

**KADI SARVA VISHWAVIDYALAY
GNADHINAGR**

PROPOSED SYLLABUS

for

B C A

(Bachelor of Computer Applications)

in

Choice Based Credit System

**W. E. F.
JUNE - 2017**

Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester I

BCA101 – Part 1 – Environment

Environmental Studies

Rationale :Environmental Science is an interdisciplinary subject which draws on the content of several disciplines to offer a balanced scientific and holistic perspective of environmental issues. Its provides knowledge, skills and attitudes to identify, prevent and solve environmental problems and thereby prepares students for ultimate careers in diverse fields of relevance to environmental management and to sustainable development of the nation.

Learning Outcomes:

1. Stimulate interest in the environment
2. Understand the interdisciplinary and holistic nature of environment.
3. Develop knowledge and understanding of environmental issues and principles and the ability to apply this environmental management.
4. Provide and understand of interactions between people and the environment
5. Increase an awareness of the importance of leaving in harmony with the environment.
6. Develop and understanding of how natural resources and the environment affect the quality of life and the quest for sustainable development of nation.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 101	Environment	Environmental Studies	2	2	15	35	-	-	50

COURSE CONTENT

Unit I (50%)

- Definition, scope and basic principles of ecology and environment -2 Hrs.
- Natural Resources –Renewable and Non-renewable resources - 2 Hrs.
- Current environmental issues – climate change, Global warming, Acid rain, Ozone layer depletion – 4 Hrs.
- Pollution- Air, Water ,Soil , Marine , Thermal, Noise pollution- causes and effects – 4 Hrs.

No. of lectures: 12

Unit II (50%)

- Ecosystem : Basic concepts, components of ecosystem. – 1 Hr.
- Trophic levels, food chains and food web – 1 Hr
- Ecological pyramids, ecosystem functions. – 2 Hrs.
- Energy flow in ecological systems, energy efficiencies – 2 Hrs.
- Biogeochemical Cycles: Importance, gaseous and sedimentary cycles. Carbon, Nitrogen, Phosphorus, hydrogen and Sulphur Cycles. – 6 Hrs.

No. of lectures: 12

References:

1. Modi C D & others (2006) Paryavaran and Aapatti Vyavasthapan [Gujarati], Swami prakashan, Patan-384265
2. Patel J C (2006) Paryavaran and disaster management [Gujarati], Parshwa publication, Ahmedabad-380001
3. Erachs Bharucha (2008, first edition) Paryavaran Adhyayan [Gujarati], Orient Longman Pvt. Ltd., Hyderabad.
4. Distributor: M/S Himanshu book company, 06-07 Shri Jayendrapuri Bhavan, Ellisbridge, New Sanyas Ashram, Ahmedabad – 380 006.
5. K Ramana Murthi, 2004 Disaster Management, Dominant Publishers and Di stributors, New Delhi -110002

Question Paper Scheme:

University Examination	Duration: 1.5 Hours.	Total marks: 35
Q.1-Unit-I & II	Objective / Short Questions	(11 Marks)
Q.2-Unit-I	Descriptive / Long questions	(12 Marks)
Q.3-Unit-II	Descriptive / Long questions	(12 Marks)

Note: Q.2 and Q.3 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

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BCA Semester I

BCA102 – Part 1 – Language: English

Communication Skills

Rationale:

Communication is a dynamic human activity and must keep pace with people’s life style, business and occupations. As English is considered as a window to the world, it has become an essential part of communication.

The course has been devised which can help the students to develop their linguistic skills- listening, speaking, reading and writing. It also makes them communicate well in English that includes oral as well as written communication. It proves to be an effective and useful tool as it motivates the student to participate in presentation, group discussions, debates etc...

Learning Outcomes: The student will be able to ...

- Make them communicate effectively in all the areas of life.
- Consolidate the command of basic words.
- Learn new words as well as the meaning of the new words.
- Get into some of processes of word-formation in English.
- Acquaint students with all the important idiomatic expressions.
- Enrich their vocabulary skills.
- Give them opportunity of creative and imaginative thinking by giving them group tasks and activities.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 102	Language: English	Communication Skills	2	2	15	35	-	-	50

Course Content:

Unit: 1 - Fundamentals of Communication:

(50%)

- Meaning of communication (Book 3: Pg no.1)
- Process of Communication/Communication Cycle (Book 3: Pg no.9,10)
- 7 C's of Communication (Book 3: Pg no.9,10)
- Barriers to Effective Communication: Semantic barrier and Psychological Barrier (Book 3: Pg no.29)
- Listening: Difference between Hearing and listening, Steps of Listening (Book 3: Pg no.51, 59, 60)

No. of Lectures: 10

Unit: 2 - Types of Communication:

(50%)

- Verbal Communication–Oral and written communication, its advantages and disadvantages (Book 4: Points to be covered 2.1.1.1- 2.1.2, 2.1.3)
- Forms of Non-verbal Communication: Kinesics, proxemics, Chronemics and paralanguage (Book 3: Pg no.37,39,40)
- Speaking skills: Telephonic Skills, Do's and Don'ts of Telephonic skills
- (Book 3: Pg no.61-64)
- Situational Dialogues: Making inquiries at the bank, post-office, hospital and college
- (Book 3: Pg no. 70-72)
- Reading Comprehension

No. of Lectures: 10**Reference Books:**

Book 1. Business Communication, Meenakshi Raman & Sangeeta Sharma, Oxford.
Book 2. Basic Communication Skills for Technology, Andrea Rutherford, Person
Book 3. Rosily Victor, Communication Skills, Synergy Knowledgeware (Mumbai)
Book 4. Communication Skills, D.K Chakradev

Sources Required:

Projector and speakers in class

Activities:

- Speaking Activities: Role Play and communicative activities
- Listening audio
- Giving Self-Introduction & Introducing friends
- Reading paragraph and news

Question Paper Scheme:

University Examination	Duration: 1.5 Hours.	Total marks: 35
Q.1-Unit-I & II		(11 Marks)
Objective / Short Questions		
Q.2-Unit-I		(12 Marks)
Descriptive / Long questions		
Q.3-Unit-II		(12 Marks)
Descriptive / Long questions		

Note: Q.2 and Q.3 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

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BCA Semester I

BCA103 – Part 2: Core 1

Programming Paradigm with ‘C’

Rationale:

To develop the basic concepts of programming using world’s most popular Middle Level Language through “C”

Learning outcomes: The Students will be able to . . .

- Create fundamentals of structure programming with basic structure
- Develop program. In such a way that machine can take decision by programming
- Know importance of an array by real life example as well as technical problem solving.
- Develop functions and enrich their skill to library function and user define side.

Teaching Methodology:

- Application and Real life examples
- Theory Method with illustration and presentation
- Models
- Charts
- Practical Implementation Simulators
- Animated video

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 103	Core	Programming Paradigm with ‘C’	4	4	30	70	-	-	100

Course Content:

Unit-I (25%)

Objective: This reference has been prepared for the beginners to help them understand Logic Development, execution of program.

Introduction to Programming and Tools of Problem Analysis: Concept and need of programming language, Concepts of Algorithm and Flowchart (with example), Translator- Compiler, Interpreter, linker, loader and assembler.

Overview of C: Introduction, History of C, Basic structure of C program, Sample of C program, executing of C program. Character Set, Usage of C tokens, Types of Tokens- Constants, Keywords, Identifiers, Variables (Declaration and Rules), Defining symbolic constants, Back Slash Character.

Text Book Reference Page No: 1 to 30

Unit-II

(25%)

Objective: Get brief idea of operators, data type, formatted and non-formatted input output functions for building block of Programming in C.

Basics Of C Language: Introduction, Need of Operators-Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, importance of Data Types, Types of Data Types, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, implicit and explicit Type conversions in built-in data type, Operator precedence and associativity, Mathematical functions (pow(), sqrt(), ceil(), floor())

Input Output Functions: Formatted and Non-formatted- Printf(), Scanf(), getchar(), putchar(), clrscr(), getch(), gets(), puts().

Text Book Reference Page No: 31 to 98

Unit-III

(25%)

Objective: Learn about Decision type Control, Looping type control and special control constructs in C and the technique of putting them to use in certain condition or repeat a group of statements.

Control and Iterative Statement: Concept and Application of Decision making Statement - Simple IF statement, IF ELSE statement, Nesting of IF ... ELSE statements, ELSE IF ladder, Switch statement, ternary (? :) Operator, GOTO statement.

Decision Making Looping: Concept and Application of Looping - WHILE statement, DO- WHILE statement, FOR statement, Break and continue, Nested Looping.

Text Book Reference Page No: 114 to 174

Unit-IV

(25%)

Objective: Get brief idea about how to handle large volume of data in terms of reading, processing and printing. Understand what a string function is and how its use benefits in program.

Array and Strings: Concept and Application of Array, Declaration and initialization of One-dimensional arrays, Declaration and initialization of Two-dimensional arrays, Concept of Multidimensional arrays.

Handling of Character strings: Declaring and initializing string variables, Reading strings from terminal, writing strings to screen.

String Operations: Importance of String Handling functions - String Copy, String Compare, String Concatenation and String Length, Table of strings

Text Book Reference Page No: 190 to 252

Text Book: Programming in ANSI C, Balagurusamy, Tata McGraw-Hill 5th Edition

Reference Books:

1. Programming in C, by Pradip Dey & Manas Ghosh, Publisher–Oxford
2. The Complete Reference, Herbert schildt Fourth Edition
3. Let Us C , Yashwant Kanetkar, BPB Publications
4. Programming in C, by Reenathareja Publisher–Oxford

Reference Link:

- www.carrerskill.com www.mcqsets.com
- www.indiabix.com www.sanfoundry.com

Question Paper Scheme:

University Examination	Duration: 3 Hours.	Total marks: 70
Q.1-Unit-I & II		(11 Marks)
Objective / Short Questions		
Q.2-Unit-I		(12 Marks)
Descriptive / Long questions		
Q.3-Unit-II		(12 Marks)
Descriptive / Long questions		
Q.4-Unit-III & IV		(11 Marks)
Objective / Short Questions		
Q.5-Unit-III		(12 Marks)
Descriptive / Long questions		
Q.6-Unit-IV		(12 Marks)
Descriptive / Long questions		

Note: Q.2,3,5 and Q.6 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

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Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester I

BCA104 – Part 2: Core 2

Internet Technology

Rationale:

The aim of this course is to provide the conceptual and technological developments in the field of internet and web designing with the emphasis knowledge of internet. The internet Web with its wide spread usefulness has become an integral part of the internet. Therefore, this course also puts emphasis on basic knowledge of internet, concepts of web designing and tools to design web pages.

Learning Outcomes:

- Review the current topics in web and internet technologies
- Describes the basic concepts for email and social networking
- Learn the basic working scheme of the internet and WWW
- Understand fundamental tools and technologies for web designing
- Comprehend the technologies for HTML (Hyper Text Markup Language)
- Specify design rules in constructing web pages and sites
- Effectively deal with designing issues and techniques with CSS

Resource Utilization:

Projector, Computer Lab, Internet, CSS Templates for Expansion of work, Reference Webpage Designs.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 104	Core	Internet Technology	4	4	30	70	-	-	100

Course content:

Unit: 1 Internet, Internet Technology and web applications: (25%)

Objective: Student will be able to work on internet and its related applications. They can search their interest using internet services. Student will get awareness about the appropriate use of search engines and surfing.

Content:

Introduction to Internet, Extranet, Intranet: Advantages of internet, Access of internet - Dial Up, Cable Modem Connection and WIFI. WWW. Web page, Web site, Hyperlink, URL, Introduction to Internet Domain Name System, FTP, Web Browsers and Web Servers. Uploading and Downloading files, Search Engines, Do's and Dont's for Search Engine, Email Communication and Social Networking (Uses, advantages and disadvantages)

Text book 1: Page nos: 1 to 39

No of Lectures: 07

Unit: 2 HTML - Basics and Advance

(25%)

Objective: Student will be able to learn the language of the web: HTML. Understands HTML tags to develop the static web pages. Understand the importance of the web as a medium of communication. Understand the principles of creating an effective web page, including an in-depth consideration of information architecture. Develop skills in analyzing the usability of a web site.

Content:

Basics of HTML: Introduction to HTML, HTML Documents Structure tags, text formatting tags (Block Formatting, Character Formatting), Link (Anchor) Tag, List Tag, Image, Audio-Video Tags, Marquee Tag,

Advance HTML: HTML Tables – Operations, Spanning on rows and columns, HTML Frames – HORIZONTAL AND VERTICAL FRAMESET, Inline frame and no frame, HTML Forms – Input, textarea, Selection list, fields.

Text book 1: page nos: 46 to 149

No of Lectures: 10

Unit: 3 Introduction Cascading Style Sheet

(25%)

Objective: The purpose of CSS is to provide Web developers with a standard way to define, apply, and manage sets of style characteristics.

Content:

Why CSS, what is CSS, CSS Syntax, CSS Inclusion, CSS Measurement units, CSS Colors, CSS Background, CSS Font and Text, CSS – working with images , CSS Links, CSS Tables and Borders, CSS Margins, CSS List, CSS Padding, CSS Scrollbar, ID and Class Selector, Inline, Internal and External stylesheet.

Textbook 1: page nos: 154 to 177

No of Lectures: 09

Unit:4 Advance CSS and CSS3

(25%)

Objective: Advance CSS and CSS3 introduces new client-side web designs. Student learns the CSS skills needed to create professional looking web pages.

Content:

CSS – Visibility, Positioning, layers, Pseudo Classes, Text effects, Media Type, Aural Media, Layouts, Printing, CSS – Rounded corner, Border Image, Multibackground, CSS3 – color, gradients, shadows, text, 2D and 3D Transform, Multicolumn, User Interface and Box sizing.

No of Lectures: 10

Web Reference:

www.W3Schools.com,

www.tutorialspoint.com

Textbook: Introduction to Internet and HTML Scripting by Bhaumik Shroff –

Books India PVT LTD References: Web Technology and design – C Xavier

Question Paper Scheme:

University Examination	Duration: 3 Hours.	Total marks: 70
Q.1-Unit-I & II	Objective / Short Questions	(11 Marks)
Q.2-Unit-I	Descriptive / Long questions	(12 Marks)
Q.3-Unit-II	Descriptive / Long questions	(12 Marks)
Q.4-Unit-III & IV	Objective / Short Questions	(11 Marks)
Q.5-Unit-III	Descriptive / Long questions	(12 Marks)
Q.6-Unit-IV	Descriptive / Long questions	(12 Marks)

Note: Q.2,3,5 and Q.6 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

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Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester I

BCA105 – Part 2: Core 3

Digital Electronics

Rationale:

The objective of this course is to familiarize students with concepts of fundamentals of Information Technology and detailed working of computer and its application.

Prerequisite:

DIGITAL ELECTRONICS is to enable students to have an understanding of computer organization and architecture of digital computer. The student will be able to assemble the computer and have a better understanding of the internal working of the circuits. The knowledge component to compute a program and to understand the basic working of a digital computer by accepting binary digits as inputs, process these signals and give the required output as acquired.

Learning Outcomes: The student will be able to understand:

- Basic attributes of computer and the hardware configuration.
- Numbering systems and their conversion into different systems like binary, Hex-decimal, Octal.
- Techniques of designing logical circuits using logical GATES.

Resource Utilization:

Lecture based on Activity Oriented Classroom Teaching by availing Projector, simulator, physical bread board, jumpers, switches, etc.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 105	Core	Digital Electronics	4	4	30	70	-	-	100

UNIT-1 – Components of a Computer (25%)

Objective: To have a thorough understanding of the basic structure and operation of a digital computer. The detail operation of the arithmetic unit, control unit, memory unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication

and division is explained.

Content

Generation of Computer (1st, 2nd, 3rd, 4th & 5th), Classification of Computer System (Super – Mainframe – Personal Computer) , Computer block diagram , input device (Key Board, Mouse, Joystick, Track Ball, Light Pen, Scanner , OMR –Bar Code Reader, MICR-OCR, Processing Device (CPU, ALU, CONTROL UNIT) , Output device (Printer , Monitor , Plotter) , storage unit (RAM, ROM, PROMS, EPROM, secondary storage device (Floppy Disk, Optical Disk, Magnetic Disk, Magnetic Tape , Hard Disk).

Topic: - 2-1, 2-3, 2-4, 2-2, 2-5 TEX BOOK – 2

No. of Lectures: 10

UNIT-2 – Number systems and Codes

(25%)

Objective: Digital Computer has two signals that is either ON or OFF, ON signifies the passage of current, symbolised by “1” and OFF signifies the absence of current, symbolised by “0”. All computer data is composed of 1s and 0s, which is the binary data, called as “BIT”. Four bits is a “Nibble”. Eight bits is a “Byte”. From there we have kilobytes, megabytes, etc. Since everything is a series of 1s and 0s, the CPU has to perform every calculation in binary. But before any operations are done, numbers have to first be converted into base 2. So conversions will give an idea to students the actual working of computations

Content

Decimal odometer, Binary odometer, Number code, binary to decimal conversion, decimal to binary conversion, hexadecimal numbers, hexadecimal to binary conversion, hexadecimal to decimal conversion, decimal to hexadecimal conversion, BCD numbers.

Topic :- 1-1,1-2,1-3,1-5,1-7,1-8,1-9,1-10,1-11,1-12.TEX BOOK – 1.

No. of Lectures: 10

UNIT-3 – LOGIC GATES and ARITHMETIC LOGIC UNIT

(25%)

Objective: Digital systems are said to be constructed by using logic gates. The logic gates are the building blocks for all computers, smart phones and the whole internet.

Content

Basic Gates like OR gate, AND gate, Boolean algebra, NOR gate, De Morgan’s first theorem, NAND gate, De Morgan’s second theorem, EXCLUSIVE-OR gate, EXCLUSIVE-NOR gate, Multiplexers, inverter.

Topic: - 2-1, 2-2, 2-3, 2-4, 3-1, 3.2, 3-3, 3-4, 3-5, 3-7, 4-7, TEX BOOK – 1. No. of Lectures: 12

UNIT-4 – BOOLEAN ALGEBRA

(25%)

Objective: It formalizes the rules of logic. Boolean algebra is used to

simplify Boolean expressions which represent combinational logic circuits.

Content

Instruction Set Design (Accumulator, Stack Based, Register Based), Instruction Cycle/CPU Operation, Binary addition binary subtraction, half adders, full adders, binary adders, 2's complement adder subtracted. Flip-Flops (RS Latch , D , JK Master-Slave)

Topic: - 3.3.1,3.3.2,3.3.3,1.6.1,1.6.2-Text Book-3, 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7 , 6-1, 6-2, 6-3, 6-4, 6-5, 6-8 ,7-1 , 7-3 ,7-6 TEX BOOK – 1. No. of Lectures: 10

Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Teaching and Evaluation Scheme: The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Bread Board, Android Apps. , Regular Attendance (i.e. Minimum 85%).

Text Books:

1. DIGITAL COMPUTER ELECTRONICS BY- MALVINO AND BROWN.(TATA McGRAW-HILL EDITION) = UNIT-1,2,3
2. “O” LEVEL, MADE SIMPLE IT TOOLS AND APPLICATION BY SATIESH JAIN(BPB PUBLICATION).
3. COMPUTER ARCHITECTURE AND ORGANIZATION BY B GOVINDARAJALU

Reference Books

1. DIGITAL PRINCIPAL AND APPLICATION BY ALBERT PAUL MALVINO AND DONALD P. LEACH(TATA McGRAW-HILL EDITION)
2. FUNDAMENTAL OF DIGITAL CIRCUITS BY A.ANAND KUMAR(PRENTICE-HALL OF INDIA)

Online MCQs Learning Resource

1. <http://www.indiabix.com/digital-electronics/boolean-algebra-and-logic-simplification/>
2. <http://www.indiabix.com/digital-electronics/integrated-circuit-technologies/>

Question Paper Scheme:

University Examination Duration: 3 Hours. Total marks: 70

Q.1-Unit-I & II (11 Marks)

Objective / Short Questions

Q.2-Unit-I (12 Marks)

Descriptive / Long questions

Q.3-Unit-II (12 Marks)

Descriptive / Long questions

Q.4-Unit-III & IV (11 Marks)

Objective / Short Questions

Q.5-Unit-III (12 Marks)

Descriptive / Long questions

Q.6-Unit-IV (12 Marks)

Descriptive / Long questions

Note: Q.2,3,5 and Q.6 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

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Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester I
BCA106 – Part 2: Core 1 (Practical)
Office Automation and ‘C’

University Examination Duration: 3 Hours (Per Batch)

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 106	Core	Office Automation and ‘C’	2	4	-	-	15	35	50

(Practical List)

Office Automation:

Open Office writer

Creating a new document, Opening an existing file and saving it in a new location, Editing your work, Understanding the clipboard, Working with fonts, Working with size, emphasis, and colour, Formatting paragraphs, Understanding styles, Checking your spelling, Automated correction tools, Customising your OpenOffice.org Writer work space, Understanding the macro and mail merge, Understanding the menus

Open Office Spreadsheet

Introduction to Spreadsheets, Open, Save and Close Spreadsheet, Enter Data in Spreadsheet,

Basic Calculations – Addition, Subtraction, Multiplication, Division, Insert Column and Row, Format Cell and its Contents, Stock Register, Customizing the Interface, Use Currency Symbols, Format Cell Contents – Font Style and size, Delete – Columns and Rows, Spell check, Border and Colour the cells, Managing Worksheets in a Workbook, Print a Worksheet, OpenOffice Impress, Creating An Impress Presentation, Creating A Presentation, Enhancing the Presentation, Animating Objects and Adding Sound Effects

‘C’:

Write an Algorithm, flowchart and a program in C language for the following:

1. Understand the concept of input output function:
 - To enter name and age and print it.
2. Understand the concept of arithmetic operations:
 - To get addition of two nos.
 - To perform Arithmetic Calculation (Addition, Subtraction, Multiplication & Division)
 - To find area of circle.
 - To calculate simple interest.
 - To compute and display value of x . $x = a/b-c$. Given the values of three variables

- a, b, c, a=250, b=85, c=25
 - To convert the currency i.e. RS to Dolor and Dolor to RS.
 - To convert the measurement i.e. feet to inch. And inch to feet.
 - To find cube of given no.
3. Understand the concept of assignment operator:
 - To interchange (swapping) two values with using third variable
 - To interchange (swapping) two values without using third variable
 4. Understand the concept of control statement:
 - To find given no. is odd or even.
 - To find given no is positive, negative or zero.
 - To find maximum no from 2 nos.
 - To find minimum no from 2 nos.
 - To find maximum no from 3 nos.
 - To find minimum no from 3 nos.
 - To enter salary of an employee. if salary is greater than 10000 then add 2000 extra in salary otherwise 1000 and print it
 - To enter age of any person. If age is greater than 18 then print message he/she is eligible for vote otherwise he/she is not eligible for vote.
 - To enter subject marks, make total, find percentage and print class grade according to following criteria.
 If per \geq 70 then print "Distinction"
 If per \geq 60 then print "First"
 If per \geq 50 then print "Second"
 If per \geq 40 then print "Pass"
 Otherwise print "fail"
 5. Understand the concept of branching statements:
 - Write a C program to Check entered char is capital, small, digit or any special Character.
 - Write a C program to read number 1 to 7 and print relatively day Sunday to Saturday (Using switch Statement).
 6. Understand the concept of looping statements:
 - Write a algorithm ,flowchart and program to find out the max. And min. number from given 10 numbers.
 - Write a algorithm ,flowchart and program to find the sum of digit of accepted number.
 - Write a algorithm ,flowchart and program to find the sum of first 10 odd numbers and even numbers.
 - Write a C program to find factorial of accepted numbers.
 - Write a C program to find whether the accepted string is palindrome or not.
 - Write a C program to find out even and odd numbers from 1 to 50 numbers.
 - Write a C program to check the accepted number is prime or not.
 - Write a C program to check the accepted number is Armstrong or not.
 - Write a C program to print first 10 Fibonacci nos.
 - Write a C program which will generate following series: 10, 9, 8, 7, ..., 1. or N, n-1, n-2, ..., 1
 - Write a C program, which will generate following series: 1, 4, 9 ... N².
 - Write a C program, which will find out sum of following series: $1 + \frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{N^2}$
 - Write a C program to print first 20 prime numbers.

- Write a C program to print reverse number of accepted no.
7. Obtain a preliminary idea of desired pattern using looping statements:
- Write a C program to display following output on the screen.

(a)	(b)	(c)	(d)
1	54321	C	COMPUTER
12	4321	CO	COMPUTE
123	321	COM	COMPUT
1234	21	COMP	COMPU
12345	1	-----	-----
		COMPUTER	C

8. Understand and learn the concept of multiple data storage using array concept:
- Write a C program to find sum of value of array.
 - Write a C program to arrange the accepted numbers in ascending and descending order.
 - Write a C program to find maximum & minimum value from the given array.
 - Write a C program to display the two matrices and perform the addition of the two matrices.
9. To get a brief idea of string functions:
- Write a C program to convert given line into upper case or lower case.
 - Write a C program to count no of word, character, line and space from given text.
 - Write a C program to sort given string in ascending order.
 - Write a C Program to copy one string to another string.
 - Write a C Program to concatenation of two strings.
 - Write a C Program to compare two strings.
 - Write a C Program to find length of string.

Evaluation Scheme:

Practical	Viva	Journal	Total
21	7	7	35

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Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester I

BCA107 – Part 2: Core 2 (Practical)

Internet Technology

Rationale:

The aim of this course is to provide the conceptual and technological developments in the field of internet and web designing with the emphasis knowledge of internet. The internet Web with its wide spread usefulness has become an integral part of the internet. Therefore, this course also puts emphasis on basic knowledge of internet, concepts of web designing and tools to design web pages.

Learning Outcomes:

- Review the current topics in web and internet technologies.
- Describes the basic concepts for network implementation.
- Learn the basic working scheme of the internet and WWW
- Understand fundamental tools and technologies for web designing.
- Comprehend the technologies for HTML (Hyper Text Markup Language)
- Specify design rules in constructing web pages and sites.
- Effectively deal with designing issues and techniques with CSS.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 107	Core	Internet Technology & Web Designing	2	4	-	-	15	35	50

Course Content:

Unit: 1

Internet , Internet Technology and web applications : (25%)

- Understanding the concept of Internet and its different types of connection.
- Understanding of different browsers and websites.
- Creating email, file uploading and downloading
- Surfing different social networking sites.

Unit: 2

Basics of HTML (25%)

- Practical on HTML Structure
- Practical on different basic tags and formatting tags
- Practical based in link, list tag, images, audio-video tag and marquee tag
- Create the table using TD, TR, TH, Colspan and Rowspan
- Create inline frame, frame set, horizontal and vertical frameset.

- Create HTML forms

Unit: 3

Introduction Cascading Style Sheet

(25%)

- working with Cascading Style Sheet : Syntex, measurement Units, colors, Background font and Text
- Working with CSS – images, links , tables and borders
- Set the margins with CSS, CSS – List, Padding and Scrollbar
- ID and Class Selector, Inline,internal and External Stylesheet

Unit : 4

Advance CSS and CSS3

(25%)

- Working with CSS – Visibility, Positioning, layers, Pseudo Classes, Text effects, Media Type, Aural Media, Layouts and printing
- CSS – Rounded corner , Border Image, Multibackground
- CSS3 – color, gradients, shadows, text, 2D and 3D Transform
- CSS3 - Multicolumns, User Interface and Box sizing

Textbook: Introduction to Internet and HTML Scripting by Bhaumik Shroff – Books India PVT LTD

References: Web Technology and design – C Xavier

www.W3Schools.com

www.tutorialspoint.com

Evaluation Scheme:

Practical	Viva	Journal	Total
21	7	7	35

X ----- X

Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester I

BCA108 – Part 3: Foundation Course

Mathematics for Computer Science

Rationale:

To enhance logic by using basic concepts of mathematics such as Set-Theory, Matrix Operation

Prerequisites:

- No formal prerequisites but students are expected to be comfortable with mathematics.
- Fundamental knowledge of Mathematical operations
- Sound knowledge of BODMAS rule

Learning Outcomes:

- Develop analytical and problem solving skills.
- Compare the relevance between the introduced terminology and abstract ideas.
- Understanding the practical applications of mathematics in solving problems of commerce, management, engineering & economics.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 108	Foundation Course	Foundation in Mathematics	2	2	15	35	-	-	50

Course Content:

Unit 1 (50%)

Objective:

To provide detailed idea of collection of similar types objects. To empower beginners logic through Predefined Sets, Arithmetic Operations on Sets (Graphically and Theoretically), and mathematical algebra using theorems of number of elements in a set. To facilitate learners ability to think conceptually

Set Theory:

Introduction, Definition and Concepts, Representation of Sets, Different types of Sets (Null Set, Singleton set, Finite set, Infinite set, Power set, Subset, Universal set, Equal set), Set Operations using Venn diagram and examples : Union, Intersection, Difference, Symmetric Difference, Complement of Set, Laws of algebra of Set(Distributive, D' Morgan's) , Cartesian Product of Set, Cardinality of Set

Coverage of topics in Books:

Book 1: Chapter – 1 --- Page no. 1-36

Book 2: Chapter – 1 --- Page no. 1-28

Application:

One of the primary applications is database query design and processing. All queries onto RDBMS are in set notation and returned as sets. Data structures organize data in well-defined ways, (lists, trees, graph) is well defined sets. Higher languages uses and provides predefined sets liken (Tokens, Identifiers, Collections, Dataset, Hashset, List). Google search engine works based on sets of provided words.

Unit 2:

(50%)

Objective:

- To enhance idea of rectangular presentation of numbers;
- To study different arrangements in two dimensional array;
- To perform arithmetic operations using Matrices;
- To get solution of linear equations using Matrix

Matrices:

Introduction, Types of Matrices(Null matrix, Equal matrix, Row matrix, Column matrix, Square matrix, Transpose of matrix, Diagonal matrix, Scalar matrix, Unit matrix, Symmetric matrix, Skew Symmetric matrix, Orthogonal matrix), Operations on Matrices (Addition, Subtraction, Scalar, Multiplication), Computations of: Determinant, Adjoint and Inverse of a Matrix.

Solution of System of Linear Equations: Cramer's Rule, Gauss Elimination Method (2x2), Matrix Inverse Method.

Coverage of topics in Books:

Book 1: Chapter – 3 --- Page no. 84-124

Book 2: Chapter – 9 --- Page no. 292-306 and Chapter – 10 --- Page no. 324-385

Applications:

One of the primary applications is Computer Graphics; widely used in development of Computer Games; In Robotics and Kinematics matrices allow rotations, translations through planes to be easily calculated. Matrices are used in engineering, physics, computer science, and other applications of mathematics.

Text Book:

1. Advanced Mathematics:

Auther(s): Heena Timani Publication:

Publication: Books India

2. Business Mathematics:

Auther(s): Prof. H. R. Vyas, Dr. C. J. Trivedi, Prof. A. B. Savjani

Publication: B. S. Shah Prakashan

Reference Books:

1. Discrete Mathematical Structure [3rd Ed.]:
Auther(s): Bernard kolman, Robert C. Busby, Sharon Roass
Publication: Prentice Hall Of India
2. The Essence Of Mathematics For Business :
Auther(s): H.A.Spooner, D.A.L.Wilson
Publication: Prentice Hall Of India.
3. Business Mathematics:
Auther(s): J.K Singh
Publication: Himalaya Publications
4. Financial Mathemetics:
Auther(s): A. Lenin Jothi
Publication: Himalaya Publications

Instructional Strategies:

- Bridge course to sharpen the existing knowledge.
- Classroom teaching with variants to make mathematics easy to learn.
- Integrate topics and concepts.
- Independent Practice to develop the art of self learning.
- Demonstration using technology tools.
- Provide examples to transfer learning.
- Problem solving of relevant real time data.

Question Paper Scheme:

University Examination	Duration: 1.5 Hours.	Total marks: 35
Q.1-Unit-I & II		(11 Marks)
Objective / Short Questions		
Q.2-Unit-I		(12 Marks)
Descriptive / Long questions		
Q.3-Unit-II		(12 Marks)
Descriptive / Long questions		

Note: Q.2 and Q.3 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

X-----X

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester II
BCA201 – Part 1 – Soft Skills
Personality Development & Leadership

Rationale:

Personality development grooms an individual and helps him make a mark of his/her own. Individuals need to have a style of their own for others to follow them. Do not blindly copy others. You need to set an example for people around. Personality development not only makes you look good and presentable but also helps you face the world with a smile. Personality development goes a long way in reducing stress and conflicts. It encourages individuals to look at the brighter sides of life. Face even the worst situations with a smile. Trust me, flashing your trillion dollar smile will not only melt half of your problems but also evaporate your stress and worries. There is no point cribbing over minor issues and problems.

Learning Outcomes

1. Describe how a personality develops
2. Define the stages of personality development
3. Define the inner strength and weaknesses
4. Describe how moral are develops.
5. How to increase vocabulary
6. Identify the quality of leader and managing ego and attitudes
7. Managing conflict and time management and motivational technique.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 201	Soft Skills	Personality Development & Leadership	2	2	15	35	-	-	50

Courses content:

Unit 1: Introduction to Personality and Techniques in Personality Stage -I (50%)

- Definition and basics of personality
- Analyzing strength and weakness (SWOT)
- Building self-esteem and self-confidence
- Introduction to leadership
- Group Dynamics
- Team Building

No. of Lectures-10

Unit 2: Techniques in Personality Development Stage II and Motivation

(50%)

- Interpersonal Relationships
- Stress Management : Causes, Impact and Managing Stress
- Conflict Management : Introduction to Conflict Management
- Time Management : Concept , Importance and Need, Steps towards better Time Management
- Motivation: Introduction to Motivation and types of motivation

No. of Lectures-10

Books: No Book is recommended – The Material will be either provided by the college or it will be made available in the college Library.

Question Paper Pattern:

University Examination

Duration: 1.5 Hours

Total Marks: 35

Q-1 Unit I & II Objective/Short Questions	(11 Marks)
Q-2 Unit I Descriptive/ Long Questions	(12 Marks)
Q-3 Unit II Descriptive/ Long Questions	(12 Marks)

X-----X

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester II
BCA202 – Part 1 – Language: English
Professional Communication

Rationale:

It has been observed that linguistic competence is essential to understand the basic concepts of various subjects. Therefore, this course is designed with an aim to make learners proficient & efficient in the use of English language. A sincere effort is being made to expose the learners to the four basic linguistic skills- Listening, speaking, reading & writing.

The student will be able to –

1. Enhance their communication skills.
2. Motivate them to communicate in English effectively.
3. Acquaint them with vocabulary & sentence formation.
4. Get into group tasks like debates, discussions, presentations etc.
5. Improve their writing & presentation skills.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 202	Language: English	Professional Communication	2	2	15	35	-	-	50

Courses content:

Unit 1: Business Communication

Business Letter Writing

- Letters – Parts and layout of Business letter
- 5. Inquiry-Reply
- 6. Order-Letter
- 7. Complain letter
- 8. Adjustment letter

(Book 3: Pg no.80-84)

Unit 2 : Impact of Technology in Communication and Soft Skills:

Latest Communication tools:

Email – Etiquettes and composing of E-mail (Book 3: Pg no.131-136)
 (Book4: 120, 121, 122,123, 124)

Blog: Types and steps to create Blog (<http://blogbasics.com/what-is-a-blog/>)

Soft Skills:

Group Discussion: Meaning and Characteristics of Group Discussion (Book 1: Pg no.408-421)

Presentation Skills: Tips for effective presentation. 4P's of Presentation (Book 3: Pg no. 41-44)

Interview Skills: Types, Do's and Don'ts of Interview (Book 1: Pg no.357-383)

Reference Books:

- Book 1. Business Communication, Meenakshi Raman & Prakash Singh, 2nd Edition Oxford.
Book 2. Basic Communication Skills for Technology, Andrea Rutherford, Person
Book 3. Rosily Victor, Communication Skills, Synergy Knowledgeware (Mumbai)
Book 4. Herta A Murphy, Herbert W Hildebrandt, Jane P Thomas, The McGraw Hill Publication

Sources Required:

Projector and speakers in class

Activities:

- Group discussion Practice
- Presentation Practice
- Demonstration of Interview
- Manners and etiquette
- How to use and create E-mail and blog

Question Paper Pattern:

University Examination

Duration: 1.5 Hours

Total Marks: 35

Q-1 Unit I & II Objective/Short Questions	(11 Marks)
Q-2 Unit I Descriptive/ Long Questions	(12 Marks)
Q-3 Unit II Descriptive/ Long Questions	(12 Marks)

X ----- X

Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester II

BCA203 – Part 2: Core 4

Programming With ‘C’

Rationale:

To develop the concept of advanced programming using world’s most popular Middle Level Language through “C”

Learning Outcomes: The student will be able to ...

- Develop users define function.
- Use a concept of structure and union.
- Develop type of data storing with File Handling
- Know the importance of reference process by pointer.
- Know the concept of Dynamic Memory Allocation.

Teaching Methodology:

- Application and Real life examples
- Theory Method with illustration and presentation
- Models
- Charts
- Practical Implementation Simulators
- Animated Video

Evaluation Scheme:

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Regular Attendance

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 203	Core	Programming with ‘C’	4	4	30	70	-	-	100

Course content:

Unit-I

(25%)

Objective: Understand what a function is and how its use benefits a program. Learn how a function declaration, call, and definition are constructed.

User- Defined Functions:

Introduction, Need for user-defined functions, Elements of UDF (function definition, function call and function declaration), return value and their types Category of functions - No arguments and no return values, Argument with no return values, No argument with return values, Arguments with return values, Nesting of functions, Recursion.

Text Book Reference Page No: 262 to 289

Unit-II

(25%)

Objective: Understand the user defined data type called structure and unions and its members and variables

Structures:

Introduction, Structure definition, declaration and initialization of structure, accessing structure member, Comparison of structures and Arrays, Arrays of structures variable, array within structure ,concept of Structures within Structures, Structures and functions

Union:

Introduction, union definition, declaration and initialization of union, accessing union member, Comparison of structure and union

Text Book Reference Page No: 317 to 335

Unit-III

(25%)

Objective: Learn the concept of memory addresses and pointers

Pointers:

Introduction, concept and application of pointers, Accessing the address of a variable, Declaring and initializing pointers, Accessing a variable through its pointer, Pointer expressions, Pointer increments and scale factor, Pointers and arrays (one dimensional), Pointers and character strings, array of pointer, Pointers and Functions

Text Book Reference Page No: 351 to 373

Unit-IV

(25%)

Objective: Know about the concept of streams used in the C file system. Comprehend how to process different files using standard library function. Understand the concept of dynamic memory allocation and Pre-processors

File Management in C:

Introduction and Application, Defining and opening a file, closing a file, file handling functions, Command line arguments.

Dynamic Memory Allocation:

Introduction, Memory allocation functions (malloc, calloc, free, realloc)

Text Book Reference Page No: 389-405,411-416

Text Book: 1. Programming in ANSI C, Balagurusamy, Tata McGraw-Hill

Reference Books:

1. Programming in C, by Pradip Dey & Manas Ghosh, Publisher–Oxford
2. The Complete Reference, Herbert schildt Fourth Edition
3. Let Us C , Yashwant Kanetkar, BPB Publications
4. Programming in C, by Reenathareja Publisher–Oxford

Reference Link:

www.carrerskill.com

www.mcqsets.com

www.indiabix.com

www.sanfoundry.com

Question Paper Scheme:

University Examination	Duration: 3 Hours.	Total marks: 70
Q.1-Unit-I & II		(11 Marks)
Objective / Short Questions		
Q.2-Unit-I		(12 Marks)
Descriptive / Long questions		
Q.3-Unit-II		(12 Marks)
Descriptive / Long questions		
Q.4-Unit-III & IV		(11 Marks)
Objective / Short Questions		
Q.5-Unit-III		(12 Marks)
Descriptive / Long questions		
Q.6-Unit-IV		(12 Marks)
Descriptive / Long questions		

Note: Q.2,3,5 and Q.6 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

X-----X

Kadi Sarva Vishwavidhyalaya, Gandhinagar

BCA Semester II

BCA204 – Part 2: Core 5

Database Management System – I

Rationale:

Database Management System – I enables beginners to understand the basic concepts of database and various other activities that can be carried out in a database environment. This subject will allow students to develop understanding of the basic concepts of data in general and relational Database System in particular. The students will learn Database concept, Data Models, various approaches to Database Design, strength of Relational Model

Learning Outcomes

- To understand the concept of Database
- To recognize the elements of Database for real applications
- To identify the key relationship between Database components
- To deal with every tiny elements of the Database

Resource Required

- Lab Facility with Microsoft Office Software
- Projector

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 204	Core	Database Management System -I	4	4	30	70	-	-	100

Course content:

Unit-I

(25%)

Introduction to File Systems and Database Systems

Applications: The Database is evolved from computer file systems. Here we will learn serious Data Management limitations and eliminating the shortcomings of file system by Database Management.

Data and Information

- Files and File System ,
- Problems with File System, 3GL and 4GL, Limitations of File System, Structural and Data Dependence, Field Definition and naming Conventions , Data Redundancy, Data Inconsistency, Data Anomaly
- Introduction of the Database
- Types of Databases
 - ✓ SingleUser, Desktop, MultiUser, Workgroup, Enterprise, Centralized, Distributed, Operational
- Introduction of DBMS

- Interaction between End User and Database(Role of DBMS)
- Advantages of DBMS
- Database System Environment(Components)
- DBMS Functions

Book: Database Systems Design, Implementation and Management by Peter Rob & Carlos Coronel, Pg No: 5 -20

Unit-II (25%)

Data and ER Models

Applications: Data Modeling is the first step in the Database design journey, serving as a bridge between real world objects and the Database that recites in the computer

- Building Blocks of Data Models
 - ✓ Entity, Attribute, Relationship and Types ,Constraints
- Types of Data Model
 - ✓ Hierarchical, Network , Relational, Object- Oriented
 - ✓ E-R Model----- Pg No:109 -115
 - Types (Chen's , Crow's Foot)
 - Symbols and Relationship
 - Connectivity and Cardinality, Relationship Strength (Strong, Weak)
 - Weak Entity
 - Generalization and specialization

Book: Database Systems Design, Implementation and Management by Peter Rob & Carlos Coronel, Pg No: 30- 44, Pg No:109 -115

Unit-III (25%)

Relational Database Model

Applications: In this chapter the students will learn the Relational Model's Logical Structure and more about how the ER Diagrams can be used to design a relational Database.

- DBMS Vs. RDBMS
- Tables and Characteristics
- Functional Dependency
- Keys - Super Key , Candidate Key , Primary Key , Foreign Key , Secondary Key, Composite Key
- Integrity Rules - Entity Integrity , Referential Integrity
- Relational Set Operators - Union, Intersect, Difference, Divide, Product, Select, Project, Join (Natural, Equi, Theta, Left Outer, Right Outer)

Book: Database Systems Design, Implementation and Management by Peter Rob & Carlos Coronel, Pg No: 61-76

Unit-IV (25%)

Advanced Data Modelling Applications: This unit will depict to summarize the data required to implement a successful database Design

- Attribute, Types and Symbols ----- Pg No:105-108
 - Simple Attribute, Composite Attribute, Single Valued, Multi Valued , Derived
- Degrees of Abstraction----- Pg No: 46- 50
 - External, Conceptual, Internal, Physical
- Relationship Degree----- Pg No: 118-120
 - Unary, Binary, Ternary
- ER Diagram of Library Management System
- ER Diagram of University Management System

Text Book

1. Database Systems Design, Implementation, and Management. 7th Edition and Further
Author: Peter Rob, Carlos Coronel And Publication: Cengage Learning

Reference Book

1. Introduction to Database Management System, Publication: Tata McGraw- Hill , Author :
ISRD Group
2. An Introduction to Database Systems, Publication: Pearson Author : C. J. Date, A. Kannan &
S. Swamynathan

Question Paper Scheme:

University Examination	Duration: 3 Hours.	Total marks: 70
Q.1-Unit-I & II		(11 Marks)
Objective / Short Questions		
Q.2-Unit-I		(12 Marks)
Descriptive / Long questions		
Q.3-Unit-II		(12 Marks)
Descriptive / Long questions		
Q.4-Unit-III & IV		(11 Marks)
Objective / Short Questions		
Q.5-Unit-III		(12 Marks)
Descriptive / Long questions		
Q.6-Unit-IV		(12 Marks)
Descriptive / Long questions		

Note: Q.2,3,5 and Q.6 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

X ----- X

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester II
BCA205 – Part 2: Core 6
System Analysis and Design

Rationale:

Large number of jobs today for computer science graduates is in creating information systems for managing organizations. Systems Analysis is a central part of systems development. It comprises the process of turning a set of user requirements into a logical system specification and encompasses various activities to achieve this end. The traditional systems lifecycle has been challenged by alternative models, for example the spiral (iterative and incremental) lifecycle and rapid application development. There are a variety of systems development approaches including the structured approach, the object oriented approach. Systems Analysis activities will be studied in the context of these trends. Candidates should be familiar with at least one structured approach (e.g. SSADM) and one object oriented approach (e.g. the Unified Process).

Learning Outcomes: Students will be able to:

- To understand the role of systems analysis within various systems development life cycles.
- To develop an awareness of the different approaches that may be taken to systems analysis.
- To understand the systems analyst’s activities, and apply current tools and techniques.
- Describe different life cycle models and explain the contribution of systems analysis within them.
- Discuss various systems analysis approaches and explain their strengths and weaknesses.
- Evaluate the tools and techniques that may be used by a systems analyst in a given context.
- Use appropriate methods and techniques to produce a systems analysis for a given scenario.
- Provide suitable systems documentation for an analysis.
- Will be able to implement SDLC by small case studies.

Resource Utilization:

Lecture based on Activity Oriented Classroom Teaching by availing case studies, Projector.

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 205	Core	System Analysis and Design	4	4	30	70	-	-	100

Course Content:

Unit I (25%)

Objective

Learners will know: Information System concept, System Analyst Role, Business Information System model, Organizational structure levels and the team of Information technology Department.

Content

System Analysis and Design: concept and need; Information System: System, Information System Components; System Analyst: Role, Skills, Tools used by System Analyst; Business Information System: Business Profile, Business Case, Business Process Modeling, E- Commerce Business Types (B2C, B2B), Business Information System categories; Organization: Hierarchy, Level based Structure; Information Technology Department.

Text Book Reference Page No: 22-34, 45-48

Unit 2: (25%)

Objective

Learners will be acquainted with: System Development Methods categories, Software Development Life Cycle Stages, detailing of System Planning System Analysis Stages.

Content

System Development Method: Structured Analysis - Software Development Life Cycle Stages and Object Oriented Analysis concept.

System Planning: Strategic Planning – SWOT Analysis; System Projects: Main reasons for System Request, Internal & External Factors; Feasibility Study types: Operational, Technical, Economical

(Tangible and Intangible Benefit), Schedule Feasibility; Preliminary Investigation Steps.

System Analysis : System Analysis Stages, Joint Application Development and Rapid Application Development Concept, Fact Finding Techniques : Interview Steps, Document Review, Observation, Questionnaires and Surveys, Sampling, Research ; Data Flow Diagrams : Symbols, Guidelines for Drawing DFD, Creating DFD (Context Level & First Level Diagram); Data Dictionary elements ; Process Description Tools : Modular Design, Structured English, Decision Tables, Decision Trees; Prototyping Methods : System Prototyping and Design Prototyping.

**Text Book Reference Page No: 36-40, 60-61, 66-71, 74-77, 78-86,101-106,113-127,
150-162, 255-256**

Unit 3: (25%)

Objective

Learners will be familiar with: System Design Stage, User Interface Design Types, Input and Output Design Concepts.

Content

System Design : User Interface Design : types- Process Centered Information System Model and User Centered Information System Model, Guidelines for User Interface Design ; Input Design : Types of Input Devices, Input Methods – Batch Input and Online Input ; Output Design : Types of Output, Reports – Summary Report, Exception Report and Detailed Report ; Data Design basic Terminology : Entity, Table or File, Field, Record.

Text Book Reference Page No: 281-282, 281-282, 296-297, 268-274, 327-328

Unit 4:

(25%)

Objective

Learners will be gaining knowledge of: System Design Implementation Stage Concept – Coding, Software Quality Assurance, Software Testing Types, Documentation, Management Approval and Systems Operations, Support and Security Stage to maximize return on the Investment as well as Security Control safeguard the system from both external and internal threats.

Content

System Implementation: Coding Concept; Software Quality Assurance concept; Types of Software testing – Unit Testing, Integration Testing and System Testing; Documentation Concept and Types, Management Approval.

Systems Operations, Support and Security: Training – training Plan, Types of Training; Data Conversion concept; System Changeover Types: Direct Cutover, Parallel Operations, Pilot Operations, Staged Operation; Post Implementation task; Final Report to Management.

Text Book Reference Page No: 430-431, 416-417, 431-435, 435-455

Text Books:

[1] System Analysis and Design Methods; 4th edition; by Shelly, Cashman, Rosenblatt; Cengage Learning India Edition.

Reference:

[2] System Analysis and Design, 3rd edition, by Elias Awad (Galgotia Publications).

Question Paper Scheme:

University Examination Duration: 3.00 Hours. Total marks: 70

Q.1-Unit-I & II	(11 Marks)
Objective / Short Questions	
Q.2-Unit-I	(12 Marks)
Descriptive / Long questions	
Q.3-Unit-II	(12 Marks)
Descriptive / Long questions	
Q.4-Unit-III & IV	(11 Marks)
Objective / Short Questions	
Q.5-Unit-III	(12 Marks)
Descriptive / Long questions	
Q.6-Unit-IV	(12 Marks)
Descriptive / Long questions	

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester II
BCA206 – Part 2: Core 4 (Practical)
Programming with ‘C’

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 206	Core	Programming with ‘C’	2	4	-	-	15	35	50

Unit -1: Understand the concept of user defined function:

- Write a program to check the no. is Palindrome or not using UDF.
- Write a program to find sum of digits of given no using UDF.
- Write a program to find first 5 prime no using UDF.
- Write a program to swap value of two integer number using UDF
- Write a program that will print the longest word written in a line using UDF.
- Write a C program to convert all Lowercase character into their uppercase character using UDF.
- Write a program that uses a UDF to sort an array of integer.
- Write a program to search a number within an array using UDF.
- Write a program to find factorial of given no using recursion.
- Write a program to display first 25 terms of Fibonacci series using recursion.
- Write a program which explains the use of nesting of functions.

Unit -2: Understand the concept of Structure and Union:

- Define a structure of person that would contain person name, date of joining and salary using this structure to read this information of 5 people and print the same on screen.
- Define a structure of student that would contain student name, branch and total marks obtained.
- Define a structure of cricket that will describe the following information: Player name, Team name, runs, declare an array player with 10 elements and write a program to read the information about all 10 players and print.
- In a program declare following structure member: name, code, age, weight and height. Read all members of the structure for 10 persons and find list of persons with all related data whose weight > 50 and height > 40 and print the same with suitable format and title.

Unit -3: Understand the concept of Pointer:

- Write a program to print the value and address of the element using pointer.
- Write a program to accept 10 numbers and display its sum using pointer.
- Write a program to accept 10 numbers and sort them with use of pointer.
- Write a program to swap the two values using pointers and UDF.
- Write a program using pointer to determine the length of a character string.
- Write a program using pointers to read an array of integers and print its elements in reverse order.
- Write a program using UDF and pointers to add two matrices and to return the resultant matrix to the calling function.

Unit -4: Understand the concept of File Management:

- Create one text file store some information into it and print the same information on Terminal.
- A file named data contains series of integer no. Write a c program to read that no. and then Write all odd no into file named odd no and write all even no into file named even no
- Display all the contents of these file on screen.
- Write a c program to read data from keyboard write it to a file called input and Display data of input file on the screen.
- Write a program that counts the number of characters and number of lines in a file.
- Two files DATA1 and DATA2 contain sorted lists of integers. Write a program to produce a third file DATA which holds a single sorted, merged list of these two lists. Use command line arguments to specify the file names.
- Write a program to work as a dos copy command using command line argument.
- Write a C program to work as a dos type command using command line argument.
- Write a C program to work as a dos copy command using command line argument.

Evaluation Scheme:

Practical	Viva	Journal	Total
21	7	7	35

X-----X

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester II
BCA207 – Part 2: Core 5 (Practical)
Database Management System – I

Rationale

The course is intended to make students familiar with the features of Database Tools .It focuses on both basic and advanced features.

Learning outcome

- To Gain the knowledge of various DBMS software Tools
- To develop skills for effective use of DBMS Software
- To Understand how to use the Database in Day-to-Day Life

Resource Required

- Lab Facility with Microsoft Office Software
- Projector

Teaching Scheme & Exam Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 207	Core	Database Management System -I	2	4	-	-	15	35	50

Unit 1: Database, Tables and Queries

Applications: Database and tables will manage the data in a structured way, and queries will allow you to retrieve required information from the pool of data.

- Creating a New Database
 - Creating a Table(Using wizard , Using Design view)
 - Data Types, Applying Primary Key, Entering Data , Field Properties
 - Giving Relationship ,Sorting and Searching , Filters
 - Concept of Foreign Key(Parent Table, Child Table)
- Queries
 - Simple Queries on Single Table
 - Simple Queries on Multiple Tables
 - Action Queries

Unit 2: Forms, Reports and across

Applications: Forms will allow you to collect information in the proper format. Reports provide information in a useful way. And Macro allows you to automate tasks and add functionality to the form

- Simple Forms(Using Wizard, Using Design View)
- Sections on a Form
- Controls on a Form(Label, Text Box, Combo Box, List Box, Command Button, Option Group, Tab Control, Option Button, Check Box, Toggle Button)
- Creating Sub Form
- Simple Reports(Using Wizard, Using Design View)
- Group Reports , Simple Macro

Note: Practical's and Examination can be conducted using any DBMS software.

Evaluation Scheme:

Practical	Viva	Journal	Total
21	7	7	35

X-----X

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester II
BCA208 – Part 3: Foundation Course
Computer Oriented Numerical Techniques

Rationale:

Computer Oriented Numerical methods provides the understanding of various concepts of numerical methods like Numerical errors in calculations, Interpolation, Numerical Integration, Numerical solution of Ordinary Differential Equations.

Prerequisites:

1. Fundamental knowledge of Numerical Computations
2. Basic information of storage in computer system
3. Idea of equal-spaced values

Learning Outcomes:

Concept cause & consequence of errors in the application of numerical computing
 Numerical techniques for solving various problems
 Applications of mathematics in real life domain

Teaching and Evaluation Scheme:

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				
			Cr.	Hrs. / Week	Theory		Practical		Total Marks
					Internal	External	Internal	External	
BCA 208	Foundation Course	Computer Oriented Numerical Techniques	2	2	15	35	-	-	50

Course content:

Unit 1: (50%)

Objective: To facilitate deep understanding of accuracy, precision and different numerical errors. To help learners to enhance their knowledge in the field of interpolation; To find out values of unknown information from given set of known information.

Numerical Errors and Interpolation

Numerical Error, Different types of errors in numerical computation (Absolute, Relative, Truncation, Round Off, Percentage), Floating point numbers, Normalized Floating Point (addition, subtraction, multiplication, division, underflow, overflow)

Interpolation, Extrapolation, Forward Differences, Backward Differences, Newton’s Forward and Backward Difference Interpolation Formulas, Lagrange Interpolation and Inverse Interpolation Formula (Examples Only).

Coverage of topics in Books:

Scientific and Statistical Computing Page no. 1-42, 108-113,126-137,164-167,184-187,
 Computer Oriented Numerical Methods (R.S.) Page no.36-53[50], 221-244[228-229,232-235]

Application: Main application is to obtain numerical solution of real life problems with considerable ease and to obtain approximate solution as close to the exact solution as possible. To enhance knowledge of storage of real numbers in computer system; Interpolation is widely used in functionality of Zoom in and Zoom out. To optimize quality of digital image

RULES AND REGULATIONS

R. UG. BCA 1: Eligibility Criteria (EC) & Selection Criteria (SC)

Eligibility Criteria (EC):

Candidates seeking admission to BCA semester-I, must have passed their higher secondary (HSC) or equivalent examination (GSEB, CBSE, ICSE etc) from the general or science stream and must have studied **English** as a compulsory subject and Mathematics / Statistics / Physics / Business-Mathematics / Computer / Biology / Economics / Philosophy at the qualifying examinations. Admission will be granted on the basis of merit.

Selection Criteria (SC)

Selection for admission is based on merit generated on the percentage obtained in 12th standard - board examination.

EVALUATION, STANDARD OF PASSING AND AWARD OF DEGREE

R. UG. BCA 2:

Examination for the BCA course will be conducted under the semester system. Each academic year will be divided into two semesters.

R. UG. BCA 3:

A candidate who has passed an equivalent examination from any other University or examining body and is seeking admission to **BCA Course (2nd Year)**, shall be admitted only on producing the Eligibility Certificate and the Migration Certificate issued by the competent authority. (ANNEXURE-I)

R. UG. BCA 4:

No candidate will be permitted to any semester examination for BCA, unless it is certified by the Designated Authority (Head of the University Department or Principal of the college)

- That he/she attended the course of study to the satisfaction of the designated authority.
- That he/she has maintained a good conduct and character during the study.
- That he/she has maintained minimum 85% attendance in both theory and practical sessions.

R. UG. BCA 5:

Candidates desirous of appearing at any semester examination of the course must forward their application to the University in the prescribed form through the designated authority on or before the prescribed date.

Rules for Grading – BCA Programme (KSV)

1. Theory Subjects and Practical Subjects are allotted credits as per the hours allocated to them per week. The subject wise credit is depicted in the structure of the syllabus mentioned in this document.
2. To pass a subject in any semester a candidate must obtain a minimum of 40% of maximum marks under each head of the subject and minimum of 40% marks in the individual subject head.
3. If a candidate fails in any head of a subject, he has to reappear for that particular heads to pass the subject. (For example, if candidate fails in mid-term exam of a subject, he has to reappear for mid-term of that subject only)
4. The performance of each candidate in all the subjects will be measured on 7-point scale in terms of grades as follow:

Grading Scheme		%age according to Grade	Grade Points	Qualitative Meaning of Grade
1	A +	90-100	10	Outstanding
2	A	80 – 89	9	Excellent
3	A-	70 – 79	8	Very Good
4	B +	60 – 69	7	Good
5	B	50 – 59	6	Average
6	B-	40 – 49	5	Fair
7	F	Less Than 40	0	Fail
8	I	Incomplete		

Award of class:

The class awarded to a student, if he passed all the courses of all the semesters of the BCA course. The class awarded to a student decided, as per the following table, by CPI, he has obtained at the end of the final semester of the course:

Distinction	CPI not less than 7.5
First Class	CPI less than 7.5, but not less than 6.5
Second Class	CPI less than 6.5, but not less than 5.5
Pass Class	CPI less than 5.5

Note:

As per the latest UGC norms a student of BCA has to complete the course BCA within five years (3+2) from the date of enrollment in the university.

Semester Performance Index (SPI)

- The performance of a student in a semester is expressed in terms of the Semester Performance Index (SPI).
- The Semester Performance Index (SPI) is the weighted average of course grade points obtained by the student in the courses opted in the semester. The weights assigned to course grade points are the credits carried by the respective courses.

$$\text{SPI} = \frac{g_1 c_1 + g_2 c_2 + \dots}{c_1 + c_2 + \dots}$$

Where g_1, g_2, \dots are the grade points obtained in the semester for courses opted in the semester and c_1, c_2, \dots are the credits carried by the respective courses.

Cumulative Performance Index (CPI)

- The cumulative performance of a student is expressed in terms of the Cumulative Performance Index (CPI). This index is defined as the weighted average of course grade points obtained by the students for all courses opted since his admission to the program.
 - If a student repeats a course, only the grade points obtained in the latest attempt are counted towards the Cumulative Performance Index.
5. For any semester the maximum marks for the internal and external assessments are shown in the teaching and examination scheme, mentioned in the syllabus structure. For the purpose of internal assessment, tests, quizzes, assignments or any other suitable methods of assessment may be used by a department.
6. Semester Passing Scheme :
- a For each semester examination, a candidate will be considered as pass/clear if he/she has secured 'B-' or above grade in all the subject(s) and overall grade point greater than 5.00.
 - b For each semester examination, a candidate will be considered as fail if he/she has secured 'F' grade in one or more subjects.
 - c If the candidate does not fulfill the subject requirements, he/she will be given 'I' grade and the candidate will have to complete the course requirement before the commencement of the next semester-end examination. If the candidate does not clear 'I' grade in any subject, he/she will be considered as fail with 'F' grade.
 - d Candidate has to clear his / her 'F' grade or 'I' grade, if any, in the next examination.

7. Semester Promotion Scheme:

A candidate will be promoted to the subsequent next semester according to the following scheme:

Semester	Conditions
II	Clearing or not clearing of all the subjects of Semester I
III	Semester I and Semester II passed completely OR Failed in any number of subjects in Semester I & Semester II but the Term Should be granted of both the semesters.
IV	Semester I to III passed completely OR Semester I passed Completely and Failed in any number of subjects in Semester II & Semester III but the Term Should be granted of both the semesters II and III.
V	Semester I to IV passed completely OR Semester I & Semester II passed Completely and Failed in any number of subjects in Semester III & Semester IV but the Term Should be granted of both the semesters III and IV.
VI	Semester I to V passed completely OR Semester I to III passed Completely and Failed in any number of subjects in Semester IV & Semester V but the Term Should be granted of both the semesters IV and V.

The final degree would be awarded to the student on successful completion of all the semesters.

8. Following criteria would be followed for awarding the mark statement of any Semester:

- The Grade (Mark) sheet will contain separate grades for each of compulsory papers (subjects), Practical work, Project Work and overall grade for all the subjects combined.
- It will also contain percentage and the class obtained. The percentage will be calculated on the basis of Cumulative Performance Index (CPI) obtained by candidate.
- CPI will be shown in each semester's Grade (mark) sheet for each end-semester examination.

9. Subject wise Grade and Grade Points are calculated based on the Grading Scheme defined.

Below mentioned table shows an example:

Semester - I							
Subject	Maximum Marks (Int + Ext)	Marks Obtained (Int + Ext)	Marks in percentage	Grade	Grade Points (GP)	Credit Points (CP)	Product of GP and CP (Total Credits)
1	2	3	4	5	6	7	(6 x 7)
Sub-1	100	75	75%	A-	8	4	32
Sub-2	100	64	64%	B+	7	4	28
Sub-3	100	49	49%	B-	5	4	20
Sub-4	100	54	54%	B	6	4	24
Prac-1	50	36	72%	A-	8	2	16
Prac-2	50	44	88%	A	9	2	18
Prac-3	50	34	68%	B+	7	2	14
Total						22	152

Semester – I

SPI – $152 / 22 = 6.90$

CPI = 6.90

Semester - II							
Subject	Maximum Marks (Int + Ext)	Marks Obtained (Int + Ext)	Marks in percentage	Grade	Grade Points (GP)	Credit Points (CP)	Product of GP and CP (Total Credits)
1	2	3	4	5	6	7	(6 x 7)
Sub-1	100	69	69%	B+	7	4	28
Sub-2	100	82	82%	A	9	4	36
Sub-3	100	54	54%	B	6	4	24
Sub-4	100	30	30%	F	0	4	0
Prac-1	50	43	86%	A	9	2	18
Prac-2	50	39	78%	A-	8	2	16
Project	200	96	48%	B-	5	6	30
Total						26	152

Semester – II

SPI – $152 / 26 = 5.85$

CPI = 6.83 (as calculated below)

Semester	SPI
I - SPI	6.90
II - SPI	5.85
Total SPI	12.75
CPI	6.37

In this case, the candidate is failing in one subject i.e. Sub-4, and he/she has secured 5.85 SPI for semester II and 6.37 CPI for semester I and II both. Whenever the candidate clears the subject i.e. Sub-4 in the next examination, the total credits for that subject will be add to CPI of the candidate.

10. To calculate the final grade of the course, CPI will be calculated as follows –

SEMESTER	POINTS OF SEM (SPI)
SEM-1	6.90
SEM-2	5.85
SEM-3	8.33
SEM-4	5.56
SEM-5	5.89
SEM-6	7.22
Total SPI	39.75
CPI	6.62