હેમચંદ્રાચાર્ય ઉત્તર ગુજરાત યુનિવર્સિટી

NAAC A (3.02) State University

પો.બો.નં.–૨૧, યુનિવર્સિટી રોડ, પાટણ (ઉ.ગુ.) ૩૮૪૨૬૫

ફોનઃ(૦૨૭૬૬) ૨૩૭૦૦૦ ફેકસ : (૦૨૭૬૬) ૨૩૧૯૧૭

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રાષ્ટ્રીય શિક્ષણ નીતિ-૨૦૨૦

પરિપત્ર નં.- ૪૯૭/૨૦૨૩

વિષયઃ મેનેજમેન્ટ વિદ્યાશાખા હેઠળના સ્નાતક કક્ષાના સેમેસ્ટર-૧ અને ૨ના જૂન ૨૦૨૩-૨૪ થી ક્રમશઃ અમલમાં આવતા અભ્યાસક્રમ / પરિક્ષા સ્કીમ અંગે.

આ યુનિવર્સિટીના મેનેજમેન્ટ વિદ્યાશાખા હેઠળના સ્નાતક વિભાગો તથા સંલગ્ન વિદ્યાશાખાની તમામ કોલેજોના આચાર્યશ્રીઓને જણાવવાનું કે, એકેડેમિક કાઉન્સિલની તારીખઃ ૧૪/૦૮/૨૦૨૩ની મળેલ સભાના નિર્દિષ્ટ ઠરાવોથી રાષ્ટ્રીય શિક્ષણ નીતિ-૨૦૨૦ અંતર્ગત UGCની Guideline તથા રાજય સરકારશ્રીના શિક્ષણ વિભાગના તારીખઃ ૧૧/૦૭/૨૦૨૩ના ઠરાવ નં.કે.સી.જી./એડમીન/૨૦૨૩-૨૪/૦૬૦૭/ખ-૧ થી પ્રકાશિત કરેલ કોમન કરિકયુલમ એન્ડ ક્રેડિટ ફ્રેમવર્ક હેઠળ ક્રેડિટ માળખું તથા પ્રકાશિત કરેલ સ્ટાન્ડર્ડ ઓપરેટીંગ પ્રોસિજર (S.O.P.) મુજબ મેનેજમેન્ટ વિદ્યાશાખા હેઠળના નીચેના સ્નાતક કક્ષાના સામેલ પરિશિષ્ટ પ્રમાણેના નવા અભ્યાસક્રમો શૈક્ષણિક વર્ષઃ ૨૦૨૩-૨૪ થી ક્રમશઃ અમલમાં આવે તે રીતે મંજુર કરેલ છે, જેનો અમલ કરવા સારૂ સબંધિતોને આ સાથે મોકલવામાં આવે છે.

ક્રમ	અભ્યાસક્રમ	ઠરાવ ક્રમાંક	સેમેસ્ટર
૧	બી.સી.એ	૦૮	સેમેસ્ટર ૧ અને ૨
૨	બી.બી.એ	૦૯	સેમેસ્ટર ૧ અને ૨

સદર બાબતની જાણ આપના સ્તરેથી અધ્યાપકશ્રીઓ તથા વિદ્યાર્થીઓને કરવા વિનંતી છે.

નોંધઃ

(૧) વિદ્યાર્થીઓની જરૂરીયાત માટે પરીપત્રની એક નકલ કોલેજના / ડિપાર્ટમેન્ટના ગ્રંથાલયમાં મૂકવાની રહેશે.

(૨) આ પરિપત્ર યુનિવર્સિટીની વેબસાઇટ www.ngu.ac.in પર પણ ઉપલબ્ધ કરવામાં આવેલ છે.આથી સંબંધીત કોલેજોને ડાઉનલોડ કરી ઉપયોગ કરવા સારૂ જણાવવામાં આવે છે.

(૩) મેનેજમેન્ટ વિદ્યાશાખા હેઠળના સ્નાતક કક્ષાના પ્રોગ્રામ્સના અભ્યાસક્રમોનો પરિપત્રનં.૧૩૧/૨૦૨૩, તારીખઃ૨૩/૦૬/૨૦૨૩ રદ કરવામાં આવે છે.

કા.કુલસચિવ

બિડાણઃ ઉપરમુજબ

નં-એકે/અ×સ/૩૭૨૮/૨૦૨૩

તારીખઃ૨૮/૦૮/૨૦૨૩

પ્રતિ,

૧. ડીનશ્રી, મેનેજમેન્ટ સ્ટડીઝ વિદ્યાશાખા તરફ.

૨. મેનેજમેન્ટ સ્ટડીઝ વિદ્યાશાખા હેઠળની કોલેજોના આચાર્યશ્રીઓ તરફ

૩. પરીક્ષા નિયામકશ્રી, હેમચંદ્રાચાર્ય ઉત્તર ગુજરાત યુનિવર્સિટી પાટણ.

૪. ગ્રંથપાલશ્રી, હેમચંદ્રાચાર્ય ઉત્તર ગુજરાત યુનિવર્સિટી પાટણ.

૫. માન.કુલપતિશ્રી/કુલસચિવશ્રીનું કાર્યાલય હેમચંદ્રાચાર્ય ઉત્તર ગુજરાત યુનિવર્સિટી પાટણ.

૬. સિસ્ટમ એનાલીસ્ટશ્રી, કોમ્પ્યુટર (રીઝલ્ટ સેન્ટર) હેમ.ઉ.ગુ.યુનિવર્સિટી, પાટણ.(વેબસાઇટ પર મુકવા સારૂ)

૭. પ્રવેશ પ્ર-શાખા, હેમ.ઉ.ગુ.યુનિવર્સિટી, પાટણ

૮. મહેકમ શાખા, હેમ.ઉ.ગુ.યુનિવર્સિટી, પાટણ.(૨ નકલ)

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

"Accredited By NAAC with 'A' Grade (CGPA 3.02)"

Bachelor of Computer Application (BCA)

NATIONAL EDUCATION POLICY - 2020
(NEP-2020)

w. e. f. June 2023

Model Curriculum Structure for

Bachelor of Computer Applications (BCA) Programme
(Basic and Honours degree)

Submitted to

Hemchandracharya North Gujarat University, Patan.

Preface

Greetings from NEP 2020 Computer Science Syllabus Framing Committee!

The committee members are thankful to the Hemchandracharya North Gujarat University for initiating the process of implementation of NEP-2020. It is our privilege to be part of this process through a committee constituted as a Board of Studies (Computer Science).

The committee members conducted various offline / online meetings for discussion and finalizing the course titles. These deliberations also helped in framing the syllabus for BCA and also the Programme and Course outcomes. The model draft curriculum structure for BCA Programme and the syllabus for the first two semesters of the Programme were presented in the committee meeting on 24th July 2023 and the inputs are considered during further revision.

The committee is committed to frame the remaining part of the syllabus for the BCA Programme and will be working further to fulfill all academic input requirements in implementing the curriculum in letter and spirit of NEP 2020.

Dr. Namrata Gupta

Principal,
Smt. B. K. Mehta I.T. Center (B.C.A.) College,
Palanpur.

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

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Bachelor of Computer Application (BCA)

Member of Board of Studies (Computer Science)

Curriculum Design/Syllabus Framing Committee

S. No.	Member's Name	Designation
1	**Dr. Namrata Gupta** Principal, Smt. B. K. Mehta I.T. Center (B.C.A.) College, Palanpur.	Chairperson
2	**Dr. Jaydeep Trivedi** Principal, Matrushri L.J.Gandhi B.C.A College, Modasa.	Member
3	**Dr. Nikunj Raval** Asst. Professor, Shri Sarvajanik M.Sc.(C.A. & I.T) College, Mehsana.	Member
4	**Mr. Natvar Patel** Asst. Professor, Smt. B. K. Mehta I.T. Center (B.C.A.) College, Palanpur.	Member
5	**Dr. Rajesh Maheta** Director , D.L Patel Institute of Management & Technology MCA College, Vidhyanagari Campus, Himmatnagar.	Member
6	**Dr. Harshad Prajapati** Asst. Professor , College Of Computer And Management Studies (CCMS), BCA College, VADU.	Member
7	**Mr. Jayram Suthar** Asst. Professr, Shree R. K. Patel BCA College, Nani Kadi.	Member
8	**Dr. Bhavesh Patel** I/C Head , Department of Computer Science, Hemchandracharya North Gujarat University, Patan.	Member
9	**Mr. Nirav Thakkar** Asst. Professor, Shri Sarvajanik BCA And PGDCA College, Mehsana.	Member (Invitee)

Preamble

BCA (3 Year)

- BCA Three Year is an undergraduate degree programme that provides students with a solid foundation in computer science and its practical applications.
- It covers various aspects of the field, such as programming, data structures, algorithms, database management, and software development.
- The programme prepares graduates for careers in software development, web design, database administration, and networking, among others.

BCA Hons (4 Year)

BCA Honours with Research

- BCA Hons with Research is an advanced undergraduate degree that focuses on in-depth research and academic exploration in computer science.
- Students engage in research projects, gaining valuable skills in problem-solving, critical thinking, and data analysis.
- This programme prepares graduates for research-oriented careers in academia, industry research labs, or further academic pursuits.
- Students who have completed BCA Hons with Research are eligible to get admission in Ph.D. without Master Degree.

BCA Hons without Research

- BCA Hons without Research is a specialized undergraduate degree that offers a comprehensive understanding of computer science without extensive research components.
- It covers theoretical knowledge and practical skills necessary for careers in the IT industry, including software development, web design, database administration, system analysis, and cyber security.
- This degree also serves as a foundation for further studies in computer science or related disciplines.

Programm Objectives (BCA)

- **Develop foundational knowledge**: The BCA programme aims to provide students with a strong foundation in computer science and its applications. This includes an understanding of programming languages, data structures, algorithms, databases, operating systems, and networking.

- **Enhance technical skills:** The programme focuses on developing practical skills in software development, system analysis, web development, and computer hardware. Students are trained to use industry-standard tools, programming languages, and software development methodologies.

- **Foster problem-solving abilities:** BCA aims to nurture problem-solving skills among students by teaching them systematic approaches to analyze and solve complex problems. This includes algorithm design, logical reasoning, and debugging techniques.

- **Cultivate teamwork and communication skills**: BCA programme often include collaborative projects and group assignments to enhance teamwork and communication skills. Students learn to work effectively in teams, communicate technical concepts clearly, and participate in professional presentations.

- **Promote industry-relevant knowledge:** The curriculum is designed to align with industry trends and requirements. BCA programs often include practical training, internships, or industry projects to expose students to real-world scenarios and enhance their employability.

- **Encourage continuous learning and adaptability:** BCA graduates need to keep up with rapidly evolving technologies. The programme emphasizes the importance of lifelong learning, encourages students to stay updated with emerging trends, and prepares them for continuous skill development.

- **Provide a platform for higher education and research:** BCA programme serve as a stepping stone for further education and research in computer science. Graduates may choose to pursue advanced degrees or engage in research and innovation in areas such as artificial intelligence, data science, cyber security, or software engineering.

Programm Outcomes: BCA (3 Years)

The Bachelor of Computer Application (BCA) Programme enables students to attain following attributes, by the time of graduation:

- **Proficiency in Programming:** Graduates will demonstrate proficiency in programming languages and be able to design, develop, and implement software applications to meet specific requirements.

- **System Analysis and Design**: Graduates will be able to analyze user requirements, design system architectures, and develop efficient solutions using appropriate software development methodologies.

- **Problem Solving and Critical Thinking:** Graduates will possess strong problem-solving and critical thinking skills, enabling them to identify and address complex issues in computer applications and systems.

- **Database Management:** Graduates will have a thorough understanding of database management systems, including the ability to design and manage databases effectively, query data, and ensure data integrity and security.

- **Web Development Skills:** Graduates will have the necessary skills to design and develop interactive and dynamic websites, including proficiency in front-end and back-end web technologies, frameworks, and content management systems.

- **Networking and Systems Administration:** Graduates will be equipped with knowledge of computer networks, network protocols, and system administration principles, allowing them to configure and manage network infrastructure and computer systems.

- **Software Testing and Quality Assurance:** Graduates will understand software testing principles and techniques, enabling them to develop and implement effective testing strategies to ensure the quality and reliability of software applications.

- **Ethical and Professional Practices:** Graduates will demonstrate ethical awareness and adhere to professional standards and practices in their work, respecting privacy, security, and intellectual property rights.

- **Effective Communication and Collaboration:** Graduates will possess strong communication and interpersonal skills, allowing them to effectively communicate technical concepts, work collaboratively in teams, and contribute to project planning and execution.

- **Lifelong Learning and Adaptability:** Graduates will recognize the need for continuous learning and professional development, staying abreast of emerging technologies and trends in the field of computer applications.

- **Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.

- **Project Management:** Practicing of existing projects and becoming independentto launch own project by identifying a gap in solutions.

- **Ethics on Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.

- **Motivation to take up Higher Studies:** Inspiration to continue educations towards advanced studies on Computer Science.

Program Outcomes: BCA (4 year Hons)

The Bachelor of Computer Application (BCA (Hons)) programme enables students to attain following additional attributes besides the afore-mentioned attributes, by the time of graduation:

- **Advanced Knowledge:** Graduates of BCA Hons will have acquired advanced knowledge and a deep understanding of specialized areas within computer science. They will demonstrate a comprehensive understanding of advanced topics, emerging technologies, and current industry trends.
- **Research Proficiency:** Students will have developed strong research skills and the ability to conduct independent research projects. They will be proficient in research methodologies, data analysis, and experimental design, enabling them to contribute to the advancement of knowledge in the field.
- **Technical Expertise:** BCA Hons will demonstrate a high level of technical expertise in areas such as programming languages, algorithms, database management, software engineering, and computer architecture. They will be proficient in implementing advanced algorithms, developing efficient software solutions, and optimizing system performance.
- **Communication and Presentation Skills:** BCA Hons will have developed strong communication and presentation skills, both written and verbal. They will be able to effectively articulate complex technical concepts, research findings, and project outcomes to diverse audiences, including peers, experts, and non-technical stakeholders.
- **Project Management Abilities:** BCA Hons will possess project management skills, including the ability to plan, organize, and execute research projects or complex software development projects. They will be adept at managing resources, meeting deadlines, and working effectively in teams.
- **Industry Readiness:** Graduates will be well-prepared for the industry, with the skills and knowledge necessary to excel in various roles within the IT sector. They will be equipped for careers in software related fields.
- **Higher Education and Research Pursuits**: BCA Hons graduates will be prepared for further academic pursuits, including pursuing advanced degrees such as Master's or Ph.D. programs in computer science or related disciplines. They will have a solid foundation to pursue research-oriented careers in academia or industry research labs.

BCA Eligibility Criteria

- The candidate should have passed 12th standard in 10+2 pattern from Gujarat secondary Education Board or Senior school Certificate Examination (std 12) from Schools in Gujarat of C.B.S.E./ I.S.C. Board or the examination equivalent to 12th standard (Graded Schooling of 12 years).
- English is compulsory in 12th Standard.

Exit Options

1. After II Semester - Exit option with Certificate in Computer Applications.

   (With a minimum of 44 + 4 credits of Summer Internship)
2. After IV Semester - Exit option with Diploma in Computer Applications.

   (With a minimum of 88 + 4 credits of Summer Internship)
3. After VI Semester - Exit Option with Bachelor of Computer Applications Degree, BCA Degree. (with a minimum of 132 credits)
4. After VIII Semester - Award of Bachelor of Computer Applications Hons Degree, BCA (Hons.) Degree. (With 176 credits)

Examination and Passing Criteria

- **Internal Examination Marks Ratio: 50%**
- **External Examination Marks Ratio: 50%**
- **Passing Marks: 40% Marks in Internal as well as External Examination.**

Please give your feedback to:

Dr. Namrta S Gupta,
(namratag_gupta@yahoo.com)
Chairperson, Board of Studies in Computer Science,
Hemchandrcharya North Gujarat University, Patan

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Syllabus w. e. f. June 2023 under NEP 2020

SEMESTER - I								
COURSE TYPE	**COURSE CODE**	**COURSE TITLE**	**CREDIT**	**WORK HOUR/ WEEK**		**EXAM HOUR**	**TOTAL MARKS**	
				TH	**PR**		**TH**	**PR**
Discipline Specific Course (Major)	MS23MJDSCBCA101	Fundamental of Programming Language - C	4	4	-	2.5	100	-
Discipline Specific Course (Major)	MS23MJDSCBCA101A	Database Management System & PC Packages	4	4	-	2.5	100	-
Minor Stream	MS23MIDSCBCA102	**PRACTICAL - Programming in C**	2	-	4	2.5	-	50
Minor Stream	MS23MIDSCBCA102A	**PRACTICAL - MS Office**	2	-	4	2.5	-	50
Multi-Disciplinary Course	MS23MDCBCA103	Computer Organization	4	4	-	2.5	100	-
Ability Enhancement Course	MS23AECBCA104	Communication Skills-I	2	2	-	2	50	-
Indian Knowledge System	MS23IKSBCA105	Understanding India	2	2	-	2	50	-
Skill Enhancement Course	MS23SECBCA106	Mathematics - I	2	2	-	2	50	-
TOTAL			**22**	**18**	**8**		**450**	**100**
			22	**26**			**550**	

- **Internal Examination Marks Ratio: 50%**
- **External Examination Marks Ratio: 50%**
- **Passing Marks: 40% Marks in Internal as well as External Examination.**

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23MJDSCBCA101	**Course Title:** Fundamental of Programming Language - C
Course Credits: 04	**Hours/Week:** 04
Exam Duration: 2.5 Hours	**Course Type:** Discipline Specific Course (Major)
Internal Exam Marks: 50	**External Exam Marks:** 50

Course Outcome:

After Completion of course students able to,

- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem.
- Perform input and output operations using programs in C.
- Write complex programs that perform operations on arrays. etc.

Total Teaching Hour: 40		
Sr. No.	**PARTICULAR**	**MARKS**
Unit - I	**Introduction to Programming:** Concepts of Algorithm and Flowcharts, problem solving examples using algorithm and flowchart, Types of Programming languages, Characteristics of higher level language, Compiler and Interpreter **Overview of C:** Introduction, Importance of C, Sample C programs, Basic structure of C programs, Programming style, executing of C program. **Constants, Variables and data Types:** Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants.	25%
Unit - II	**Operators and Expression :** Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associativity, Mathematical functions. **Managing Input and Output Operators :** Introduction, reading a character, writing a character, formatted input, formatted output.	25%

Unit - III	**Decision making branching:** Introduction, Decision making with IF statement, Simple IF statement, the IF ELSE statement, Nesting of IF … ELSE statements, The ELSE IF ladder, The switch statement, the turnery (? :) Operator, the GOTO statement. **Decision Making Looping:** Introduction, the WHILE statement, the DO statement, The FOR statement, Jumps in loops Break and continue.	25%
Unit - IV	A**rray :** Introduction, One-dimensional, arrays, Two-dimensional arrays, Initialization of twodimensional arrays, Concept of Multidimensional arrays **Handling of Character strings :** Introduction, Declaring and initializing string variables, Reading strings from terminal, Writing strings to screen, Arithmetic operations on characters, Putting string together, String Operations: String Copy, String Compare, String Concatenation And String Length, String Handling functions, Table of strings.	25%

Text Books:

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 Reena thareja Publisher – Oxford

University Question Paper Scheme			
Q.1	UNIT-I	Descriptive/ Long questions with choice	10 Marks
Q.2	UNIT-II	Descriptive/ Long questions with choice	10 Marks
Q.3	UNIT-III	Descriptive/ Long questions with choice	10 Marks
Q.4	UNIT-IV	Descriptive/ Long questions with choice	10 Marks
Q.5	All Unit	Objective / Short Question / True –False etc.	10 Marks
Note: • Programs can be asked when necessary.			

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23MJDSCBCA101A	**Course Title:** Database Management System & PC Packages
Course Credits: 04	**Hours/Week:** 04
Exam Duration: 2.5 Hours	**Course Type:** Discipline Specific Course (Major)
Internal Exam Marks: 50	**External Exam Marks:** 50

Course Outcome:

After Completion of Course students able to,

- Understand the fundamental principles of database management systems (DBMS) and their role in organizing and storing data efficiently.
- Gain practical skills in designing, implementing, and managing databases, including creating tables, defining relationships, and optimizing query performance.
- Develop the ability to analyze complex data requirements and translate them into logical and physical database designs that meet business needs.
- Acquire knowledge of advanced database concepts such as transaction management, concurrency control, data security, and backup and recovery techniques to ensure data integrity and availability.

Total Teaching Hour: 40		
Sr. No.	**PARTICULAR**	**MARKS**
Unit - I	**Database Concepts**: Database and DBMS, Comparison between traditional file V/s DBMS, Characteristics of data in database, Components of database system environment, Functions of DBMS, Advantages and disadvantages of the DBMS, DBMS users, Database administrator, Role of DBA	25%
Unit - II	**Database Design and Architecture**: Essentials of Database Design, Three level Architecture of Database-external, conceptual and internal, Data Models concepts: Hierarchical, Network and Relational, Operators, relations, domains and attributes, keys, traditional set operations, special relational operations.	25%
Unit - III	**The E/R model**: Entity, E-R Diagram, Attributes, Relationship & Types, Development stages of E-R diagram & Examples **Normalization:** Functional Dependency, Trivial and Non-Trivial Dependency, Transitive Dependency Normalization Process, 1 st NF , 2 nd NF, 3 rd NF, demoralization.	25%

Unit - IV	**MS-Access**: Introduction of Database, Data type - Text, Number, Auto number, Currency, Boolean, Date/Time, Memo Introduction to Object and its uses – Table, Query, Forms, Macro. Reports Controls use in form and report	25%

Text Books:

1. Database Management System A C Shah & A R Patel, MacMillan Publication

Reference Books:

1. Introduction to Database System C. J. Date (7 thedition) Low Price Edition
2. Database system concepts Henry F. Korth (3 rd edition) TMH Publications

University Question Paper Scheme			
Q.1	UNIT-I	Descriptive/ Long questions with choice	10 Marks
Q.2	UNIT-II	Descriptive/ Long questions with choice	10 Marks
Q.3	UNIT-III	Descriptive/ Long questions with choice	10 Marks
Q.4	UNIT-IV	Descriptive/ Long questions with choice	10 Marks
Q.5	All Unit	Objective / Short Question / True –False etc.	10 Marks

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23MIDSCBCA102	**Course Title: PRACTICAL - Programming in C**
Course Credits: 02	**Hours/Week:** 04
Exam Duration: 2.5 Hours	**Course Type:** Minor Stream
Internal Exam Marks: 25	**External Exam Marks:** 25

Total Teaching Hour: 40

Practical List

1. Write a C program to display "hello computer" on the screen.
2. Write a C program to print roll no, name and address.
3. Write a C program to find the area of circle using the formula **area=PI * r * r.**
4. Write a C program to find the area of rectangle, cube and triangle.
   Formula are: Rectangle=l *b, triangle = (I * b)* 0.5, cube = l*b*h
5. Write a C program to find the area and volume of sphere.
   Formulas are Area = **4*PI*R*R** Volume = **4/3*PI*R*R*R**.
6. Write a C program to evaluate simple interest **I = P*R*N / 100**.
7. Write a C program to enter a distance into K.M and convert it in to meter, feet, inches and Centimeter
8. Write a C program to interchange two numbers.
9. Write a C program to convert Fahrenheit into centigrade. **C = (F - 32) × 5/9.**
10. Write a C program for summation, subtraction, multiplication, division of two numbers using Arithmetic operator.
11. Write a C program to enter days and convert into years, month and reminder days.
12. Write a C program to find out the largest value from given three numbers using conditional Operator.
13. Write a C program to find the maximum number from given three numbers.
14. Write a C program to find that the enter number is Negative, or Positive or Zero.
15. Write a C program to Checked whether entered char is capital, small, digit or any special Character
16. Write a C program to read number 1 to 7 and print relatively day Sunday to Saturday.
17. Write a C program to find out the max. and min. number from given 10 numbers.
18. Write a C program to find the sum of digit of accepted number.
19. Write a C program to find the sum of first 100 odd numbers. And even numbers.
20. Write a C program to display first 25 Fibonacci nos.
21. Write a C program to check the accepted number is prime number or not.
22. Write a C program to display first 100 prime numbers.
23. Write a C program to find factorial of accepted numbers.

24. Write a C program to print accepted no and its reverse number.
25. Write a C program to find whether the accepted number is palindrome or not.
26. Write a C program to convert decimal numbers into equivalent binary number.
27. Write a C program to convert decimal numbers into equivalent to octal number.
28. Write a C program to convert decimal numbers into equivalent hexadecimal numbar.
29. Write a C program to display first 5 Armstrong number.
30. Write a C program to arrange the accepted numbers in ascending order and descending order.
31. Write a C program to find whether the accepted string is palindrome or not.
32. Write a C program to convert given line into upper case or lower case.
33. Write a C program to count no of word, character, line and space from given text.
34. Write a C program to sort given string in ascending order.
35. Write a C program to prepare pay slip using following data.

    Da = 10% of basic, Hra = 7.50% of basic, Ma = 300

    Pf = 12.50% of basic, Gross = basic + Da + Hra + Ma

    Nt = Gross – Pf.

36. Write a C program to read marks and your program will display grade.

    Marks Grade 100– 80 Dist

    60– 79 First

    50– 59 Second

    35– 49 Pass

    0– 34 Fail

37. Write a C program to find 1+1/2+1/3+1/4+....+1/n.

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

    1

    1 2

    1 2 3

    1 2 3 4

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

    1

    2 2

    3 3 3

    4 4 4 4

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

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

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

```
    1
   2 2
  3 3 3
 4 4 4 4
5 5 5 5 5
```

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

```
1
2 3
4 5 6
7 8 9 10
```

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

```
*
* *
* * *
* * * *
* * * * *
```

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

```
    *
   * *
  * * *
 * * * *
* * * * *
```

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

```
    1
   2  3
  4  5  6
 7  8  9  10
11 12 13 14 15
```

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

    C

    CP

    CPR

    CPRO

    .....

    CPROGRAMMING

    .....

    CPRO

    CPR

    CP

    C

47. Write a C program to find maximum & minimum value from the given array.
48. Write a C program to find next minimum from the given array.
49. Write a c program to input N and find out the sum, average, max, min, total even no and total odd no.

    [without use of array]
50. Write a c program to input N no and find out the sum, average, max, min, total even no and total odd no. [using array]
51. Write a c program to display the two matrix on screen and perform the addition of two matrix and print on screen.
52. Write a c program to display the two matrix on screen and perform the multiplication of two matrix and print on screen.

University Practical Exam Scheme:

University Examination Duration: **2.5 Hours (Per Batch)**

Practical Marks: **10** Viva Marks: **10** Journal Marks: **5**

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23MIDSCBCA102A	**Course Title: PRACTICAL - MS Office**
Course Credits: 02	**Hours/Week:** 04
Exam Duration: 2.5 Hours	**Course Type:** Minor Stream
Internal Exam Marks: 25	**External Exam Marks:** 25

Total Teaching Hour: 40

Practical List

I. Operating System and working with files / folders

- Introduction of Operating System: DOS and Window
- DOS: Internal & External commands, File naming rules, Creating/Editing file, Create batch file
- Window based operating system and its terminologies

II. Word Processing

- Word Essentials, The Word Workplace, Typing and Editing, Typing and Revising, Finding and Replacing,
- AutoCorrect and AutoText: Reusing Text & graphics, Editing and Proofing Tools, Formatting Text, Formatting Text Characters, Formatting Paragraphs, Formatting and Sorting Lists, Automatic Formatting and Styles
- Document Templates, Page Design and Layout, page Setup, Margins, Page Numbers, and Other Items, Newspaper-Style Columns, working with Tables, Working with Long Documents, Outlining and Organizing a document
- File Management, Opening, Saving, and Protecting Documents, locating and Managing Documents, Printing.
- Assembling Documents with Mail Merge, Mail Merge- Step by Step, Mail Merge-Advanced Techniques, Automating Your Work.

Practical may be given for

- Create your bio-data with use bold, italic, underline tools and save that document set the alignment left, right &center with table.
- Create a Time table. o Create a macro.
- Create a mail- merge.

III. **Spreadsheet Application**

- Essential Skills, Starting Microsoft Excel, Managing Workbook Files, Working in Workbooks, Selecting Cells and Choosing Commands, entering Data, Using Formulas to Calculate Values, Editing a Worksheet, formatting a Worksheet , Printing, Consolidating Data.
- Creating Charts (graphs), Chart Types, Auto formats, Changing Data in a Chart, Formatting a Chart.

- Organizing and Analyzing Data in a List Using a List to Organize, data sorting and filtering Data in a List Summarizing Data in a List, Presenting, Reviewing, and Sharing Workbooks,.
- Creating Graphic Objects on Worksheets and Charts, Auditing and Adding Comments to Documents, Protecting a Workbook, Exchanging Data with Other Applications, Sharing Data and Graphics with Other Applications, Importing and Exporting Documents, Switching from Other Applications.

Practical may be given to create

- Pivot table
- Macro facility
- Student mark sheet using formula & chart
- Salary sheet using formula & chart

IV.Multimedia

Presentation Creating a presentation, Inserting/Deleting slides, Different slide views, Editing slides, Slide transition & editing special effects, Inserting sound, picture, chart, organization chart, Inserting clip art, Applying Transition Effect and Animation Effect.

Practical may be given to perform

Create a presentation using all elements like Slide view, transactions, animation, sound, picture and chart (Minimums 5 slide).

GUI Based Database Tool

- Create a database with different data types using wizard.
- Create a Relationship between two or more tables (Usage of Primary key and foreign key).
- Create a table to Insert, Delete, Update and Search record into database.
- Create a form to enter the data using form Insert, Delete, Update and Search records.
- Create a table and perform the query. (Select Query, Cross tab Query, Make-table Query, Update Query, Append Query, Delete Query and Query for the select one record, all record, update record, delete record).
- Create a Report using wizard. (Auto Report, A Report Wizard, A Label wizard, A Chart Wizard)
- Create a Project on Student information system Employee Information/Salary system Electricity Billing system

University Practical Exam Scheme:

University Examination Duration: **2.5 Hours (Per Batch)**

Practical Marks: **10** Viva Marks: **10** Journal Marks: **5**

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23MDCBCA103	**Course Title:** Computer Organization
Course Credits: 04	**Hours/Week:** 04
Exam Duration: 2.5 Hours	**Course Type:** Multi-Disciplinary Course
Internal Exam Marks: 50	**External Exam Marks:** 50

Course Outcome:

After Completion of course students able to,

- Understand the basic principles of computer organization, including the computer hardware components such as processors, memory, and input/output devices.
- Develop an understanding of memory systems, including cache memory, virtual memory, and memory management techniques.
- Understand the fundamental concepts of digital logic gates, Boolean algebra, and truth tables, to design and analyze combinational circuits.
- Develop the ability to convert between different number systems, including binary, decimal, and hexadecimal, and perform arithmetic operations in these systems.

Total Teaching Hour: 40		
Sr. No.	**PARTICULAR**	**MARKS**
Unit - I	**Computer basics** Digital & Analog systems, Logic levels and pulse wave forms, digital computer, Major parts of computer, Hardware, Software - Application and System Software **Computer generations** First generation, Second generation, Third generation, Fourth generation, Fifth generation **Classifications of Computers** Palmtop PC, Laptop PC, Personal Computer, Workstations, Mainframe, Supercomputer. **Operating system** Dos, Windows Family	25%
Unit - II	**Introduction to Computer Parts** **Input devices (only principles)** Keyboard, Mouse, Light pen, Joystick, Scanner, Voice input system, Touch screen **Output devices (only principles)** Monitor - CRT terminals (Monitor / VDU) Non – CRT terminals, LCD, Plasma display, LED Printer - Dot matrix printer, Ink jet printer, Laser printer, Line printer, Plotter	25%

	Storage devices (only principles & types) Magnetic memory - Magnetic disk, Hard disk, Floppy disk, Semiconductor memory - RAM, ROM, Flash memory Optical memory - CD, CD-ROM, CD-RAM, DVD, DVD-ROM, DVD-RAM Cache memory, Physical & Virtual memory **Communication devices :** Modem, NIC, Switch, Hub	
Unit - III	**Number system:** Binary, decimal, octal, hexadecimal **Conversion :** Binary to decimal, decimal to binary, octal to decimal , decimal to octal, octal to binary, binary to octal, hexadecimal to binary, binary to hexadecimal, hexadecimal to Decimal, decimal to hexadecimal, hexadecimal to octal, octal to hexadecimal **Binary arithmetic** – Addition, subtraction (simple method)	25%
Unit - IV	**Logic gates -** AND, OR, NOT, NAND, NOR, Exclusive-OR, Exclusive-NOR **Combinational circuits** - Half adder, Full adder, Half subtractor, Full subtractor **Binary classification of codes -** 8421 BCD code, Excess-3(XS-3) code **Data Processing circuit -** Decoder, Encoder	25%

Text Books:

1.Fundamentals of computers – By. V. Rajaraman PHI Publication
2.Fundamentals of computers – By. Anand Kumar PHI Publication

Reference Books:

1. Fundamentals of computers – By. B. Ram
2. O-Level (Information Technology) - By V.K.Jain (Module- M1.1)
3. Computer Architecture – By K M Hebbar MacMillan Publication

University Question Paper Scheme			
Q.1	UNIT-I	Descriptive/ Long questions with choice	10 Marks
Q.2	UNIT-II	Descriptive/ Long questions with choice	10 Marks
Q.3	UNIT-III	Descriptive/ Long questions with choice	10 Marks
Q.4	UNIT-IV	Descriptive/ Long questions with choice	10 Marks
Q.5	All Unit	Objective / Short Question / True –False etc.	10 Marks

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23AECBCA104	**Course Title:** Communication Skills-I
Course Credits: 02	**Hours/Week:** 02
Exam Duration: 2 Hours	**Course Type:** Ability Enhancement Course
Internal Exam Marks: 25	**External Exam Marks:** 25

Course Outcome:

After Completion of course,

- Students will develop clarity, fluency, and confidence in verbal communication, including engaging in discussions and delivering impactful presentations.
- Students will enhance active listening skills, develop strong interpersonal skills, and understand non-verbal communication cues.
- Students will improve written communication skills, including grammar, organization, and adapting writing style for different purposes.
- Students will develop cross-cultural communication skills and collaborative abilities to work effectively in diverse teams.

Total Teaching Hour: 20		
Sr. No.	**PARTICULAR**	**MARKS**
Unit - I	**Theory of Communication** • Communication – Meaning and Objectives • Communication – Process and Importance • Communication – Barriers • Methods of Communication - Verbal and Non-Verbal • Dimensions of Communication – Upward, Downward, Diagonal, Horizontal, Grapevine • Steps of Effective Communication	50%
Unit - II	**Grammar** • Parts of Speech • Active Passive • Auxiliaries and Modals • Subject Verb Agreement • Indirect Speech • Questions and Negatives	50%

Reference Books:

1. Business Communication - Meenakshi Raman & Prakash Singh – Oxford Publication
2. Business correspondence and report writing – R.C. Sharma & Krishna Mohan – Tata McGraw Hill
3. Contemporary English grammar structures and composition – David Grren – Macmillan
4. Business Communication – V.K. Jain & Omprakash Biyani – S.Chand
5. Essential of Business Communication – Rajendra Pal & J.S. Korlahalli – S. Chand
6. Developing Communication Skills – Krishna Mohan & Meera Benarji – McMilan Pub.

University Question Paper Scheme			
Q.1	UNIT-I	Descriptive/ Long questions with choice	10 Marks
Q.2	UNIT-II	Descriptive/ Long questions with choice	10 Marks
Q.3	All Unit	Objective / Short Question / True –False etc.	5 Marks

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23IKSBCA105	**Course Title:** Understanding India
Course Credits: 02	**Hours/Week:** 02
Exam Duration:2 Hours	**Course Type:** Indian Knowledge Systems
Internal Exam Marks: 25	**External Exam Marks:** 25

Course Outcome:

After Completion of course students able to,

- Develop a comprehensive understanding of India's history, culture, and societal dynamics.
- Analyze the political, economic, and social factors shaping contemporary India.
- Critically evaluate the diversity and pluralistic nature of Indian society, including its religions, languages, and regional variations.
- Apply knowledge of India's past and present to gain insights into its future trajectory and contribute to informed discussions on Indian issues.

Total Teaching Hour: 20		
Sr. No.	**PARTICULAR**	**MARKS**
Unit - I	**Background of India's culture:** 1. Harappan civilisation and Vedic age 2. Buddhism, Jainism, Sanatan (Hinduism) and Islam **(3 Lecture)** **Growth and development of Indian Education and literature:** 1. Bharat's Natyashastra, Kalidas, Panini, Patanjali 2. Taxila, Nalanda, Vishwa Bharati, BHU, AMU, IIT, IISC, AIIMS **(4 Lecture)** **Geographical features of India:** 1. India on the map of world and its neighboring countries 2. Physical features of India including mountain, plateau, plain, coast, island, vegetation, rivers, soils, and climate **(3 Lecture)**	50%
Unit - II	**Leaders of India's freedom struggle:** 1. Mahatma Gandhi 2. Jawaharlal Nehru 3. Subhash Chandra Bose **(2 Lecture)** **The People of India:** Racial diversities, Population, its growth, distribution, Migration. **(2 Lecture)** **Indian Constitution:** 1. Preamble 2. Salient features 3. Fundamental rights 4. Fundamental duties **(4 Lecture)** **Political ideas:** Non-violence, Satyagraha and Social Justice **(2 Lecture)**	50%

Text Books & Reference Books:

1. A. L. Basham, A Cultural History of India, Oxford University Press, 1997
2. A. L. Basham, A Wonder that was India, Rupa, New Delhi, 1994
3. N. R. Ray, An Approach to Indian Art, Publication Bureau, Chandigarh, 1974
4. Nayanjot Lahiri, Marshaling the Past: Ancient India and its Modern Histories, Permanent Black, 2012
5. R.C. Majumdar (ed.), History and Culture of Indian People (Relevant Volumes and Chapters), Bhartiya Vidya Bhawan, Bombay.
6. S. C. Ghosh, History of Education in Modern India, 1758-1986, Orient Longman, Hyderabad, 1995
7. Tirthankar Ray, The Economic History of India 1857-1947, OUP, 2006
8. Vijay Joshi and I.M.D. Little, India's Economic Reforms, 1991-2001, OUP, 199

University Question Paper Scheme			
Q.1	UNIT-I	Descriptive/ Long questions with choice	10 Marks
Q.2	UNIT-II	Descriptive/ Long questions with choice	10 Marks
Q.3	All Unit	Objective / Short Question / True –False etc.	5 Marks

Note: The Question Paper will be in English Language Only but Students can answer in English or Hindi or Gujarati Language.

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Bachelor of Computer Application (BCA)

Semester: I	**Program Code:MGTUG201**
Course Code: MS23SECBCA106	**Course Title:** Mathematics - I
Course Credits: 02	**Hours/Week:** 02
Exam Duration: 2 Hours	**Course Type:** Skill Enhancement Course
Internal Exam Marks: 25	**External Exam Marks:** 25

Course Outcome:

After Completion of course,

- Students will develop a solid understanding of fundamental mathematical concepts, including set theory, set operations and function etc.
- Students will enhance their problem-solving skills and develop analytical thinking abilities, enabling them to apply mathematical principles to real-world situations and formulate logical solutions.
- Students will cultivate skills in mathematical reasoning and proof, learning to construct logical arguments and proofs to validate mathematical statements and theorems.
- Students will learn to create mathematical models to represent and analyze real-world phenomena, as well as interpret and draw conclusions from mathematical data.

Total Teaching Hour: 20		
Sr. No.	**PARTICULAR**	**MARKS**
Unit - I	**Set Theory** Definition and notation of Set, Methods of representation of set (Property and List Method), set of numbers (Natural, Integers, Rational, Irrational, Real) Definition: Finite set, Infinite set, Empty set, Singleton set, Subset, Proper subset of a set, Power set, Universal set, Complement of a set, Cardinality of set, Venn Diagrams Set Operations: Union of two sets, Intersection of two sets, Disjoint sets, Equality of sets, Equivalent sets, Difference set, Symmetric Difference set, Cartesian product of sets Properties of set operations (Commutative, Associative, Distributive, DeMorgan's laws)	50%
Unit - II	**Function** Introduction of Function, Definition of function, Domain, Co-domain, Image and Range of function Types of function(with example): Linear, Quadratic, Polynomials, Rational, Irrational, Single value and Many value, Even and Odd, Explicit and Implicit,	50%

	The Classification of functions: one-one, many-one, onto, into function, Evaluation of function, Composition of functions, Identity function Mathematical functions (Definition with example): Floor and Ceiling function, Integer and Absolute value function, Remainder function, Exponential function, logarithm function and its properties, Recursive function.	

Text Books:

Reference Books:

1. Discrete Mathematics -Revised 3rd Edition Authors: Seymour Lipschutz and Marc Lars Lipson, Publication: McGraw-Hill Education (India) Pvt Limited
2. Elements of Discrete Mathematics -3rd Edition Authors: Chung Laung Liu and Durga Prasad Mohapatra Publication: McGraw-Hill Education (India) Pvt Limited
3. Discrete Mathematics -3rd Edition Author: J. K. Sharma Publication: Macmillan Publishers India Limited
4. Business Mathematics -Latest Edition Authors: D. C. Sancheti and V. K. Kapoor Publication: Sultan Chand & Sons

University Question Paper Scheme			
Q.1	UNIT-I	Descriptive/ Long questions with choice	10 Marks
Q.2	UNIT-II	Descriptive/ Long questions with choice	10 Marks
Q.3	All Unit	Objective / Short Question / True –False etc.	5 Marks