C P PATEL AND F H SHAH COMMERCE COLLEGE, ANAND
(AUTONOMOUS)

(Managed by Sardar Patel Education Trust, Anand)

(Affiliated to Sardar Patel University, Vallabh Vidyanagar)

NAAC Reaccredited CGPA – 3.30 – Grade A+

Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)
SEMESTER II

PROGRAMME OUTCOME

At the end of the BCA programme the students will be able to:

- Understand the fundamental concepts of computers, software hardware and peripheral devices and evolution of computer technologies**.**
- Work in the IT sector as system engineer, software tester, junior programmer, web developer, system administrator, software developer etc.
- Apply standard software engineering practices and strategies in software project development using open source programming environment to deliver a quality of product for business success.

PROGRAM SPECIFIC OUTCOMES

- Equip themselves to potentially rich & employable field of computer applications.
- Pursue higher studies in the area of Computer Science/Applications.
- Take up self-employment in Indian & global software market.
- Meet the requirements of the Industrial standards.

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Bachelor of Computer Applications (BCA)
SEMESTER II

Subject		Subject Code	Subject Title	Credits	WCH	Exam Duration	Marking Scheme		
							Int	Ext	Total
Discipline Specific Course Core (Major)	Core Course-1	**US2MABCA11**	Problem Solving Through Advanced Programming	4	4	2	50/18	50/18	100/36
	Practical of Core Course-1	**US2MABCA12**	Practical Based On Problem Solving Through Advanced Programming	4	8	2	50/18	50/18	100/36
Minor	Minor Course-1	**US2MIBCA13**	Advanced Web Application with JQuery	2	2	1	25/09	25/09	50/18
	Practical of Minor Course-1	**US2MIBCA14**	Practical Based On Advanced Web Application with JQuery	2	4	1	25/09	25/09	50/18
Inter disciplinary	Inter disciplinary Course-1	**US2MDBCA15**	Mathematics	2	2	1	25/09	25/09	50/18
	Practical of Inter disciplinary Course-1	**US2MDBCA16**	Practical Based on Mathematics	2	4	1	25/09	25/09	50/18
Ability Enhancement Course		**US2AEBCA17**	Foundation of Communication Skills in English-II	2	2	1	25/09	25/09	50/18
Skill Enhancement Course/Internship		**US2SEBCA18**	Multimedia Technologies	2	2	1	25/09	25/09	50/18
IKS/Value Added Course (Any One)		**US2VABCA19**	Environmental Studies	2	2	1	25/09	25/09	50/18
		US2VABCA20	NCC-I	2	2	1	25/09	25/09	50/18
		US2VABCA21	NSS-I	2	2	1	25/09	25/09	50/18
		US2VABCA22	Yoga, Meditation & Fitness-I	2	2	1	25/09	25/09	50/18
Minimum Qualifying Credits				**22**					

Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)
Semester – II

Course Code	**US2MABCA11**	**Title of the Course**	**Problem Solving Through Advanced Programming**
Total Credits	**04**	**Hours per Week**	**04 Hours / Week**

Course Learning Outcomes (CLOs)	
CLO 1	To understand concepts of user-defined functions.
CLO 2	Learn the concept of structures and unions.
CLO 3	The fundamentals of pointers and its usage.
CLO 4	Basic concept of file handling.

Course Content

Unit No.	**Description**	**Weightage (%)**
1.	**User-Defined Functions** • Introduction and need of user defined Functions • Components of user defined functions • Methods of passing parameters to functions • Recursion	**25%**
2.	**Structure and Union** • Introduction to structures • Structures and arrays • Structures within structures • Structures and functions • Unions • Command Line Arguments	**25%**
3.	**Pointers** • Introduction, usage and understanding of pointers • Declaration and initialization of pointer variables • Accessing variables through Pointers • Chain of Pointers (Pointer to Pointer) • Pointer arithmetic expression • Pointers and arrays	**25%**

	• Pointers as function arguments • Pointer and structure • Dynamic memory allocation	
4.	**Usage of File Handling** • Introduction to File Handling • File Access Modes • Input Output Operations on files • Error Handling during I/O operations	**25%**

Teaching – Learning Methodology
The course would be taught /learnt through ICT (e.g. Power Point Presentation, Audio-Visual Presentation), Lectures, Quizzes, Assignments, Case Study and Browsing E- Resources & Practical Learning.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE			
Sr. No.	**Details of the Evaluation Pattern**		**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)		
	A	Assignments	10
	B	Multiple Choice Questions	05
	C	Attendance	05
	D	Written Examination (01 Hour)	30
	(Formative Assessment) (A + B + C + D)		**50 Marks**
02	Semester End Evaluation (SEE) (Summative Assessment)		
	E	Written Examination (02 Hours)	**50 Marks**
	TOTAL(For 04 Credit Courses)		**100 Marks**

Rubrics – Based Assessment for Assignments (10 Marks)		
Excellent	09 – 10 Marks	Correct logic and syntax, accurate program execution/output, well-structured code, proper use of UDF, structure, pointers, and appropriate use of file handling functions
Good	07 – 08 Marks	Minor syntax or logical errors, good conceptual clarity, mostly

		correct program and output, proper use of programming concepts like UDF, structure, pointers and file handling with few mistakes
Average	05 – 06 Marks	Basic understanding of concepts, some logical or syntax errors, partially correct program/output
Basic	03 – 04 Marks	Limited clarity of concepts, noticeable errors in logic and syntax, incomplete or partially working program
Poor	01 – 02 Marks	Inadequate understanding, incorrect logic, major syntax errors, program does not execute properly
Below Poor	Zero Marks / NA	Irrelevant answer or not attempted

Note:

- Assignments may be taken in forms of written project, computerized and online suggested courses / certificates as per the decision made by the respective faculties of the courses.

Rubrics – Based Assessment for Multiple Choice Questions (05 Marks)		
05 Multiple Choice Questions – 01 Mark Each (05 Marks)		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted

Rubrics – Based Assessment for Attendance (05 Marks)

As per the Rules and Regulations provided by the Academic Section of Sardar Patel University, Vallabh Vidyanagar, for the students studying in all departments and colleges.
Reference No.: E – 3 / 3127; dated: 07-03-2024.
https://www.spuvvn.edu/orbit-cdn/uploads/circulars/Circular-NEP-InternalExamMarks-March-April24.pdf

Excellent	05 Marks	More than 90% (Minimum 54 Hours for 04 Credits Courses)
Good	04 Marks	80% - 89% (48 to 53 Hours for 04 Credit Courses)
Average	03 Marks	70% - 79% (42 to 47 Hours for 04 Credit Courses)
Poor	Zero / NA	Less than 70% (Less than 42 Hours) **(NOT ELIGIBLE TO APPEAR FOR EXAM)**

Note:

- Students with below 70% of attendance must submit their written application to their respective class coordinators with genuine reasons and evidence (in case of working or medical emergencies). Students must **not** pursue dual degree programmes that clash with the college's timings.

Rubrics – Based Assessment for Mid-Semester Examination (30 Marks)

Any Two Unit or 50% of The Syllabus - 15 Marks Each Question		
Excellent	13 – 15 Marks	Accurate, error-free, logically presented, timely submission
Good	10 – 12 Marks	Minor errors and good conceptual clarity
Average	07 – 09 Marks	Basic understanding or partially correct
Basic	04 – 06 Marks	Limited clarity, noticeable mistakes, incomplete content
Poor	01 – 03 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	Content is irrelevant / Not Attempted / Not Submitted
Note: • Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.		

Rubrics – Based Evaluation Pattern for End-Semester Examination (50 Marks)		
06 Multiple Choice Questions – 01 Mark Each (06 Marks)		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted
Short Question (12 Marks) – 6 Question from all Units		
Excellent	02 Marks	Demonstrates accurate understanding of concepts related to questions. Provides correct calculations, appropriate formulas, and clear explanations with complete answers.
Good	01 Mark	Shows partial understanding of concepts with some correct steps or explanations. Minor errors or incomplete answers may be present.
Poor	00 Mark	Incorrect, irrelevant, or no response provided.
UNIT I - 08 Marks Each Question		
Excellent	06 – 08 Marks	Complete and accurate explanation of user-defined functions, components, parameter passing methods, and recursion with correct syntax, examples, and clear conceptual understanding
Good	04 – 06 Marks	Mostly correct explanation with minor mistakes in syntax or concepts related to functions and recursion
Average	03 – 04 Marks	Basic explanation with limited examples, missing some concepts like parameter passing or recursion
Basic	02 – 03 Marks	Incomplete answer, unclear understanding of functions or recursion
Poor	01 – 02 Marks	Very limited knowledge, incorrect definitions or syntax
Below Poor	Zero Marks / NA	No attempt or totally irrelevant answer
UNIT II - 08 Marks Each Question		

Excellent	06 – 08 Marks	Clear and complete explanation of structures, unions, arrays, nested structures, and command line arguments with correct syntax and examples
Good	04 – 06 Marks	Minor mistakes in syntax or examples, mostly correct understanding of structures and unions
Average	03 – 04 Marks	Basic knowledge of structures and unions, limited clarity and examples
Basic	02 – 03 Marks	Partial understanding, missing key elements like nesting or unions
Poor	01 – 02 Marks	Incorrect syntax and poor conceptual understanding
Below Poor	Zero Marks / NA	No attempt or irrelevant content
UNIT III - 08 Marks Each Question		
Excellent	06 – 08 Marks	Clear explanation of all pointer concepts including declaration, arithmetic, arrays, functions, structures, and dynamic memory allocation with correct syntax and examples
Good	04 – 06 Marks	Minor mistakes in syntax or examples, mostly correct logic in pointer usage
Average	03 – 04 Marks	Basic knowledge of pointers, limited clarity in advanced topics like DMA or pointer-to-pointer
Basic	02 – 03 Marks	Incomplete explanation, confusion in pointer operations or concepts
Poor	01 – 02 Marks	Incorrect logic, very limited understanding of pointers
Below Poor	Zero Marks / NA	No attempt or wrong answer
UNIT IV - 08 Marks Each Question		
Excellent	06 – 08 Marks	Complete explanation of file handling concepts including access modes, I/O operations, and error handling with correct syntax and examples
Good	04 – 06 Marks	Minor mistakes in functions or examples, mostly correct explanation of file operations
Average	03 – 04 Marks	Basic explanation with limited examples, some missing concepts like error handling
Basic	02 – 03 Marks	Partial understanding of file handling concepts
Poor	01 – 02 Marks	Incorrect or very limited knowledge of file operations
Below Poor	Zero Marks / NA	No attempt or irrelevant answer

Note:

- Multiple Choice Questions of 10 Marks will be based on various levels of Revised Bloom's

Taxonomy.

- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping

Problem Solving Through Advanced Programming

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
CLO 1	3	3	2	1	0	0	0	1
CLO 2	3	3	2	1	0	0	0	1
CLO 3	3	3	3	2	1	0	0	1
CLO 4	3	3	3	3	2	2	0	2

Note:
High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00**

Suggested References and E-Resources for Further Reading

- E. Balagurusami: Programming in ANSI C., Eighth Edition, Tata McGraw Hill Publication, 2019.
- Kernighan B. Ritchie D. : The C Programming Language, Prentice Hall, 1988.
- Cooper H. & Mullish H : The Spirit of C, Jaico Publication House,NewDelhi, 1988.
- https://www.geeksforgeeks.org/
- https://www.w3schools.com/c/
- https://www.programiz.com/c-programming

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Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)
Semester – II

Course Code	**US2MABCA12**	**Title of the Course**	**Practical Based on Problem Solving Through Advanced Programming**
Total Credits	**04**	**Hours per Week**	**04 Hours / Week**

Course Learning Outcomes (CLOs)	
CLO 1	To develop the programs on user-defined functions.
CLO 2	To develop the programs on structures and unions.
CLO 3	To develop the programs on pointers.
CLO 4	Basic programs on file handling.

Course Content		
Unit No.	**Description**	**Weightage (%)**
1.	**User-Defined Functions** • Introduction and need of user defined Functions • Components of user defined functions • Methods of passing parameters to functions • Recursion	**25%**
2.	**Structure and Union** • Introduction to structures • Structures and arrays • Structures within structures • Structures and functions • Unions • Command Line Arguments	**25%**
3.	**Pointers** • Introduction, usage and understanding of pointers • Declaration and initialization of pointer variables • Accessing variables through Pointers • Chain of Pointers (Pointer to Pointer) • Pointer arithmetic expression	**25%**

	• Pointers and arrays • Pointers as function arguments • Pointer and structure • Dynamic memory allocation	
4.	**Usage of File Handling** • Introduction to File Handling • File Access Modes • Input Output Operations on files • Error Handling during I/O operations	**25%**

Teaching – Learning Methodology
The course would be taught / learnt through ICT (e.g. Power Point Presentation, Audio-Visual Presentation), Quizzes, Case Study and Browsing E- Resources & Practical Learning.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE		
Sr. No.	**Details of the Evaluation Pattern**	**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	**50**
	Practical Hands-on Evaluation	
02	Semester End Evaluation (SEE) (Summative Assessment)	**50**
	Practical Examination (02 Hours)	
	TOTAL(For 04 Credit Courses)	**100 Marks**

Rubrics – Based Assessment for Mid-Semester Examination (50 Marks)		
Any Two Unit or 50% of The Syllabus - 15 Marks Each Question with 5 Marks Journal		
Excellent	40 – 50 Marks	Accurate, error-free, logically presented, timely submission
Good	30 – 40 Marks	Minor errors and good conceptual clarity
Average	20 – 30 Marks	Basic understanding or partially correct
Basic	10 – 20 Marks	Limited clarity, noticeable mistakes, incomplete content
Poor	01 – 10 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	Content is irrelevant / Not Attempted / Not Submitted

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

Rubrics – Based Evaluation Pattern for End-Semester Examination (50 Marks)		
All Units of The Syllabus - 15 Marks Each Question with 5 Marks Journal		
Excellent	40 – 50 Marks	Accurate, error-free, logically presented, timely submission
Good	30 – 40 Marks	Minor errors and good conceptual clarity
Average	20 – 30 Marks	Basic understanding or partially correct
Basic	10 – 20 Marks	Limited clarity, noticeable mistakes, incomplete content
Poor	01 – 10 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	Content is irrelevant / Not Attempted / Not Submitted

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping								
Practical Based on Problem Solving Through Advanced Programming								
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
CLO 1	3	3	2	1	0	0	0	1
CLO 2	3	3	2	1	0	0	0	1
CLO 3	3	3	3	2	1	0	0	1
CLO 4	3	3	3	3	2	2	0	2

Note:
- High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00**

Suggested References and E-Resources for Further Reading
• E. Balagurusami: Programming in ANSIC., Eighth Edition, Tata McGraw Hill Publication, 2019.
• Kernighan B. Ritchie D.: The C Programming Language, Prentice Hall, 1988.
• Cooper H. & Mullish H: The Spirit of C, Jaico Publication House, New Delhi, 1988.
• https://www.geeksforgeeks.org/
• https://www.w3schools.com/c/
• https://www.programiz.com/c-programming

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Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)
Semester – II

Course Code	US2MIBCA13	Title of the Course	Advanced Web Application with JQuery
Total Credits	02 Credits	Hours per Week	02 Hours / Week

Course Learning Outcomes (CLOs)	
CLO 1	To learn the basic concepts of scripting
CLO 2	To study fundamentals of JavaScript development.

Course Content		
Unit No.	**Description**	**Weightage (%)**
1.	**Introduction to Scripting** • Introduction to Scripting • Client Side Scripting V/S Server Side Scripting • Introduction to JavaScript • Applications and Advantages of JavaScript • JavaScript basics: Syntax, Data Types, Variables, Literals, Type Casting, Operators • User interaction through dialog boxes • Built-in functions • Flow Control statements • Arrays	50%
2.	**Advanced JavaScript with JQuery** • User-defined functions, **String Object** (length, charAt, indexOf, substr, toLowerCase, toUpperCase), **Math Object** (PI, abs, ceil, floor, max, min, round), **Date Object** (getDate, getDay, getFullYear, getMonth, getTime, getHours, getMinutes, getSeconds, setDate, setFullYear, setMonth, setTime, setHours, setMinutes, setSeconds) • Introduction to DOM • DOM Hierarchy, Understanding objects & Collections in DOM, HTML Form Hierarchy • Accessing Form elements (Text, Radio, Checkbox, Dropdown, Button), Event handling • Introduction to JQuery.	50%

Teaching – Learning Methodology
Material for this course will be presented using multiple teaching approach: lecture and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE			
Sr. No.	**Details of the Evaluation Pattern**		**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)		
	A	Assignments	10
	B	Active Learning Activities	05
	C	Attendance	05
	D	Written Examination (01 Hour)	30
		(A + B + C + D)	50 Marks
	Note: For 02 Credit Courses, the Formative Assessment for students must be from 25 Marks. Thus, the total obtained marks from A + B + C + D (50 Marks) will be divided by 02.		**25 Marks**
02	Semester End Evaluation (SEE) (Summative Assessment)		
	E	Written Examination (01 Hour)	**25 Marks**
		TOTAL (For 02 Credit Courses)	**50 Marks**

Rubrics – Based Assessment for Assignments (10 Marks)		
Excellent	09 – 10 Marks	Accurate, error-free, logically presented, timely submission
Good	07 – 08 Marks	minor errors and good conceptual clarity
Average	05 – 06 Marks	basic understanding or partially correct
Basic	03 – 04 Marks	limited clarity, noticeable mistakes, incomplete content
Poor	01 – 02 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	content is irrelevant / Not Attempted / Not Submitted
Note: Assignments may be taken in forms of written project, computerized and online suggested courses / certificates as per the decision made by the respective faculties of the courses.		

Rubrics – Based Assessment for Active Learning Activities (05 Marks)		
Excellent	05 Marks	explanation is clear, detailed and covered all keys
Good	04 Marks	good conceptual clarity, minor details may be missing
Average	03 Marks	basic explanation or partially correct
Basic	02 Marks	limited clarity, noticeable mistakes, lacks depth
Poor	01 Mark	Poorly presented or not understandable
Below Poor	Zero / NA	content is irrelevant / Not Attempted / Not Submitted
Note: Active Learning Activities may be taken in forms of classwork, viva, oral presentations, PowerPoint presentations, role play, collaborative problem solving, debates, group discussions, online tests, Q&A, case studies, etc. as per the decision made by the respective faculties of the courses.		

Rubrics – Based Assessment for Attendance (05 Marks)		
As per the Rules and Regulations provided by the Academic Section of Sardar Patel University, Vallabh Vidyanagar, for the students studying in all departments and colleges. Reference No.: E – 3 / 3127; dated: 07-03-2024. https://www.spuvvn.edu/orbit-cdn/uploads/circulars/Circular-NEP-InternalExamMarks-March-April24.pdf		
Excellent	05 Marks	more than 90% (Minimum 27 Hours for 02 Credits Courses)
Good	04 Marks	80% - 89% (24 to 26 Hours for 02 Credit Courses)
Average	03 Marks	70% - 79% (21 to 23 Hours for 02 Credit Courses)
Poor	Zero / NA	less than 70% (**NOT ELIGIBLE TO APPEAR FOR EXAM)**
Note: Students with below 70% of attendance must submit their written application to their respective class coordinators with genuine reasons and evidence (in case of working or medical emergencies). Students must not pursue dual degree programmes that clash with the college's timings.		

Rubrics – Based Assessment for Mid-Semester Examination (30 Marks)		
ANY ONE UNIT OR 50% OF THE SYLLABUS - 15 Marks Each Question		
Excellent	13 – 15 Marks	Accurate explanation of JavaScript/jQuery concepts, correct syntax, error-free code, proper use of DOM/events, logical and well-structured answers
Good	10 – 12 Marks	Minor syntax or logical errors, good conceptual understanding, mostly correct code and explanation
Average	07 – 09 Marks	Basic understanding of concepts (JavaScript, DOM, jQuery), some coding mistakes, partially correct answers
Basic	04 – 06 Marks	Limited clarity of scripting concepts, incorrect or incomplete code, weak understanding of DOM/jQuery
Poor	01 – 03 Marks	Very low conceptual clarity, mostly incorrect answers/code, unable to apply concepts.
Below Poor	Zero Marks / NA	Not attempted or completely irrelevant answer.
Note: Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.		

Rubrics – Based Evaluation Pattern for End-Semester Examination (25 Marks)		
Multiple Choice Questions (05 Marks) – 01 Mark Each from all Units		
Excellent	01 Mark	the chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted
UNIT I - 10 Marks Each Question		
Excellent	09 – 10 Marks	Clear & deep explanation of scripting concepts, JavaScript basics (syntax, data types, variables, operators) with correct examples
Good	07 – 08 Marks	Clear & deep explanation of scripting concepts, JavaScript basics (syntax, data types, variables, operators) with correct examples.
Average	05 – 06 Marks	Clear & deep explanation of scripting concepts, JavaScript basics (syntax, data types, variables, operators) with correct examples.

Basic	03 – 04 Marks	Very limited understanding; explanation lacks clarity and depth.
Poor	01 – 02 Marks	Very limited understanding; explanation lacks clarity and depth.
Below Poor	Zero Marks / NA	Very limited understanding; explanation lacks clarity and depth.
UNIT II - 10 Marks Each Question		
Excellent	09 – 10 Marks	Logical and accurate use of advanced JavaScript, DOM, event handling, and jQuery with correct syntax.
Good	07 – 08 Marks	Logical and accurate use of advanced JavaScript, DOM, event handling, and jQuery with correct syntax.
Average	05 – 06 Marks	Logical and accurate use of advanced JavaScript, DOM, event handling, and jQuery with correct syntax.
Basic	03 – 04 Marks	Incomplete or incorrect implementation with major gaps.
Poor	01 – 02 Marks	Incomplete or incorrect implementation with major gaps.
Below Poor	Zero Marks / NA	Incomplete or incorrect implementation with major gaps.
Note: Multiple Choice Questions of 05 Marks will be based on Bloom's Taxonomy Level 1 & 2 and Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.		

PLO – CLO Mapping						
	Advanced Web Application with JQuery					
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CLO 1	01	02	01	03	02	01
CLO 2	01	03	01	03	02	01
Note: High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00**						

Suggested References and E-Resources for Further Reading	
Sr. No.	**Suggested References**
1.	Ivan Bayross, "Web Enabled Commercial Applications Development using HTML, DHTML, JavaScript, Perl CGI", BPB, 2004.
2.	Douglas E Comer: The Internet, PHI, Second Edition, May 2000.
3.	Wilton P., Jeremy McPeak: Beginning JavaScript, 4th Ed., Wiley Pub.
4.	Danny Goodman, Machael Morrison: "JavaScript Bible", 6th Ed., Wiley Pub.
5.	Kogent Learning Solution Inc., "HTML5 Black Book".
Sr. No.	**On-Line Resources available that can be used as Reference Material**
1.	https://www.w3schools.com/
2.	https://www.tutorialspoint.com/
3.	https://www.javatpoint.com/

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Bachelor of Computer Applications (BCA)

Semester – II

Course Code	**US2MDBCA14**	**Title of the Course**	**Practical Based On Advanced Web Application with JQuery**
Total Credits	**02 Credits**	**Hours per Week**	**02 Hours / Week**

Course Learning Outcomes (CLOs)	
CLO 1	Implement basic JavaScript programs using syntax, variables, and control structures
CLO 2	Develop interactive web pages using DOM manipulation and event handling and JQuery

Course Content

Unit No.	Description	Weightage (%)
1.	**Introduction to Scripting** • Introduction to Scripting • Client Side Scripting vs. Server Side Scripting • Introduction to JavaScript • Applications and Advantages of JavaScript • JavaScript basics: Syntax, Data Types, Variables, Literals, Type Casting, Operators • User interaction through dialog boxes • Built-in functions • Flow Control statements • Arrays	**50%**
2.	**Advanced JavaScript with JQuery** • User-defined functions, **String Object** (length, charAt, indexOf, substr, toLowerCase, toUpperCase), **Math Object** (PI, abs, ceil, floor, max, min, round), **Date Object** (getDate, getDay, getFullYear, getMonth, getTime, getHours, getMinutes, getSeconds, setDate, setFullYear, setMonth, setTime, setHours, setMinutes, setSeconds) • Introduction to DOM • DOM Hierarchy, Understanding objects & Collections in DOM, HTML Form Hierarchy • Accessing Form elements (Text, Radio, Checkbox, Dropdown, Button), Event handling • Introduction to JQuery.	**50%**

Teaching – Learning Methodology
Material for this course will be presented using multiple teaching approaches: lab work and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE		
Sr. No.	**Details of the Evaluation Pattern**	**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	**25**
	Practical Hands-on Evaluation	
02	Semester End Evaluation (SEE) (Summative Assessment)	**25**
	Practical Examination (02 Hours)	
	TOTAL(For 02 Credit Courses)	**50 Marks**

Rubrics – Based Assessment for Mid-Semester Examination (25 Marks)		
Any One Unit or 50% of The Syllabus - 11 Marks Each Question with 3 Marks Journal		
Excellent	09 – 11 Marks	Program executes correctly; proper use of JavaScript/jQuery, DOM, and events; clean, well-structured code; correct output
Good	07 – 09 Marks	Minor syntax or logical errors; mostly correct implementation and output
Average	05 – 07 Marks	Basic implementation; some errors in logic or output
Basic	03 – 05 Marks	Incomplete program; limited understanding of concepts
Poor	01 – 03 Marks	Incorrect logic; program not working properly
Below Poor	Zero Marks / NA	Not attempted or irrelevant program

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

Rubrics – Based Assessment for End-Semester Examination (25 Marks)		
All Units of The Syllabus - 11 Marks Each Question with 3 Marks Journal		
Excellent	09 – 11 Marks	Program executes correctly; proper use of JavaScript/jQuery, DOM, and events; clean, well-structured code; correct output
Good	07 – 09 Marks	Minor syntax or logical errors; mostly correct implementation and output
Average	05 – 07 Marks	Basic implementation; some errors in logic or output
Basic	03 – 05 Marks	Incomplete program; limited understanding of concepts
Poor	01 – 03 Marks	Incorrect logic; program not working properly
Below Poor	Zero Marks / NA	Not attempted or irrelevant program

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping						
Practical Based On Advanced Web Application with JQuery						
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CLO 1	03	02	02	00	02	00
CLO 2	02	03	02	00	01	03

Note:
- High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00**

Suggested References and E-Resources	
Sr. No.	**Suggested References**
1.	Ivan Bayross, "Web Enabled Commercial Applications Development using HTML, DHTML, JavaScript, Perl CGI", BPB, 2004.
2.	Douglas E Comer: The Internet, PHI, Second Edition, May 2000.
3.	Wilton P., Jeremy McPeak: Beginning JavaScript, 4th Ed., Wiley Pub.
4.	Danny Goodman, Machael Morrison: "JavaScript Bible", 6th Ed., Wiley Pub.
5.	Kogent Learning Solution Inc., "HTML5 Black Book".
Sr. No.	**On-Line Resources available that can be used as Reference Practical**
1.	https://www.w3schools.com/
2.	https://www.tutorialspoint.com/
3.	https://www.javatpoint.com/

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NAAC Reaccredited CGPA – 3.30 – Grade A+

Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)

Semester – II

Course Code	**US2MDBCA15**	**Title of the Course**	**Mathematics**
Total Credits	**02 Credits**	**Hours per Week**	**02 Hours / Week**

Course Learning Outcomes (CLOs)	
CLO 1	Apply the fundamental concepts of vectors and matrices, perform vector and matrix operations, like vector addition, scalar multiplication, matrix addition, matrix multiplication, transpose of matrix, square matrix, special square matrix solve problems in mathematics, science, engineering, and computing applications.
CLO 2	Apply the fundamental concepts of elementary data analysis to collect, organize, and analyze data using elementary statistical techniques, compute and interpret measures of central tendency such as mean, median, and mode, and apply these concepts to summarize data and support informed decision-making in practical situations.

Course Content

Unit No.	**Description**	**Weightage (%)**
1.	**Vectors and Matrices** • Vectors in $\mathbb{R}n$ • Dot product and norm • Matrix addition and scalar multiplication, Matrix multiplication, • transpose of matrix • Square matrices: Row, column, Zero, Diagonal, upper and lower • triangular, Orthogonal, symmetric and skew-symmetric matrices • Determinants of matrices up to order 3 • Adjoint of Matrix, • Inverse of Matrix	**50%**
2.	**Elementary Data Analysis** • Discrete and continuous frequency distribution • Cumulative frequency distribution • Graphical representation, Measure of central tendency: Mean, Median, Mode, Geometric mean, Harmonic mean, weighted mean, combined mean	**50%**

Teaching – Learning Methodology

The topics of Vectors and Matrices and Elementary Data Analysis will be taught through a combination of interactive lectures, problem-solving sessions, worked examples, classroom discussions, and practical exercises. Students will engage in numerical computations, real-life applications, case studies, and data

interpretation activities to develop analytical and computational skills. The use of visual aids, spreadsheets, mathematical software, assignments, quizzes, and collaborative learning activities will further enhance conceptual understanding and practical application of vector operations, matrix methods, and statistical measures such as mean, median, and mode.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE			
Sr. No.	**Details of the Evaluation Pattern**		**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)		
	A	Assignments	10
	B	Multiple Choice Questions	05
	C	Attendance	05
	D	Written Examination (01 Hour)	30
	(Formative Assessment) (A + B + C + D)		**50 Marks**
	Note: • For 02 Credit Courses, the Formative Assessment for students must be from 25 Marks. Thus, the total obtained marks from A + B + C + D (50 Marks) will be divided by 02.		**25 Marks**
02	Semester End Evaluation (SEE) (Summative Assessment)		
	E	Written Examination (01 Hour)	**25 Marks**
	TOTAL		**50 Marks**

Rubrics – Based Assessment for Assignments (10 Marks)		
Excellent	09 – 10 Marks	Accurate, error-free, logically presented, timely submission
Good	07 – 08 Marks	Minor errors and good conceptual clarity
Average	05 – 06 Marks	Basic understanding or partially correct
Basic	03 – 04 Marks	Limited clarity, noticeable mistakes, incomplete content
Poor	01 – 02 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	Content is irrelevant / Not Attempted / Not Submitted

Note:
- Assignments may be taken in forms of written project, computerized and online suggested courses / certificates as per the decision made by the respective faculties of the courses.

Rubrics – Based Assessment for Multiple Choice Questions (05 Marks)		
05 Multiple Choice Questions – 01 Mark Each (05 Marks)		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted

Rubrics – Based Assessment for Attendance (05 Marks)		
As per the Rules and Regulations provided by the Academic Section of Sardar Patel University, Vallabh Vidyanagar, for the students studying in all departments and colleges. Reference No.: E – 3 / 3127; dated: 07-03-2024. https://www.spuvvn.edu/orbit-cdn/uploads/circulars/Circular-NEP-InternalExamMarks-March-April24.pdf		
Excellent	05 Marks	More than 90% (Minimum 27 Hours for 02 Credits Courses)
Good	04 Marks	80% - 89% (24 to 26 Hours for 02 Credit Courses)
Average	03 Marks	70% - 79% (21 to 23 Hours for 02 Credit Courses)
Poor	Zero / NA	Less than 70% (**NOT ELIGIBLE TO APPEAR FOR EXAM)**

Note:

- Students with below 70% of attendance must submit their written application to their respective class coordinators with genuine reasons and evidence (in case of working or medical emergencies). Students must **not** pursue dual degree programmes that clash with the college's timings.

Rubrics – Based Assessment for Mid-Semester Examination (30 Marks)		
Any One Unit or 50% of The Syllabus - 15 Marks Each Question		
Excellent	13 – 15 Marks	Accurate and comprehensive understanding of Vectors and Matrices and Elementary Data Analysis concepts. Demonstrates excellent application of vector operations, matrix algebra, determinants, inverse matrices, and statistical measures. Performs calculations correctly and interprets data effectively with high-level analytical ability and logical conclusions.
Good	10 – 12 Marks	Good understanding of vector and matrix concepts, matrix operations, and basic data analysis techniques. Explanations are clear with proper application. Minor calculation or conceptual errors may be present, but answers remain well-organized and relevant.
Average	07 – 09 Marks	Basic understanding and recall of vector, matrix, and elementary data analysis concepts with limited application and analysis. Answers show average presentation and lack detailed explanations or complete interpretations of results.
Basic	04 – 06 Marks	Partial understanding of vector operations, matrices, and statistical measures. Explanations are incomplete, organization is weak, and noticeable mistakes occur in calculations or interpretation of data.

Poor	01 – 03 Marks	Very limited conceptual clarity with incorrect explanations, major computational errors, insufficient content, and poor presentation.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

Rubrics – Based Evaluation Pattern for End-Semester Examination (25 Marks)		
Multiple Choice Questions (05 Marks) – 01 Mark Each from all Units		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted
Short Question (08 Marks) – 4 Question from all Units		
Excellent	02 Marks	Demonstrates accurate understanding of concepts related to questions. Provides correct calculations, appropriate formulas, and clear explanations with complete answers.
Good	01 Mark	Shows partial understanding of concepts with some correct steps or explanations. Minor errors or incomplete answers may be present.
Poor	00 Mark	Incorrect, irrelevant, or no response provided.
UNIT I - 06 Marks Each Question		
Excellent	05 – 06 Marks	Demonstrates deep understanding and critical analysis of vector concepts, matrix operations, determinants, inverses, and applications. Explanations are logical, precise, and supported with accurate calculations and interpretations.
Good	04 – 05 Marks	Good understanding and analysis of vectors and matrices. Explanations are clear with proper application of vector operations, matrix algebra, and determinants. Minor conceptual or computational errors may be present.
Average	03 – 04 Marks	Basic recall and understanding of vector and matrix concepts. Limited analytical depth and application of operations. Answers show average presentation with incomplete explanations or calculations.
Basic	02 – 03Marks	Partial understanding with incomplete explanations of vector operations, matrix multiplication, determinants, or inverses. Calculations contain noticeable errors and lack proper organization..
Poor	01 – 02 Marks	Very poor understanding with major conceptual mistakes regarding vectors and matrices. Answers contain incorrect procedures, significant computational errors, and insufficient content.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

UNIT II - 6 Marks Each Question		
Excellent	05 – 06 Marks	Demonstrates deep understanding and critical analysis of elementary data analysis concepts, including data collection, classification, tabulation, graphical representation, and measures of central tendency and dispersion. Explanations are logical, precise, and supported with accurate calculations and meaningful interpretations
Good	04 – 05 Marks	Good understanding and analysis of data analysis concepts and statistical measures. Explanations are clear with proper application of tables, charts, and basic descriptive statistics. Minor conceptual or computational errors may be present.
Average	03 – 04 Marks	Basic recall and understanding of data analysis concepts. Limited analytical depth regarding data organization, graphical representation, and computation of statistical measures. Answers show average presentation with incomplete explanations or interpretations.
Basic	02 – 03Marks	Partial understanding with incomplete explanations of data collection, tabulation, graphical methods, or measures of central tendency and dispersion. Calculations contain noticeable errors and lack proper organization.
Poor	01 – 02 Marks	Very poor understanding with major conceptual mistakes regarding elementary data analysis. Answers contain incorrect calculations, improper interpretation of data, and insufficient content.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

Note:

- Multiple Choice Questions of 5 Marks will be based on various levels of Revised Bloom's Taxonomy.
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping

Mathematics

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CLO 1	03	02	02	00	02	00
CLO 2	02	03	02	00	01	03

Note:

- High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00s**

Suggested References and E-Resources for Further Reading
• S C Gupta: Fundamentals of Statistics, Himalaya Publishing House • R P Hooda: Statistics for Business and Economics, Mac Million Publication, New Delhi • Levin & Rubin: Statistics for Manasgement, Prentice Hall of India, NewDelhi. • https://www.dcpehvpm.org/E • Content/Stat/FUNDAMENTAL.MATHEMATICAL.STATISTICS- • S.C.GUPTA&KAPOOR.pdf • https://civildatas.com/download/fundamentals-of-mathematical-statistics-by-s-c-gupta • https://www.learncbse.in/statistics-for-economics-class-11-notes-chapter-5/ • https://byjus.com/commerce/measures-of-central-tendency-arithmetic-mean/

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NAAC Reaccredited CGPA – 3.30 – Grade A+

Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)

Semester – II

Course Code	**US2MDBCA16**	**Title of the Course**	**Practical Based On Mathematics**
Total Credits	**02 Credits**	**Hours per Week**	**02 Hours / Week**

Course Learning Outcomes (CLOs)	
CLO 1	Apply the fundamental concepts of vectors and matrices, perform vector and matrix operations, like vector addition, scalar multiplication, matrix addition, matrix multiplication, transpose of matrix, square matrix, special square matrix solve problems in mathematics, science, engineering, and computing applications.
CLO 2	Apply the fundamental concepts of elementary data analysis to collect, organize, and analyze data using elementary statistical techniques, compute and interpret measures of central tendency such as mean, median, and mode, and apply these concepts to summarize data and support informed decision-making in practical situations.

Course Content		
Unit No.	**Description**	**Weightage (%)**
1.	**Vectors and Matrices** • Vectors in $\mathbb{R}n$ • Dot product and norm • Matrix addition and scalar multiplication, Matrix multiplication, • transpose of matrix • Square matrices: Row, column, Zero, Diagonal, upper and lower • triangular, Orthogonal, symmetric and skew-symmetric matrices • Determinants of matrices up to order 3 • Adjoint of Matrix, • Inverse of Matrix	**50%**
2.	**Elementary Data Analysis** • Discrete and continuous frequency distribution • Cumulative frequency distribution • Graphical representation, Measure of central tendency: Mean, Median, Mode, Geometric mean, Harmonic mean, weighted mean, combined mean	**50%**

Teaching – Learning Methodology
The topics of Vectors and Matrices and Elementary Data Analysis will be taught through a combination of interactive lectures, problem-solving sessions, worked examples, classroom discussions, and practical exercises. Students will engage in numerical computations, real-life applications, case studies, and data

interpretation activities to develop analytical and computational skills. The use of visual aids, spreadsheets, mathematical software, assignments, quizzes, and collaborative learning activities will further enhance conceptual understanding and practical application of vector operations, matrix methods, and statistical measures such as mean, median, and mode.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE		
Sr. No.	**Details of the Evaluation Pattern**	**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	**25**
	Practical Hands-on Evaluation	
02	Semester End Evaluation (SEE) (Summative Assessment)	**25**
	Practical Examination (02 Hours)	
	TOTAL(For 02 Credit Courses)	**50 Marks**

Rubrics – Based Assessment for Mid-Semester Examination (25 Marks)		
Any One Unit or 50% of The Syllabus - 11 Marks Each Question with 3 Marks Journal		
Excellent	09 – 11 Marks	Accurate and comprehensive understanding of Vectors and Matrices and Elementary Data Analysis concepts. Demonstrates excellent application of vector operations, matrix algebra, determinants, inverse matrices, and statistical measures. Performs calculations correctly and interprets data effectively with high-level analytical ability and logical conclusions.
Good	07 – 09 Marks	Good understanding of vector and matrix concepts, matrix operations, and basic data analysis techniques. Explanations are clear with proper application. Minor calculation or conceptual errors may be present, but answers remain well-organized and relevant.
Average	05 – 07 Marks	Basic understanding and recall of vector, matrix, and elementary data analysis concepts with limited application and analysis. Answers show average presentation and lack detailed explanations or complete interpretations of results.
Basic	03 – 05 Marks	Partial understanding of vector operations, matrices, and statistical measures. Explanations are incomplete, organization is weak, and noticeable mistakes occur in calculations or interpretation of data.

Poor	01 – 03 Marks	Very limited conceptual clarity with incorrect explanations, major computational errors, insufficient content, and poor presentation.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

Rubrics – Based Assessment for End-Semester Examination (25 Marks)		
All Units of The Syllabus - 11 Marks Each Question with 3 Marks Journal		
Excellent	09 – 11 Marks	Accurate and comprehensive understanding of Vectors and Matrices and Elementary Data Analysis concepts. Demonstrates excellent application of vector operations, matrix algebra, determinants, inverse matrices, and statistical measures. Performs calculations correctly and interprets data effectively with high-level analytical ability and logical conclusions.
Good	07 – 09 Marks	Good understanding of vector and matrix concepts, matrix operations, and basic data analysis techniques. Explanations are clear with proper application. Minor calculation or conceptual errors may be present, but answers remain well-organized and relevant.
Average	05 – 07 Marks	Basic understanding and recall of vector, matrix, and elementary data analysis concepts with limited application and analysis. Answers show average presentation and lack detailed explanations or complete interpretations of results.
Basic	03 – 05 Marks	Partial understanding of vector operations, matrices, and statistical measures. Explanations are incomplete, organization is weak, and noticeable mistakes occur in calculations or interpretation of data.
Poor	01 – 03 Marks	Very limited conceptual clarity with incorrect explanations, major computational errors, insufficient content, and poor presentation.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

Note:
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping						
Mathematics						
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CLO 1	03	02	02	00	02	00
CLO 2	02	03	02	00	01	03

Note:
- High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00**

Suggested References and E-Resources for Further Reading
• S C Gupta: Fundamentals of Statistics, Himalaya Publishing House • R P Hooda: Statistics for Business and Economics, Mac Million Publication, New Delhi • Levin & Rubin: Statistics for Management, Prentice Hall of India, NewDelhi. • https://www.dcpehvpm.org/E • Content/Stat/FUNDAMENTAL.MATHEMATICAL.STATISTICS- • S.C.GUPTA&KAPOOR.pdf • https://civildatas.com/download/fundamentals-of-mathematical-statistics-by-s-c-gupta • https://www.learncbse.in/statistics-for-economics-class-11-notes-chapter-5/ • https://byjus.com/commerce/measures-of-central-tendency-arithmetic-mean/

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NAAC Reaccredited CGPA – 3.30 – Grade A+

Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Application (BCA)
Semester – II

Course Code	**US2\AEBCA17**	**Title of the Course**	**Foundation of Communication Skills in English-II**
Total Credits	**02 Credits**	**Hours per Week**	**02 Hours / Week**

Course Learning Outcomes (CLOs)	
CLO 1	Develop effective oral communication and job-related skills.
CLO 2	Apply business writing and professional communication skills.

Course Content		
Unit No.	**Description**	**Weightage (%)**
1.	**Effective Oral Communication Skills & Job Skills** • Effective presentation Skills; Putting the message across, Body Language, • Proxamics and Kinesics, dealing with Nerves, Using Visual Aids • Language of Meetings and participating in a seminar Telephone Techniques − Writing Job Application and CV • Interview Skills i.e., General Preparation for an Interview, Types of Questions generally asked in interviews, Types of interviews, Importance of non-verbal aspect. • Self-development Skills: i.e., Assertiveness, Stress Management, Time Management • Interpersonal Skills: Team Development Skills i.e., Team-Talk Dynamics, Communication in Teams, Leadership-Skills, Giving-Feedback	**50%**
2.	**Writing Skills in Business Communication and Individual Project** • Issues in Writing Business Letters i.e., Structure and Types of Business • Letters, Letters of Inquiry, Complaint, Adjustment and Regret • Report Writing Skills i.e., Types of Reports, Characteristics of a Good Report, Preparing and Organizing a Report and Individual reports (a report about the need to computerize the activities of your	**50%**

	department) • Students can be made to work individually on detailed projects based on the following topics. However, the list given below is not exhaustive and thus any topic related to the areas of Communication and Personality Development can be worked upon in the interest of the students: • Process of Communication • Barriers of Communication • Types of Communication • Objectives of Communication • Stress Management • Time Management • Leadership Quality • Teamwork • Body Language • Presentation Skills • Group Discussion Skills • Personal Interview Skills • Feedback Skills	

Teaching – Learning Methodology
Role Play, Discussion and Debate, Think-Pair-Share, Traditional Classroom Teaching, as well as Usage of ICT Tools.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE			
Sr. No.	**Details of the Evaluation Pattern**		**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)		
	A	Assignments	10
	B	Multiple Choice Questions	05
	C	Attendance	05
	D	Written Examination (01 Hour)	30
		(Formative Assessment) (A + B + C + D)	**50 Marks**
	Note: • For 02 Credit Courses, the Formative Assessment for students must be from 25 Marks. Thus, the total obtained marks from A + B + C + D (50 Marks) will be divided by 02.		**25 Marks**
02	Semester End Evaluation (SEE) (Summative Assessment)		
	E	Written Examination (01 Hour)	**25 Marks**
		TOTAL	**50 Marks**

Rubrics – Based Assessment for Assignments (10 Marks)		
Excellent	09 – 10 Marks	Accurate, error-free, logically presented, timely submission
Good	07 – 08 Marks	Minor errors and good conceptual clarity
Average	05 – 06 Marks	Basic understanding or partially correct
Basic	03 – 04 Marks	Limited clarity, noticeable mistakes, incomplete content
Poor	01 – 02 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	Content is irrelevant / Not Attempted / Not Submitted
Note: • Assignments may be taken in forms of written project, computerized and online suggested courses / certificates as per the decision made by the respective faculties of the courses.		

Rubrics – Based Assessment for Multiple Choice Questions (05 Marks)		
05 Multiple Choice Questions – 01 Mark Each (05 Marks)		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted

Rubrics – Based Assessment for Attendance (05 Marks)		
As per the Rules and Regulations provided by the Academic Section of Sardar Patel University, Vallabh Vidyanagar, for the students studying in all departments and colleges. Reference No.: E – 3 / 3127; dated: 07-03-2024. https://www.spuvvn.edu/orbit-cdn/uploads/circulars/Circular-NEP-InternalExamMarks-March-April24.pdf		
Excellent	05 Marks	More than 90% (Minimum 27 Hours for 02 Credits Courses)

Good	04 Marks	80% - 89% (24 to 26 Hours for 02 Credit Courses)
Average	03 Marks	70% - 79% (21 to 23 Hours for 02 Credit Courses)
Poor	Zero / NA	Less than 70% (**NOT ELIGIBLE TO APPEAR FOR EXAM)**

Note:

- Students with below 70% of attendance must submit their written application to their respective class coordinators with genuine reasons and evidence (in case of working or medical emergencies). Students must **not** pursue dual degree programmes that clash with the college's timings.

Rubrics – Based Assessment for Mid-Semester Examination (30 Marks)		
Any One Unit or 50% of The Syllabus - 15 Marks Each Question		
Excellent	13 – 15 Marks	Demonstrates clear understanding of oral communication, presentation, interview skills, and business writing. Accurate explanations, correct use of terminology, well-structured answers, and proper application such as report writing, business letters, and communication techniques with relevant examples.
Good	10 – 12 Marks	Minor errors, good conceptual clarity of communication and job skills. Mostly correct explanations with appropriate examples.
Average	07 – 09 Marks	Basic understanding of communication concepts, but explanations may be incomplete or partially incorrect. Limited coverage of topics.
Basic	04 – 06 Marks	Limited clarity of concepts. Noticeable mistakes, incomplete answers, missing key points such as writing formats or communication techniques.
Poor	01 – 03 Marks	Inadequate understanding of concepts. Incorrect explanations, irrelevant content, inability to apply communication or writing skills.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

Note:

- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

Rubrics – Based Evaluation Pattern for End-Semester Examination (25 Marks)		
Multiple Choice Questions (05 Marks) – 01 Mark Each from all Units		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted

Short Question (08 Marks) – 4 Question from all Units		
Excellent	02 Marks	Demonstrates accurate understanding of concepts related to questions.
Good	01 Mark	Shows partial understanding of concepts. Minor errors or incomplete answers may be present.
Poor	00 Mark	Incorrect, irrelevant, or no response provided.
UNIT I - 06 Marks Each Question		
Excellent	05 – 06 Marks	Demonstrates comprehensive understanding of the topic. Concepts are accurate, well-organized, and explained clearly with logical reasoning, relevant examples, illustrations, or applications wherever appropriate.
Good	04 – 05 Marks	Shows good understanding of the topic with clear explanations and relevant examples. Minor conceptual gaps may be present, but the overall answer is accurate and well presented.
Average	03 – 04 Marks	Demonstrates basic understanding and recall of the topic. Explanations are generally correct but lack analytical depth, detail, or adequate examples.
Basic	02 – 03Marks	Shows partial understanding of the topic. Explanations are incomplete, lack clarity and organization, and include limited supporting details or examples.
Poor	01 – 02 Marks	Demonstrates very limited understanding of the topic with major conceptual errors, insufficient content, and weak presentation.
Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

UNIT II - 6 Marks Each Question		
Excellent	05 – 06 Marks	Demonstrates comprehensive understanding of the topic. Concepts are accurate, well-organized, and explained clearly with logical reasoning, relevant examples, illustrations, or applications wherever appropriate.
Good	04 – 05 Marks	Shows good understanding of the topic with clear explanations and relevant examples. Minor conceptual gaps may be present, but the overall answer is accurate and well presented.
Average	03 – 04 Marks	Demonstrates basic understanding and recall of the topic. Explanations are generally correct but lack analytical depth, detail, or adequate examples.
Basic	02 – 03Marks	Shows partial understanding of the topic. Explanations are incomplete, lack clarity and organization, and include limited supporting details or examples.
Poor	01 – 02 Marks	Demonstrates very limited understanding of the topic with major conceptual errors, insufficient content, and weak presentation.

Below Poor	Zero Marks / NA	No attempt or completely irrelevant answer.

Note:

- Multiple Choice Questions of 5 Marks will be based on various levels of Revised Bloom's Taxonomy.
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping

Foundation of Communication Skills in English-II

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CLO 1	03	02	02	00	02	00
CLO 2	02	03	02	00	01	03

Note:

- High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00s**

Suggested References and E-Resources for Further Reading

- Wren & Martin: High School English Grammar and Composition, S. Chand & Company.
- Sanjay Kumar & Pushp Lata: Communication Skills, Oxford University Press.
- Raymond Murphy: English Grammar in Use, Cambridge University Press.
- Urmila Rai & S.M. Rai: Business Communication, Himalaya Publishing House
- Kulbhushan Kumar: Effective Communication Skills, Khanna Publishing House
- Wren & Martin: High School English Grammar and Composition, S. Chand & Company.
- Sanjay Kumar & Pushp Lata: Communication Skills, Oxford University Press.
- https://www.britishcouncil.org/english
- https://www.grammarly.com/blog/
- https://www.bbc.co.uk/learningenglish
- https://www.tutorialspoint.com/business_communication/index.htm

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NAAC Reaccredited CGPA – 3.30 – Grade A+

Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Bachelor of Computer Applications (BCA)

Semester – II

Course Code	US2SEBCA18	Title of the Course	Multimedia Technology
Total Credits	02 Credits	Hours per Week	02 Hours / Week

Course Learning Outcomes (CLOs)	
CLO 1	Understand fundamental concepts related to multimedia technology.
CLO 2	Understand how to work with text, audio, video and graphics.

Course Content		
Unit No.	Description	Weightage (%)
1.	**Introduction** • Multimedia : meaning • Various facets of multimedia : text, audio, video, animation graphics • Classification of multimedia technology • Multimedia : hardware/software essentials • Different categories of multimedia software.	50%
2.	**Working with Text, Audio, Graphics** • Multimedia Text: Introduction, designing text for multimedia, hypermedia, hypertext • Multimedia Audio : Introduction, digital audio and sound card fundamentals, sound card functionalities, audio jacks, connectors, digital audio playback, audio editing • Multimedia graphics : introduction, basic concepts of colour displays, monitor video modes, colour monitors and their parameters, graphics in multimedia projects	50%

Teaching – Learning Methodology
The course would be taught /learnt through ICT (e.g. Power Point Presentation, Audio-Visual Presentation), Lectures, Quizzes, Assignments, Case Study and Browsing E- Resources.

Examination Evaluation Pattern		
Sr. No.	**Particulars**	**Weightage (%)**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)	50%
02	Semester End Evaluation (SEE) (Summative Assessment)	50%
	TOTAL	**100%**

Specifications for CCE and SEE			
Sr. No.	**Details of the Evaluation Pattern**		**Marks**
01	Continuous and Comprehensive Evaluation (CCE) (Formative Assessment)		
	A	Assignments	10
	B	Multiple Choice Questions	05
	C	Attendance	05
	D	Written Examination (01 Hour)	30
	(Formative Assessment) (A + B + C + D)		**50 Marks**
	Note: • For 02 Credit Courses, the Formative Assessment for students must be from 25 Marks. Thus, the total obtained marks from A + B + C + D (50 Marks) will be divided by 02.		**25 Marks**
02	Semester End Evaluation (SEE) (Summative Assessment)		
	E	Written Examination (01 Hour)	**25 Marks**
	TOTAL		**50 Marks**

Rubrics – Based Assessment for Assignments (10 Marks)		
Excellent	09 – 10 Marks	Accurate, error-free, logically presented, timely submission
Good	07 – 08 Marks	Minor errors and good conceptual clarity
Average	05 – 06 Marks	Basic understanding or partially correct
Basic	03 – 04 Marks	Limited clarity, noticeable mistakes, incomplete content
Poor	01 – 02 Marks	Inadequate conceptual clarity, incorrect content
Below Poor	Zero Marks / NA	Content is irrelevant / Not Attempted / Not Submitted
Note: • Assignments may be taken in forms of written project, computerized and online suggested courses / certificates as per the decision made by the respective faculties of the courses.		

Rubrics – Based Assessment for Multiple Choice Questions (05 Marks)		
05 Multiple Choice Questions – 01 Mark Each (05 Marks)		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted

Rubrics – Based Assessment for Attendance (05 Marks)		
As per the Rules and Regulations provided by the Academic Section of Sardar Patel University, Vallabh Vidyanagar, for the students studying in all departments and colleges. Reference No.: E – 3 / 3127; dated: 07-03-2024. https://www.spuvvn.edu/orbit-cdn/uploads/circulars/Circular-NEP-InternalExamMarks-March-April24.pdf		
Excellent	05 Marks	More than 90% (Minimum 27 Hours for 02 Credits Courses)
Good	04 Marks	80% - 89% (24 to 26 Hours for 02 Credit Courses)
Average	03 Marks	70% - 79% (21 to 23 Hours for 02 Credit Courses)
Poor	Zero / NA	Less than 70% (**NOT ELIGIBLE TO APPEAR FOR EXAM)**

Note:

- Students with below 70% of attendance must submit their written application to their respective class coordinators with genuine reasons and evidence (in case of working or medical emergencies). Students must **not** pursue dual degree programmes that clash with the college's timings.

Rubrics – Based Assessment for Mid-Semester Examination (30 Marks)		
Any One Unit or 50% of The Syllabus - 15 Marks Each Question		
Excellent	13 – 15 Marks	Demonstrates clear understanding of multimedia concepts (text, audio, graphics), accurate explanations, proper use of terminology, well-structured answers, and correct application of concepts such as hypertext, audio systems, and graphics principles
Good	10 – 12 Marks	Minor errors, good conceptual clarity of multimedia elements, mostly correct explanations with proper examples
Average	07 – 09 Marks	Basic understanding of multimedia concepts, some incorrect or incomplete explanations, partial coverage of topics
Basic	04 – 06 Marks	Limited clarity of multimedia concepts, noticeable mistakes, incomplete answers or missing key points
Poor	01 – 03 Marks	Inadequate understanding of concepts like text/audio/graphics, incorrect explanations, irrelevant content
Below Poor	Zero Marks / NA	Not attempted or completely irrelevant answer

Note:

- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

Rubrics – Based Evaluation Pattern for End-Semester Examination (25 Marks)		
Multiple Choice Questions (05 Marks) – 01 Mark Each from all Units		
Excellent	01 Mark	The chosen option is correct, no errors in response
Below Poor	Zero Marks / NA	Chosen option is incorrect, completely irrelevant, multiple options chosen / Not Attempted

Short Question (08 Marks) – 4 Question from all Units		
Excellent	02 Marks	Demonstrates accurate understanding of concepts related to questions. Provides correct explanation, appropriate figures, and clear explanations with complete answers.
Good	01 Mark	Shows partial understanding of concepts with some correct steps or explanations. Minor errors or incomplete answers may be present.
Poor	00 Mark	Incorrect, irrelevant, or no response provided.
UNIT I - 06 Marks Each Question		
Excellent	05 – 06 Marks	Comprehensive explanation of multimedia concepts, facets (text, audio, video, graphics, animation), classification, hardware/software with correct terminology and examples
Good	04 – 05 Marks	Good understanding of multimedia concepts with minor errors or missing details
Average	03 – 04 Marks	Basic explanation of key concepts, but lacks depth and clarity
Basic	02 – 03Marks	Limited understanding, incomplete explanation of topics
Poor	01 – 02 Marks	Incorrect or irrelevant explanation of multimedia concepts
Below Poor	Zero Marks / NA	Not attempted or completely irrelevant

UNIT II - 6 Marks Each Question		
Excellent	05 – 06 Marks	Clear and detailed explanation of multimedia text, hypertext/hypermedia, audio fundamentals, sound cards, graphics concepts with proper examples and diagrams
Good	04 – 05 Marks	Good understanding with minor mistakes in explanation or missing examples
Average	03 – 04 Marks	Basic understanding of text, audio, and graphics concepts with partial correctness
Basic	02 – 03Marks	Limited clarity, incomplete coverage of topics
Poor	01 – 02 Marks	Poor understanding, incorrect explanations
Below Poor	Zero Marks / NA	Not attempted or irrelevant

Note:

- Multiple Choice Questions of 5 Marks will be based on various levels of Revised Bloom's Taxonomy.
- Written Examination questions will be based on various levels of Revised Bloom's Taxonomy.

PLO – CLO Mapping

Multimedia Technology

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CLO 1	3	2	0	2	1	0
CLO 2	2	3	2	0	2	0

Note:

- High: **03**; Moderate: **02**; Low: **01**; No Mapping: **00s**

Suggested References and E-Resources for Further Reading
• Multimedia Magic. By S. Gokul, BPB Publications, 1998 and (Revised and updated Second Edition) 2005.
• Introduction to Multimedia : By Ana Weston Solomon, Tata McGraw-Hill Publishing Company Limited, 2005.
• https://www.geeksforgeeks.org/what-is-multimedia/
• https://www.tutorialspoint.com/multimedia_systems/multimedia_introduction.htm
• https://www.tutorialspoint.com/multimedia_systems/multimedia_audio.htm
• https://www.geeksforgeeks.org/digital-audio-and-sound/