sql/sql_ref_sqlserver.asp
- 2. <https://www.javatpoint.com/pl-sql-tutorial>
- 3. <https://www.tutorialride.com/plsql/plsql-control-statements.htm>

Course Outcomes Web Development & Database Management System FCAM120309	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO-2
CO-1	3					3	3							
CO-2	2						3	3						
CO-3			3					3				1	2	
CO-4		3		2						2				3
CO-5						3	2			3				
CO-6								3			2	2	3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	II
Course title :	Operating System	Course code :	FCAM120310
Course type :	Theory	Course credit :	04
Pre-requisite :	The students should have general idea about Operating System Concept, types of Operating System and their functionality.		
Rationale :	The course provides the students with an understanding of human computer interface existing in computer system and the basic concepts of operating system and its working.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
4	0	0	Mid	CE	70	100
			15	15		

Course Objective :

1. To familiarize the operations performed by OS as a resource Manager.
2. To learn and understand the Concepts of operating systems.
3. To Learn and understand operating system services.
4. To teach the different memory management techniques.

Course Outcome:

1. Recall key operating system concepts, including process, memory management, and file systems
2. Understand the role of virtual memory and its impact on system performance.
3. Implement synchronization mechanisms to address concurrent programming challenges.
4. Analyze the impact of different scheduling algorithms on system performance.





Content

Unit	Description in detail	Credit	Weightage
I	Operating System Overview: Introduction to Operating System, Types of Operating system, Operating System Services functionality and characteristics of OS Buffering & Spooling	1	25 %
II	Process Management: Process, Process States, Control Block (PCB), Scheduling – Types of Schedulers, Scheduling & Performance Criteria, Scheduling Algorithms – FCFS, SJF, Priority & Round Robin (RR) Scheduling. Deadlock: Concept, Deadlock detection, and prevention	1	25 %
III	Memory Management: Static Memory Allocation, Dynamic Memory Allocation, Segmentation, Virtual memory – Paging, Demand Paging, Page Replacement, Fragmentation & Defragmentation, Cache memory	1	25 %
IV	I/O Management: Program Controlled I/O, Interrupt Driven I/O, USART, PIT File Management: File concept, Access method, Directory structure, Disk Space Management - Continuous allocation, non continuous allocation, File related system services	1	25 %

Reference Books:



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University Campus, State Highway-41, Sidhpur - 384151, Dist. Patan, Gujarat, INDIA

E: dean.fac.compsci@gokuluniversity.ac.in W: www.gokuluniversity.ac.in M: +91 95124 00808



1. Operating System Concept, Wiley, Sixth Edition - Silberschatz & Galvin
2. Operating Systems, Tata McGraw – Hill, Second Edition- Milan Milenkovi’c
3. Operating Systems, PHI, Fourth Edition - William Stallings

Suggested Readings:

1. Operating System Concept, Wiley, Sixth Edition - Silberschatz & Galvin

Online Resources:

1. https://www.tutorialspoint.com/operating_system/index.htm
2. <https://www.geeksforgeeks.org/operating-systems/>
3. <https://www.javatpoint.com/operating-system>

Course Outcomes Operating System FCAM120310	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
CO-1	3						1							1
CO-2		2				3								
CO-3			1		1									
CO-4	2	2				3		2						3





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	II
Course title :	Practical- Object oriented Technology(JAVA)	Course code :	FCAP120311
Course type :	Practical	Course credit :	04
Pre-requisite :	Basic knowledge of Object oriented Technology(JAVA).		
Rationale :	Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is objected-oriented. This allows you to create modular programs and reusable code.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective:

1. To learn how to extend Java classes with inheritance and dynamic binding.
2. To learn how to implement object-oriented designs with Java.
3. To learn how to design a graphical user interface (GUI) with Java Swing.

Course Outcome:

1. demonstrate a solid understanding of fundamental Object-Oriented Programming (OOP) principles, including encapsulation, inheritance, and polymorphism.
2. Learn to read from and write to files in Java and understand the concept of object.
3. Introduced to common design patterns and apply them to solve recurring design problems in Java applications.
4. introduced its application in Java enterprise development.





Content

Course Contents

1. Write a Java Program find the Area of circle using command-line arguments.
2. Write a Java Program that will display Factorial of the given number.
3. Write a Java Program that will display 25 Prime nos.
4. Write a Java Program to sort the elements of an array in ascending order.
5. Write a Java Program which will read a word and count all occurrences of a particular character.
6. Write a Java Program which will read a string and rewrite it in the alphabetical order eg. The word “STRING” should be written a “GINRST”.
7. Write a java program which shows the application of constructors and constructors overloading.
8. Write a java program which shows the use of methods overloading.
9. Write a java program which shows the use of static members and methods.
10. Write a java program which shows the nesting of methods.
11. Write a java program which shows use of String & String Buffer class.
12. Write a java program which shows use of Vector class.
13. Write a java program for Data Input Stream which use try and catch for exception handling. Write a java program which use multiple catch blocks and also define finally block.
14. Write a java program which shows throwing our own exception.
15. Write a java program to explain the concept of single inheritance.
16. Write a java program which explains the concept of multilevel inheritance.
17. Write a java program to shows the use of ‘super’ keyword.
18. Write a java program which show the method overriding.
19. Write a java program which demonstrates the use of final variable, method and class.
Write a java program which shows the concept of abstraction using abstraction class.
Write a java program to implement interface.
20. Write a java program for implements multiple inheritance using interface.
21. Write a java program which shows importing of classes from other packages.
22. Write a java program which shows the use of Stack and Hash Table class. Write a java program which shows the use Date and Calendar Classes.





Reference Books:

1. Teach Yourself JAVA, Josheph O’Neil & Herb Schildt, Tata McGraw Hill
2. JAVA 2 UNLEASHED, Tech Media Publications.
3. JAVA 2(1.3) API Documentations.
4. Programming with JAVA: A printer, Balagurusamy,2nd Edition, Tata McGraw Hill

Suggested Readings:

1. Java: A Beginner’s Guide.Author: Herbert Schildt

Online Resources:

1. <https://www.geeksforgeeks.org/introduction-to-java/>
2. https://www.w3schools.com/java/java_intro.asp

Course Outcomes Practical- Object oriented Technology(JAVA) FCAP120311	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO-1	3				2	2	3							2
CO-2	3						3							
CO-3		2	3		1		3							
CO-4							3	3				3	3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	II
Course title :	Practical-Web Development & Database Management System	Course code :	FCAM120312
Course type :	Practical	Course credit :	04
Pre-requisite :	Basic knowledge of Database management System.		
Rationale :	Student will learn to use data manipulation language to query, update, and manage a database. Student will understand essential DBMS concepts such as: database security, integrity, concurrency, storage strategies etc. The students will get the hands on practice of using SQL and PL/SQL concepts.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Students will learn the physical and logical database designs, database modeling, relational, and network models.
2. Become familiar with the expanding role of database technology.
3. Understand PL/SQL concept: Cursor, Trigger, Stored Procedure etc.

Course Outcome:

1. Recall database terminology, concepts, and data modeling techniques.
2. Interpret the principles of database design, query optimization, and transaction management.
3. Apply database design principles to create and optimize databases. Implement complex queries and transactions.
4. Analyze database structures, query performance, and troubleshoot issues.
5. Assess the security, scalability, and reliability of database systems.
6. Design and implement a comprehensive database system for a specific application or organization.

Content





Practical:

Create following Three Tables.

1. Salesman

SNUM	SNAME	CITY	COMMITION
1001	PIYUSH	LONDON	12%
1002	NIRAJ	SURAT	13%
1003	MITI	LONDON	11%
1004	RAJESH	BARODA	15%
1005	ANAND	NEW DELHI	10%
1006	RAM	PATAN	10%
1007	LAXMAN	BOMBAY	09%

SNUM : A Unique number assign to each salesman.
 SNAME : The name of salesman.
 CITY : The location of salesman.
 COMMITION: The salesman commission on order.

2. Customer

CNUM	CNAME	CITY	RATING	SNUM
2001	HARDIK	LONDON	100	1001
2002	GITA	ROME	200	1003
2003	LAXIT	SURAT	200	1002
2004	GOVIND	BOMBAY	300	1002
2005	CHANDRESH	LONDON	100	1001
2006	CHAMPAK	SURAT	300	1007
2007	PRATIK	ROME	100	1004
2008	MANOJ	LONDON	200	1007

CNUM : A Unique number assign to each customer.
 CNAME : The name of customer.
 CITY : The location of customer.
 RATING : A level of preference indicator given to this customer.
 SNUM : A salesman number assign to this customer.

3. Order

ONUM	AMOUNT	ODATE	CNUM	SNUM
------	--------	-------	------	------





3001	18.69	03/03/99	2007	1007
3002	767.19	05/03/97	2001	1001
3003	1900.10	10/03/97	2007	1004
3004	5160.45	12/03/99	2003	1002
3005	1098.25	15/04/99	2008	1007
3006	1713.12	10/04/95	2002	1003
3007	75.75	20/05/96	2004	1002
3008	4723.00	30/05/99	2006	1001
3009	1309.95	08/05/97	2004	1002
3010	9898.87	06/06/99	2006	1001

ONUM : A Unique number assign to each Order.

AMOUNT : Amount of order in Rs.

ODATE : The date of order.

CNUM : The number of customer making the order.

SNUM : The number of salesman credited with the sale.

Solve following request with the help of sql query.

1. Produce the order no, amount and date of all orders.
2. Give all the information about all the customers with salesman number 1001.
3. Display the information in the sequence of city, sname, snum, and Commission.
4. List of rating followed by the name of each customer in Surat.
5. List of snum of all salesmen with orders from order table.
6. List of all orders for more than Rs. 1000.
7. List out names and cities of all salesmen in London with commission above 10%
8. List all customers excluding those with rating ≤ 100 or they are located in Rome.
9. List all order for more than Rs. 1000 except the orders of snum 1006 of 10/03/97
10. List all orders taken on March 3rd or 4th or 6th.
11. List all customers whose names begin with a letter 'C'.
12. List all customers whose names begins with letter 'A' or 'B' or 'c'.
13. List all orders with zero or NULL amount.
14. Find out the largest orders of salesman 1002 and 1007.
15. Count all orders of 10-Mar-97.
16. Calculate the total amount ordered.
17. Calculate the average amount ordered.
18. Count the no. of salesmen currently having orders.
19. Find the largest order taken by each salesman.
20. Find the largest order taken by each salesman on 10/03/1997.
21. Count the no. of different non NULL cities in the Customer table.
22. Find out each customer's smallest order.
23. Find out the customer in alphabetical order whose name begins with 'G'
24. Count the no. of salesmen registering orders for each day.
25. List all salesmen with their amount calculated with commission.



PL/Sql PRACTICAL LIST



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GROUP I (PL/SQL Examples)

- P1. Display any string using pl/sql block.
- P2. Check whether accepted number is positive or negative.
- P3. Accept three different numbers from terminal and display biggest one.
- P4. Make the sum of first 100 natural number and display it.
- P5. Make the sum of odd and even numbers up to 100 and display it.

GROUP II (PL/SQL)

1. Simple PL/SQL block construction
 - a. Displaying message on terminal
 - b. Calculation on given data and prepare result for display
 - c. Accept the value from the user and do accordingly.
2. Decision making and looping
 - a. If..then, if..then..else, else..if ladder, and nested if.
 - b. Different looping concepts like loop..end loop, while, for
 - c. Nested looping.
 - d. Use of go to clause.



— Faculty of Computer Science & Applications —
Gokul College of Computer Science & Applications



University Campus, State Highway-41, Sidhpur - 384151, Dist. Patan, Gujarat, INDIA

E: dean.fac.compsci@gokuluniversity.ac.in W: www.gokuluniversity.ac.in M: +91 95124 00808



Reference Books:

1. Database System Concepts: – Henry F. Korth & AbrahamSilberschatz –McGraw Hill Education
2. Introduction to Database System C. J. Date (7 Edition) Low Price Edition
3. Database System Concepts, A.Silberschatz, Henry Korth and S.Sudarshan,McGraw-Hill, 1997

Suggested Readings:

1. SQL, PL/SQL: The Programming Language of Oracle(3nd, 4rd edition)By Ivan Bayross-BPB

Online Resources:

1. https://www.w3schools.com/sql/sql_ref_sqlserver.asp
2. <https://www.javatpoint.com/pl-sql-tutorial>
3. <https://www.tutorialride.com/plsql/plsql-control-statements.htm>

Course Outcomes Practical-Web Development & Database Management System FCAM120312	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO - 1	PSO -2
CO-1	3					3	3							
CO-2	2						3	3						
CO-3			3					3				1	2	
CO-4		3		2						2				3
CO-5						3	2			3				
CO-6								3			2	2	3	

MCA SEMESTER – III





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Software Engineering	Course code :	FCAM130301
Course type :	Theory	Course credit :	04
Pre-requisite :	You must have strong project management skills before learning software engineering skills. They can help you organize how you work on assignments and projects		
Rationale :	The reasoning and justification behind human decisions, opinions, and beliefs. In software engineering, rationale management focuses on capturing design and requirements decisions and on organizing and reusing project knowledge.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective:

1. Be employed in industry, government, or entrepreneurial endeavors to demonstrate professional advancement through significant technical achievements and expanded leadership responsibility;
2. Demonstrate the ability to work effectively as a team member and/or leader in an ever-changing professional environment; and
3. Progress through advanced degree or certificate programs in computing, science, engineering, business, and other professionally related fields.

Course Outcome:

1. Apply the principles of various software development methodologies, software systems design, considering architectural patterns, modularity, and scalability.
2. Learn techniques for gathering, analyzing, and documenting software requirements
3. Develop and execute test plans, ensuring the quality and reliability of software through testing methodologies.
4. Create comprehensive and well-organized documentation, including user manuals, technical specifications, and system documentation.





Content

Unit	Introduction to Software Engineering	Credit	Weightage
I	Define Software and System; Define Software Engineering, Software Characteristic, Difference between Software Engineering and Computer Science. Difference between Software Engineering and System Engineering. Software Costs, Software Application, Evolution of software Engineering, Software Crisis-Problem and Causes, Software Myths, Professional and Ethical Responsibility, Software Process, Principal of Software Engineering, Software Quality Factors, Software Quality Attributes, Software Engineering Methods. Software Process Model Waterfall Model, Prototyping Model, Incremental Model, Spiral Model	1	25 %
II	Software Requirement Specification What is Requirement, Types of Requirement, SRS(Software Requirement Specification), Software Engineering Benefits, Role of Management in Software Development, Role of Metrics and Measurement. System Design Software Design Strategy, Become a Master Designer, Evaluating a Design, Problem Partitioning, Abstraction, Strategy of Design, Function Oriented/s Object Oriented Approaches	1	25 %
III	Coding Programming Practices, Top down Approaches & Bottom Up Approaches, Structure Programming, Information hiding, Programming Style, Testing Testing Fundamental, Top-Down Approaches & Bottom Up Approaches, Test Cases and Test Criteria, Psychology of Testing, Regressing Testing, Functional Testing, Structure Testing Equivalence Class Partitioning, Boundary Value Analysis, Cause Effect Graphing, Type of Testing, Test Plan.	1	25 %





Reference Books:

1. Software engineering-Rogers. Pressman
2. Practical approach of software engineering- dr. Munesh Trivedi, avinash

Suggested books:

1. Pressman r.s: software engineering: a practitioner approach, McGraw-Hill
2. Software engineering, Addison wesley

Online Resources:

1. <https://medium.com/fantageek/best-resources-for-software-engineering-77a5b8f7280c>
2. <https://www.coursera.org/specializations/software-engineering>
3. <https://www.knowledgehut.com/blog/web-development/software-engineering-books>

Course Outcomes Software Engineering, FCAM13030 1	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
CO-1			3		2		3	2					3	1
CO-2		2	3							1	2			1
CO-3		3	2		2		3	3				2	1	
CO-4						3		3					2	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Web development using PHP	Course code :	FCAM130302
Course type :	Theory	Course credit :	04
Pre-requisite :	To learn PHP one must have a basic understanding of computer programming, Internet, database, HTML/XHTML and MySQL will be very helpful. Audience - It is designed for those who are unaware of the PHP concepts but have a basic understanding of computer programming.		
Rationale :	server-side programming language that can be used to create websites, applications, customer relationship management systems and more.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
4	0	0	Mid	CE	70	100
			15	15		

Course Objective :

1. Develop PHP scripts to dynamically generate HTML content
2. Understand and apply the principles of object-oriented programming in PHP.
3. Perform a multitude of useful tasks for web development.

Course Outcome:

1. Recall and list the fundamental of PHP language
2. Describe principles of server-side scripting with PHP in web development
3. Evaluate the efficiency and performance of PHP code.
4. Innovate efficient solutions to solve real-world problems using PHP, HTML, CSS, and JavaScript and MySQL





Content

Unit	Description in detail	Credit	Weightage
Unit – 1	PHP FUNDAMENTALS	1	25 %
	Building blocks of PHP: Basic syntax, Variables, Data Types, Operators and expressions, Constants. Flow Control: Switch flow, Loops, Code Block, Sending data to the browser. Working with Arrays: Arrays, Creating array, Array related Functions.		
Unit – 2	PHP FUNCTIONS	1	25 %
	Working with Function: Function, Calling Function, Defining Function, Returning the Values from user defined function, Variable Scope, Argument. Working with Strings, Date and Time Functions: formatting String with PHP, Date and Time Function, String Manipulation and Investigating Strings with PHP. Working with Forms: Creating form, handling form, validating form data, accessing form data, use of Hidden fields to save State, redirecting user, fileUpload and Sending Mail on Form Submission.		
Unit – 3	WORKING WITH FILE COOKIES & SESSION:	1	25 %
	Working with Cookies and User Session: Introduction of Cookie, Setting a Cookie with PHP, Introduction of Session and Improving Session Security, Starting a Session, Working with Session Variables, Passing Session Id in the query String, Destroying Session and Unsetting Variables. Working with Directories: Directory related function. Working with files: Include Files with INCLUDE, creating and deleting files, opening a file for reading, writing or Appending, Reading from files, Validating Files.		
Unit – 4	DATABASE MYSQL	1	25 %
	Understanding the Database Design Process: The importance of good database design, Types of Table Relationship, Understanding Normalization . Learning Basic SQL Command: Table Creation, Insert row, Select Command Using Where Clause, Update and Delete Command, Replace Command, Stored Procedures, Join, Indexing and Sorting query. Using MySQL with PHP: Connecting to MySQL and selecting the database, executing simple queries, retrieving query results, counting return Records, updating, Record Addition, Viewing Record, and Deletion Record with PHP. MYSQL Error Handling: SQL and MySQL debugging techniques.		




Reference Books:

1. PHP and MySQL for dynamic Web Sites: Visual Quickpro Guide, Second Edition by Larry.
2. Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre.
3. The Complete Reference PHP by Steven Holzner

Suggested Books:

1. Beginning PHP 5 by Wrox.
2. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education.

Online Resources:

1. <https://www.w3schools.com/php/>
2. <https://www.tutorialspoint.com/php/index.htm>
3. <https://www.phptutorial.net/>

Course Outcomes Web development using PHP, FCAM13030 2	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
CO-1	3					2	3						1	
CO-2	3	1	1				2						1	
CO-3		3	3			2							2	
CO-4			3					3			3	3	3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Mobile application development	Course code :	FCAM130303
Course type :	Theory	Course credit :	04
Pre-requisite :	Basic concept of programming language java		
Rationale :	Students are capable to develop android mobile application		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

Students will learn about Mobile application development using android language

Course Outcome:

1. Recognize principles and concepts of mobile application development
2. Describe the role of Intents, activities, services, and broadcast receivers in Android.
3. Construct a well-documented and organized codebase for an Android application
4. Identify and troubleshoot common errors in Android development
5. Evaluate the effectiveness of different data storage and other APIs in Android.





Content

Unit	Theory of Communication	Credit	Weightage
I	History of Mobile Software Development, The Open Handset Alliance, The Android Platform, Android SDK, Building a sample Android application, Android Manifest File and its common settings, Anatomy of an Android application, Application Context, Activities, Intents, Services, Receiving and Broadcasting Intents	1	25 %
II	Working with different types of resources, User Interface Screen elements, Designing User Interfaces with Layouts, Working with Animation, Working with canvas	1	25 %
III	Using Android Data and Storage APIs, managing data using SQLite, Sharing Data between Applications with Content Providers	1	25 %
IV	Using Android Web APIs, Using Android Telephony APIs, Selling your Android application	1	25 %

Reference Books:



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1. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)
2. Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd (2011)

Suggested Readings:

1. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd(2009)
2. Sayed Y Hashimi and Satya Komatineni, “Pro Android”, Wiley India Pvt Ltd (2009)

Online Resources:

1. <https://developer.android.com/>
2. <https://www.tutorialspoint.com/android/index.htm>
3. <https://www.javatpoint.com/android-tutorial>
4. <https://www.geeksforgeeks.org/android-tutorial/>

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Mobile application development, FCAM130303														
CO-1	3					2	3						1	
CO-2			1			2	3						2	
CO-3		1	1					3			3	3	3	
CO-4		3				2		1						
CO-5			3					3					2	2





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Computer security	Course code :	FCAM130304
Course type :	Theory	Course credit :	04
Prerequisite :	Vulnerabilities in the Information Technology systems. Anticipating and detecting threats. Routing and switching. Being aware of the network architecture and protocol. Firewalls.		
Rationale :	Computer security helps keep valuable information protected and maintain the health of a computer with no disruptive behavior in its performance caused by viruses and malware. That's all for the importance and need of computer security.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. To prepare students with the technical knowledge and skills needed to protect and defend computer systems and networks.
2. To develop graduates that can plan, implement, and monitor cyber security mechanisms to help ensure the protection of information technology assets.
3. To develop graduates that can identify, analyze, and remediate computer security breaches.

Course Outcome:

1. Analyze and evaluate the computer security needs of an organization.
2. Conduct a computer security risk assessment.
3. Measure the performance and troubleshoot computer security systems.
4. Implement computer security solutions.





Content

Unit	Introduction:	Credit	Weightage
I	Introduction: What Does "Secure "Mean? Attacks, The Meaning of Computer Security, Computer Criminals, Methods of Defense. Cyber Security: Making a Business Case, Quantifying Security, Modeling Cyber-security, Current Research and Future Directions	1	25 %
II	System Security <ul style="list-style-type: none">- Intruders<ul style="list-style-type: none">• Intruders, Intruders detection, Password management.- Malicious Software<ul style="list-style-type: none">• Viruses and Related Threats- Firewalls<ul style="list-style-type: none">• Firewalls Design principle, established systems.	1	25 %
III	Cryptography <ul style="list-style-type: none">- Foundations of cryptography and computer security<ul style="list-style-type: none">• Mathematical foundations, Randomness- Symmetric key cryptography<ul style="list-style-type: none">• Classical Encryption Techniques• Block Ciphers and The Data Encryption Standard• Advance Encryption Standard• Confidentiality Using Symmetric Encryption- Public key cryptography<ul style="list-style-type: none">• Public Key Cryptography And RSA Message Authentication and Hash Function	1	25 %
IV	Network Security <ul style="list-style-type: none">- Protocols: Digital Signature standards- Electronics Mail Security-PGP(Pretty Good Privacy)MIME, data Compression technique- IP Security: Architecture, Authentication Leader, Encapsulating security Payload–Key management- Web security: -Secure Socket Layer & Transport Layer security, secure electronic transactions	1	25 %





Textbooks:

1. Security in Computing, Fourth Edition By Charles P. Pfleeger, Shari Lawrence Pfleeger Publisher: Prentice Hall.
2. Cryptography and Network Security (2nd edition) William Stallings (Pearson Education).

Reference Books:

1. Computer Security Basics by Debby Russell, G.T. Gangemi (O'Reilly)
2. Network Security Private Communication in a Public World by Charlie Kamfman, Radia Parolman, Mike Speciner

Online Resources:

1. <https://www.britannica.com/technology/computer-security>
2. <https://bootcamp.berkeley.edu/blog/what-is-computer-security/>

Course Outcomes Computer security, FCAM13030 4	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
CO-1				1		3				2		2		2
CO-2		2		3			3							
CO-3	3	3								3				
CO-4			3				3	2						2





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Practical - Web Development Using PHP	Course code :	FCAM130305
Course type :	Practical	Course credit :	04
Pre-requisite :	To learn PHP one must have a basic understanding of computer programming, Internet, database, HTML/XHTML and MySQL will be very helpful. Audience - It is designed for those who are unaware of the PHP concepts but have a basic understanding of computer programming.		
Rationale :	server-side programming language that can be used to create websites, applications, customer relationship management systems and more.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
4	0	0	Mid	CE	70	100
			15	15		

Course Objective :

1. Develop PHP scripts to dynamically generate HTML content
2. Understand and apply the principles of object-oriented programming in PHP.
3. Perform a multitude of useful tasks for web development.

Course Outcome:

1. Recall and list the fundamental of PHP language
2. Describe principles of server-side scripting with PHP in web development
3. Evaluate the efficiency and performance of PHP code.
4. Innovate efficient solutions to solve real-world problems using PHP, HTML, CSS, and JavaScript and MySQL





Content

CONTENT

1. Write a PHP program to display "Hello World" Message on Screen.
2. Write a PHP program to display the today's date and current time.
3. Write a PHP program to display the Fibonacci series
4. Write a PHP program to calculate sum of given number.
5. Write a PHP Program that will use the concept form.
6. Write a PHP program to read the employee detail using form component.
7. Write a PHP program to demonstrate the use of array.
8. Write a PHP program to prepare student Mark sheet using Switch statement.
9. Write a PHP program to generate the multiplication of matrix.
10. Write a PHP program to send Mail from PHP Script.
11. Write a PHP Program for Create, Delete, and Copying file from PHP Script.
12. Write a PHP Program to Recursive Traversals of Directory.
13. Write a PHP Program to Validate Input Data
14. Write a PHP Program to Upload File.
15. Write a PHP program to perform demonstrates the college Website.
16. Write a PHP program for Error Handling.
17. Write a PHP Program for Session and Cookies.
18. Write a PHP program for connection with my Sql and display all record from the database
19. Write a PHP program for add record into database
20. Write a PHP program for search record from the database.
21. Write a PHP program for delete, update record from the database
22. Develop a PHP application to make following Operation
 - I. Registration of user.
 - ii. Insert the details of user.
 - iii. Modify the details

Reference Books:



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1. PHP and MySQL for dynamic Web Sites: Visual Quickpro Guide, Second Edition by Larry.
2. Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre.
3. The Complete Reference PHP by Steven Holzner

Suggested Books:

1. Beginning PHP 5 by Wrox.
2. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education.

Online Resources:

1. <https://www.w3schools.com/php/>
2. <https://www.tutorialspoint.com/php/index.htm>
3. <https://www.phptutorial.net/>

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
Practical-Web development using PHP, FCAM130302														
CO-1	3					2	3						1	
CO-2	3	1	1				2						1	
CO-3		3	3			2							2	
CO-4			3					3			3	3	3	





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Practical – Mobile Application Development	Course code :	FCAM130306
Course type :	Theory	Course credit :	04
Pre-requisite :	Basic concept of programming language java		
Rationale :	Students are capable to develop android mobile application		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

Students will learn about Mobile application development using android language

Course Outcome:

1. Recognize principles and concepts of mobile application development
2. Describe the role of Intents, activities, services, and broadcast receivers in Android.
3. Construct a well-documented and organized codebase for an Android application
4. Identify and troubleshoot common errors in Android development
5. Evaluate the effectiveness of different data storage and other APIs in Android.





Content

1. Create “Hello World” application. That will display “Hello World” in the middle of the screen in the red color with white background.
2. To understand Activity, Intent
 - a. Create sample application with login module.(Check username and password)
 - b. On successful login, go to next screen. And on failing login, alert user using Toast.
 - c. Also pass username to next screen.
3. Create login application where you will have to validate EmailID(User Name). Till the username and password is not validated , login button should remain disabled.
4. Create and Login application as above . On successful login , open browser with any URL.
5. Understand resource folders :
 - a. Create spinner with strings taken from resource folder(res >> value folder).
 - b. On changing spinner value, change image.
6. Understand Menu option.
 - a. Create an application that will change color of the screen, based on selected options from the
 - b. menu.
7. Create an application that will have spinner with list of animation names. On selecting animation name , that animation should affect on the images displayed below.
8. Understanding of UI :
 - a. Create an UI such that , one screen have list of all the types of cars.
 - b. On selecting of any car name, next screen should show Car details like : name , launched date ,company name, images(using gallery) if available, show different colors in which it is available.
9. Understanding content providers and permissions:
 - a. Read phonebook contacts using content providers and display in list.
10. Read messages from the mobile and display it on the screen.
11. Create an application to call specific entered number by user in the Edit Text
12. Create an application that will create database with table of User credential.
13. Create an application to read file from asset folder and copy it in memory card.
14. Create an application that will play a media file from the memory card.
15. Create an application to make Insert, update, Delete and retrieve operation on the database.
16. Create an application to read file from the SD card and display that file content to the screen.
17. Create an application to draw line on the screen as user drag his finger.
18. Create an application to send message between two emulators.
19. Create an application to take picture using native application.
20. Create an application to pick up any image from the native application gallery and display it on the screen.
21. Create an application to open any URL inside the application and clicking on any link from that URL should not open Native browser but that URL should open the same screen.

Reference Books:





1. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)
2. Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd (2011)

Suggested Readings:

1. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd(2009)
2. Sayed Y Hashimi and Satya Komatineni, “Pro Android”, Wiley India Pvt Ltd (2009)

Online Resources:

1. <https://developer.android.com/>
2. <https://www.tutorialspoint.com/android/index.htm>
3. <https://www.javatpoint.com/android-tutorial>
4. <https://www.geeksforgeeks.org/android-tutorial/>

Course Outcomes Practical- Mobile application development, FCAM130306	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PS O -1	PSO - 2
CO-1	3					2	3						1	
CO-2			1			2	3						2	
CO-3		1	1					3			3	3	3	
CO-4		3				2		1						
CO-5			3					3					2	2





Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title :	Mobile Testing & Automation	Course code :	FCAM130307
Course type :	Theory	Course credit :	04
Pre-requisite :	One should have basic knowledge of Fundamental of Software Testing		
Rationale :	Mobile Testing and Automation refer to the process of testing mobile applications, ensuring their functionality, performance, and security.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
4	0	0	Mid	CE	70	100
			15	15		

Course Objective:

1. Students will learn about Mobile testing automation tools, techniques and methods.

Course Outcome:

1. Recall mobile testing terminology, testing types, and basic principles of understand the challenges in mobile app testing,
2. Apply mobile testing techniques, tools, and frameworks to perform testing activities.
3. Break down mobile app testing scenarios, analyze test results, and identify issues and defects.
4. Design a mobile test plan that includes both manual and automated testing.





Content

Unit		Credit	Weightage
I	Mobile Testing: Overview, Platforms, Device Types, Native Vs. Hybrid Vs. Mobile Web, Device Vs. Application, Emulator, Simulator, Real Testing Device, Key Difference between Emulator and Simulator, Mobile Testing using UI, Planning & Tools, Hardware Perspective, Frameworks Overview, Android Frameworks, IOS Frameworks.	1	25 %
II	Mobile Testing Application: Functional Testing, Performance Testing, Stress Testing, Security Testing, Usability Testing, Compatibility Testing, Laboratory Testing, Power Consumption Testing, Interrupt Testing, Recoverability Testing, Installation Testing, Uninstallation Testing, Updates Testing, Certification Testing, Advantages of Real device and Emulator/Simulator based testing, Disadvantages of Real device and Emulator/Simulators based testing.	1	25 %
III	APPIUM: How APPIUM Works? Prerequisite to use APPIUM, Install APPIUM Desktop, APPIUM Inspector, Attach Android Emulator to APPIUM, APPIUM Test Case for Native Android App (Calculator), Limitations using APPIUM, Common Encountered Errors and Troubleshooting Steps in APPIUM.	1	25 %
IV	UiAutomator: What is UiAutomator Viewer? Download & Install UiAutomator, use UiAutomat or Viewer, find objects in my application, identify elements for automation, Error one might encounter while using UiAutomat or Viewer. What is Android Debug Bridge (ADB)? USB debugging and ADB Configuration, How to Connect to an Emulator, How to Connect Android Device with ADB, How to Configure ADB for Wi-Fi Support	1	25 %

Reference Books:



1. Software Testing (A Practical Approach) Rajiv Chopra, Mercury Learning & Information Publisher Illustrated edition 2018

Suggested Readings:

1. Effective Methods of Software Testing (3rd Edition) - By William E, Software Perry Wiley, India

Online Resources:

1. <https://www.guru99.com/software-testing.html>
2. https://www.tutorialspoint.com/mobile_testing/mobile_testing_overview.htm

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
Mobile Testing & Automation FCAM130307														
CO-1		3	3			2								1
CO-2			1		3						3	1	2	
CO-3		2												
CO-4			3		1								2	



Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	III
Course title and	Data Mining & Data warehousing	Course code :	FCAM130308
Course type :	Theory	Course credit :	04
Pre-requisite :	The students should have a basic Understanding of bunch of data are sorting in data mining.		
Rationale :	It gives information to students which gives the means of data mining supports fraud detection, risk management, cybersecurity planning and many other critical business use case.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. To understand the data and database management of data warehouse.
2. To extract knowledge from data repository for data analysis.
3. Identify the data frequent pattern, classification and prediction..

Course Outcome:

1. Design and implement a comprehensive data warehousing solution, including data modeling and schema design.
2. Analyze and evaluate the structure and design of data warehouses
3. Apply data warehousing concepts to design and implement a data warehouse.
4. Explain the principles of data warehousing and its role in decision support systems.
5. Define key terms related to data mining, such as clustering, classification, and association rules.
6. Evaluate the appropriateness of different data mining algorithms for specific types of data

Content





Unit	Introduction :		Weightage
I	<p>Data Mining – Motivation, Importance of DM Functionalities, Basic Data Mining Tasks, Classification of data mining, integration of data mining system with a database or data warehouse system, major issues in data mining</p> <p>Data Processing:</p> <p>Why process the data? Descriptive data summarization, data cleansing, data integration and transformation, data reduction, data discretization and concept hierarchy generation.</p>	<p>1</p>	<p>25 %</p>
II	<p>Data warehouse:</p> <p>What is data warehouse? A multidimensional data model, data warehouse architecture, data warehouse implementation, from data warehousing to data mining.</p> <p>Data Generalization: Attribute oriented Induction.</p>	<p>1</p>	<p>25 %</p>
III	<p>Data Mining:</p> <p>Data Mining Primitives, Languages : Data Cleaning, Data Integration and Transformation, Data Reduction</p> <p>Association Rule Mining,</p> <p>Classification and Prediction – Decision Tree, Bayesian Classification Back Propagation, Cluster Analysis, Outlier Analysis.</p>	<p>1</p>	<p>25 %</p>
IV	<p>Mining Object, Spatial, Multimedia, Text, and web data : Spatial data mining, Multimedia data mining, Text mining, Mining the world wide web</p> <p>Application and Trends in Data Mining: Data mining application, Data mining system products and research prototypes, additional themes on data mining, social impacts of data mining, Trends in data mining.</p>	<p>1</p>	<p>25 %</p>



Reference Books:

1. Data Mining, Concept and techniques by Jiawei Han and Micheline Kamber, Jian Pei

Suggested Books:

1. Data Mining, Concept and techniques by Jiawei Han and Micheline Kamber, Jian Pei

Online Resources:

1. <https://www.topcoder.com/thrive/articles/data-warehousing-and-mining>.
2. <http://www.gersteinlab.org/courses/545/>

Course Outcomes Data mining and data warehousing ,FCAM130308	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO -1	PO -2	PO -3	PO -4	PO -5	PO -6	PO -7	PO -8	PO -9	PO -10	PO -11	PO -12	PSO -1	PSO -2
CO-1			2											
CO-2		2		3										2
CO-3	3													
CO-4	1													
CO-5	2					2	1							
CO-6												1		



Program :	MCA	Subject / Branch :	NA
Year :	2022/23	Semester :	IV
Course title :	System Development Project	Course code :	FCAM140301
Course type :	Practical	Course credit :	24
Pre-requisite :	Student can study, analyze, design, implement and evaluate the information system.		
Rationale :	To make the students confident in software development.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme		
Lecture	Tutorial	Practical	Internal	External	Total
0	0	48	CE		
			1 st Progress Report – 50	From external organization – 100	600
			2 nd Progress Report – 50	(Industry marks)	
			3 rd Progress Report – 100	Final Viva, Presentation – 300	
			200	400	600

Course Objective:

1. Study, analyze, design, implement and evaluate the information system

Course Outcome:

1. Understand analysis of real-world problems and solutions.
2. Design and implement software based on user requirements.
3. Evaluate and test the result after the implementation with maintenance.
4. Understand the working mechanism using system diagram.
5. Describe the software documentation as per software development lifecycle.

Content

In this subject-head students have to do Information system development work and/or



design work or software development work in any organization/ company/institute to gain industry experience.



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~~The students will be assigned one or more system development projects.~~ It will be an external project, with work duration of one (01) academic term (Full Semester). The students have to start work on project after completion of the III semester. The students should have to do full time work i.e. at least 5 days per week with at least 5 or more hours per day.

Students may work in team (comprising not more than three) or individually to acquire hands-on skills in system development.

Following could be the possible alternatives for the projects.

1. Development of a system for IT / Computer Company or Institutional or Government Department or Private Sector.
2. Development of Hypothetical Application.
3. Analysis of work (Analytical or descriptive) Information project / system including cyber laws, standard, which may not include source coding.
4. Network designing and deployment. (may include less source coding as per nature of work)
5. Developing and / or designing a website or web scripting.

Project work should include all of the phases of system development life cycle. Like

- Analysis of a system
- Designing, Source Coding
- Documentation
- Implementation &
- Updating in system (if any)

The system development project evaluation divided into

1) Internal marks - 200

2) Industry marks - 100

3) Final Viva / Presentation examination marks - 300.

1. During the project work, Department will conduct presentations of progress of project at different stages. There will be 200 internal marks for progress reports. At least three progress report need to be conduct by the department. The organization / company may also give the grades as per his/her individual performance and



— Faculty of Computer Science & Applications —
Gokul College of Computer Science & Applications



University Campus, State Highway-41, Sidhpur - 384151, Dist. Patan, Gujarat, INDIA

E: dean.fac.compsci@gokuluniversity.ac.in W: www.gokuluniversity.ac.in M: +91 95124 00808

- progress in different stages of a project, which may be considered at the stage of internal evaluation by the internal experts panel of the Department.
2. After the completion of the system development project work, organization / company owner or project leader has to provide confirmation of work done (certificate of work completion) as well as Organization / Company marks (Industry marks) out of 100.
 3. After the completion of a system development project, the University has to arrange Viva/Presentation examination, which will be of 300 marks. The examination Panel should include Academic Experts as well as Industry Experts. The experts will decide student's marks out of 300 as per his performance. Panel should contain at least 4 experts. The Viva/Presentation examination time for each group should be at least 40 minutes.

Documentation:

The project has to be well-documented in the form of a Project Report (at least 50 pages comprising of the design, data dictionary, source code, screenshots etc.)

Format: Print out on both the side of page with single line spacing. Use Times New Roman of size 10 for normal text.

Students are advised preferably to make documentation in Agile

Table of contents

No	Contents
1	Project or Company Profile
2	Functional Requirement Specification
2.1	Module Specification
2.2	User Specification
3	About System
3.1	About Existing System
3.2	Need for new system
4	Technical Requirement Specification
4.1	Hardware Requirement
4.2	Software Requirement
5	System Flow Chart
6	Diagrams
6.1	UML Diagram
6.2	Use-case Diagram
6.3	Activity Diagram
6.4	Class Diagram





6.5	Sequence Diagram
6.6	Deployment Diagram
7	Data Dictionary
8	Input & Output Design
9	Testing
10	Post implementation review
11	Future Enhancement
12	Conclusion
13	Bibliography / References

Course Outcomes	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
System Development Project FCAM140301														
CO-1	3	3				3								2
CO-2			3		3								3	
CO-3								3			3	3	2	
CO-4			3		3									
CO-5													3	

