MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR
BACHELOR OF COMPUTER APPLICATION (BCA Semester Scheme)

Courses of Study and Examination
BCA Semester – I

Paper	Paper Name	L-T-P	Credits	Max. Marks		Total
				University Exam.	Internal Assessment	
Paper-I (BCA-S101)	Introduction to Information Technology & PC Packages	3-1-0	4	80	20	100
Paper-II (BCA-S102)	Business Communication	3-1-0	4	80	20	100
Paper-II (BCA-S103)	Problem solving through C	3-1-0	4	80	20	100
Paper-IV (BCA-S104)	Computer Organization	3-1-0	4	80	20	100
Paper-V (BCA-S105)	Practical-I C Programming Lab.	0-0-8	4	80	20	100
Paper-VI (BCA-S106)	Practical-II ICT & PC Software Lab.	0-0-8	4	80	20	100
Paper-VI (BCA-S107)	Language Lab	1-0-2	2(AP)		50	50
Paper VII (BCA-S108)	Seminar	4	2		50	50
Paper IX (BCA-S109)	Extension Activities (Required to choose one activity from the list of activities)	2	1 (AP)		25	25
Paper X (BCA-S110)	Basic Mathematics- I (Only for those have not studied Maths at 10+2 Level)	3-1-0	4(AP)		100	100
SBCA 1209	Environment Studies		2	100		
SBCA 1704	English		2	100		
	TOTAL		33(28)	680	345	1025

BCA Semester – II

Paper	Paper Name	L-T-P	Credits	Max. Marks		Total
				University Exam.	Internal Assessment	
Paper-I (BCA-S201)	Computer Architecture	3-1-0	4	80	20	100
Paper-II (BCA-S202)	Basic Physics	3-1-0	4	80	20	100
Paper-III (BCA-S203)	Basic Mathematics-II	3-1-0	4	80	20	100
Paper-IV (BCA-S204)	Object oriented programming using C++	3-1-0	4	80	20	100
Paper-V (BCA-S205)	Object oriented Programming Lab.	0-0-8	4	80	20	100
Paper-VI (BCA-S206)	Microprocessor Lab	0-0-8	4	80	20	100
Paper-VII (BCA-S207)	Communication Skill Lab	0-0-4	2(AP)		50	50
Paper-VIII (BCA-S208)	Seminar	4	2		50	50
	TOTAL		28 (26)	480	270	750

BCA Semester – III

Paper	Paper Name	L-T-P	Credits	University Exam.	Internal Assessment	Total
				Max. Marks		
Paper-I (BCA-S301)	Database Management	3-1-0	4	80	20	100
Paper-II (BCA-S302)	Data Structure	3-1-0	4	80	20	100
Paper-III (BCA-S303)	Computer Communication and Networks	3-0-2	4	80	20	100
Paper-IV (BCA-S304A or BCA -S304B)	Elective(choose one from following) A. 1.Business organization and Management B. 2.Numerical & Statistical Computing	3-1-0	4	80	20	100
Paper-V (BCA-S305)	Data Structure Lab	0-0-8	4	80	20	100
Paper-VI (BCA-S306)	DBMS Lab	0-0-8	4	80	20	100
Paper-VII (BCA -S307A or BCA -S307B)	Practical Elective(choose one from below) A. Web Design B. Desk Top Publishing	0-0-4	2(AP)		50	50
Paper VIII (BCA-S308)	Seminar	4	2		50	50
Paper IX (BCA-S309)	Extension Activities (Required to choose one activity from the list of activities)	2	1 (AP)		25	25
SBCA 1705	Hindi		2	100		100
	TOTAL		(31) 28	580	245	825

BCA Semester – IV

Paper	Paper Name	L-T-P	Credits	University Exam.	Internal Assessment	Total
				Max. Marks		
Paper-I (BCA-S401)	System Analysis & Design	3-1-0	4	80	20	100
Paper-II (BCA-S402)	Fundamentals of operating System	3-1-0	4	80	20	100
Paper-III (BCA-S403)	Java Programming	3-0-2	4	80	20	100
Paper-IV (BCA-S404A / S404B)	Elective (Choose one from below) A. Information Systems B. Business Accounting	3-1-0	4	80	20	100
Paper-V (BCA-S405)	Java programming Lab	0-0-8	4	80	20	100
Paper-VI (BCA-S406)	Operating system Lab.	0-0-8	4	80	20	100
Paper-VII (BCA-S407A / S407B)	Practical Elective(Choose one from following) A. Accounting Software Lab B. Networking Lab	0-0-4	2(AP)		50	50
Paper-VIII (BCA-S408)	Seminar	4	2		50	50
	TOTAL		28 (26)	525	225	750

BCA Semester – V

Paper	Paper Name	L-T-P	Credits	University Exam.	Internal Assessment	Total
				Max. Marks		
Paper-I (BCA-S501)	Software Engineering	3-0-2	4	80	20	100
Paper-II (BCA-S502)	Data mining	3-0-2	4	80	20	100
Paper-III BCA-S503	Web Technology	3-1-0	4	80	20	100
Paper-IV BCA-S504A/ S504B	Elective A. Network management & Security B. Client Server Computing	3-1-0	4	80	20	100
Paper-V (BCA-S505)	Practical-I: Data mining Lab	0-0-8	4	80	20	100
Paper-VI (BCA-S506)	Practical-II Minor Project Based on Web technology	0-0-8	4	80	20	100
Paper-VII (BCA-S507A/ S507B)	Practical Elective(Choose one from following) A. Web Development Lab B. Advanced Web Tools	0-0-4	2(AP)		50	50
Paper-VIII (BCA-S508)	Seminar	4	2		50	50
Paper IX (BCA-S509)	Extension Activities (Required to choose one activity from the list of activities)	2	1 (AP)		25	25
	TOTAL		29 (26)	480	245	725

BCA Semester – VI

Paper	Paper Name	Credits	University Exam.	Internal Assessment	Total
			Ma		
Paper-I (BCA-S601)	Project	18	80	20	100
		18			

Total Credits: 171, 152 credits for calculation of CGPA

(Effective from session 2018-21)
BCA Semester –I
BCA- S101: Introduction to Information Technology & PC Packages

UNIT-I

Computer Basics and its generations:
A Simple Model of a Computer, Characteristics and classification of Computers, Generations of Computers. Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory organization and hierarchy, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of ICT.

UNIT-II

Operating Systems:
History and Evolution, Main functions of OS, Multitasking, Multiprocessing, Time Sharing, Real Time OS with Examples, DOS: Introduction, FAT, booting process, DOS system files, DOS commands- internal & external.

Windows Operating System: Introduction, versions, Features, Structure, Utilities, Installation of Hardware & Software, Using Scanner, System Tools, Communication, Sharing Information between computers and programs,

Linux: Introduction, features, Shell, Kernel, basic commands

UNIT-III

Word Processing software:
Understanding Word Processing: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document, Mail Merge, Working with references and Review.

UNIT-IV

Using Spread Sheet and Presentations:
Basics of Spreadsheet: Manipulation of cells; Named Range, Conditional Formatting, Formulas and Functions; Graphs and Charts, Pivot tables, sorting, filters, advanced filters, What if analysis, Protecting sheet and workbook, Views.

Making Small Presentation:
Basics of presentation software; Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation / handouts.

UNIT- V

Introduction to Internet, WWW and Web Browsers:
Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting, World Wide Web; Web Browsing software's, Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website, Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

Recommended Books
1.   P .K. Sinha ,Fundamentals of Computers, BPB Publications
2.   Fundamental of Computers By R. Thareja, Oxford University Press.
3.   Introduction to Information Technology-ITL Education solutions limited, PEARSON.

BCA-S102: Business Communication

UNIT I

Basic language skills and grammar: Phonetics and accent, Features of Indian English, Correction of sentences, structures, Tenses, ambiguity, Idiomatic distortions.

UNIT II

Theories of Communication: Importance of Communication, Communication, Process, Channels of communication, Significance of, Feedback, Barriers to Effective Communication, Ways to overcome the Barriers. Informal conversation Vs Formal expression Verbal and non-Verbal communication, barriers to effective communication, kinesics

UNIT III

Written communication: Differences between spoken and written communication, features of effective writing such as clarity brevity, appropriate tone clarity, balance etc. Précis Writing - expressing the presented ideas in concise and accurate manner

UNIT IV

Business Communication: Business and Technical report writing, types of reports, progress reports, routine reports, Annual reports, format, Analysis of sample reports from industry, Synopsis and thesis writing. Letter writing, format and style, effectiveness, promptness, Analysis of sample letters and emails collected from Business.

UNIT V

Vocabulary and English for businesses: Reading newspapers, business news, magazines to build vocabulary for the business communication. Reading Comprehension, Comprehending notices, advertisements, official documents, booklets, newspapers, instructional manuals and other documents.

Recommended Books
1 Bovee, Courtland, John Thill & Mukesh Chaturvedi. Business Communication Today: Dorling Kindersley, Delhi
2 Kaul, Asha: Business Communication: Prentice-Hall of India, Delhi
3 Monippally, Matthukutty M. Business Communication Strategies. Tata McGraw-Hill Publishing Company Ltd., New Delhi
4 Sharma, Sangeeta and Binod Mishra. Communication Skills for Engineers and Scientists: PHI Learning Pvt. Ltd., New Delhi
5 Essentials of Business Communication, Rajendra Pal, JS Korlahhi: Sultan Chand & Sons, New Delhi.
6 Advanced Communication Skills, V. Prasad, Atma Ram Publications, New Delhi.
7 Raymond V.Lesikav, John D. Pettit Jr.: Business Communication; Theory and Application, All India Traveller Bookseller, New Delhi 51
8 Business Communication, RK Madhukar, Vikas Pulishing House Pvt. Ltd.,
9 KR Lakshiminarayana: English for Technical Communication – vols. 1 and 2, SCITECH Publications (India) Pvt. Ltd., T.Nagar, Chennai 600 017
10 Edmund H weiss: Writing Remedies: Practial Exercises for Technical Writing. Universities Press, Hyderabad.

BCA-S103: Problem Solving through C Programming

UNIT-I

Algorithm and algorithm development:
Definition and properties of algorithm, flow chart symbols, conversion of flow chart to language, example of simple algorithms, Introduction to program design, errors – syntax error, runtime error, logic error.

UNIT-II

Basics of C – Language:
Structure of C program, tokens, Data types, constants, operators and its precedence.

UNIT-III

Control Structure:
Decision Structure: - Simple if, if – else, if – else – if, nested if, switch case;
Loop Control Structure:- while , do while and for; Use of break, goto and continue.

UNIT-IV

Functions: Function definition, declaration and prototypes, Call by Value and Call by Reference, Recursion
Arrays and pointers: One Dimensional array, two dimensional arrays, array handling, passing arrays to functions, arrays and string handling, definition of pointers and its uses, pointer arithmetic

UNIT-V

Storage classes–auto, external, static, register;
Structures – declaring and accessing elements, array of structure,
File Handling - Input/Output, Create, Open, Read, Write, Delete, Close;

Recommended Books
1. The C Programming Language, Brian Kernighan and Dennis Ritchie, PHI Publications.
2. Let us C, Yashavant Kanetkar, BPB Publications.
3. Programming in C, Balaguruswamy, McGraw Hill Education.

BCA -S104: Computer Organization

UNIT-I

Logic families:
TTL, ECL, CMOS Gates, Boolean Algebra, Minimization of Boolean Functions, Flip-flops, Combinational circuits, Sequential circuits.

Representation of Integers :
Octal, Hexadecimal, Decimal, and Binary, 2's complement and 1's complement arithmetic, floating point representation.

UNIT-II

Building blocks of computer system:
Basic building blocks – I/O, Memory, ALU and its components, Control Unit and its functions, Instruction –word, Instruction and Execution cycle, branch, skip, jump and shift instruction, Operation of control registers; Controlling of arithmetic operations.

UNIT-III

Addressing techniques and registers:
Addressing techniques – Direct, Indirect, Immediate, Relative, Indexed addressing and paging. Registers – Indexed, General purpose, Special purpose, overflow, carry, shift, scratch, Memory Buffer register; accumulators; stack pointers; floating point; status information and buffer registers.

UNIT-IV

Memory:
Main memory, RAM, static and dynamic, ROM, EPROM, EEPROM, EAROM, Introduction to Cache memory, cache Coherence, Cache penalty and Virtual memory.

UNIT- V

Interconnecting System components:
Buses, Interfacing buses, Bus formats – address, data and control, Interfacing keyboard, display, auxiliary storage devices and printers. I/O cards in personal computers.

Introduction to Microprocessors and Microcontrollers:
Introduction to 8085 microprocessor, examples of few instructions to understand addressing techniques. Difference between microprocessor and microcontrollers.

Recommended Books
1. Andrew S. Tanenbaum , Structured Computer Organization, Prentice Hall
2. William Stallings, Computer Organization and Architecture, Sixth Edition, Pearson.
3. Digital Design and Computer Organization M. Morris Mano, Pearson Education

PRACTICAL

BCA S105: Practical-I: C programming Lab

Practical based on Paper-III

BCA S106: Practical-II: ICT & PC Software Lab:

Practical based on Paper-I

BCA S107: Practical-III: Language Laboratory (Audit Course)
Practical training in Spoken English using Language Lab software like Linguaphone

BCA-S108: Seminar:
Seminar topics to be allotted in the beginning of the course by issuing schedule of seminars including faculty seminars

BCA- S110: Basic Mathematics -I
(To be offered as an audit pass course by the candidates not studied mathematics at 10+2 level)

Unit I

Algebraic Expressions : Term and degree

Evaluating Algebraic Expressions: Addition and Subtraction of Algebraic Expressions, Multiplication & Division of Algebraic Expressions, Rational Expressions, Operations with Rational Expressions
Factoring : Difference of squares, quadratic trinomials, splitting middle term

Unit II
Linear Equations
Translating algebraic expressions, Solving linear equations: Addition property, Solving linear equations: Multiplication property, Combining rules, Inequalities Solving linear inequalities

Graphing Linear Equations
The Cartesian coordinate system, The graph of a linear equation, Solve Linear equations in two variables by graph

Unit III
Systems of Linear Equations
Solution of Systems of equations in two variables (addition/elimination)

Quadratic equations
Solution by Special methods: by square root, by Factorization of roots, completing the square, The quadratic formula. Nature of roots, Sum and product of roots
Unit IV
Radical expressions and complex numbers
Introduction to roots and radicals
Simplifying radical expressions [No variables]
Operations with radical expressions, rationalizing binomials denominators
Complex numbers [Addition and Subtraction]

Equation of lines
Slope of a line, Parallel & perpendicular line, slope intercept form of equation of line, slope point form, two point form, intercept form

Unit V
Conic Sections: General quadratic equation, conic sections, circles, parabolas, ellipses, hyperbolas
System of Real Numbers:Natural, whole, integer, rationals, irrationals, graphical representation of real numbers

Recommended Books
1. Discrete Mathematics, Schaum'sOutlines
2. Differential Calculus, Shanti Narayan,P.K.Mittal
3. Integral Calculus, Shanti Narayan,P.K.Mittal
4. Elementary Calculus, Gokhroo & Bhargav.
5. Business Mathematics, Quaji Zameeruddin, V.K.Khanna,S.K.Bhambri
6. Comprehensive Mathematics Class XII Part-A, Parmanand Gupta

BCA PAPER 1209
Environmental Studies
Compulsory paper for all stream at UG level

UNIT I

The Multi disciplinary nature of environmental studies and natural resources.
Definition, Scope and importance, Need for public awareness .

a) Renewable and nonrenewable resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

c)Mineral Resources : Use and exploitation, environmental effects of extracting and using minerals resources, case studies.

d)Food Resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e)Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, Case studies.

f)Land Resources: Land as a resource, Land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources
Equitable use of resources for sustainable lifestyles. (10 Lectures)

UNIT II

Ecosystem
Concept. of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers.
Energy flow in the ecosystem.
Ecological succession.
Food Chains, food webs and ecological pyramids.
Introduction, types, characteristic features, structure and function of the following ecosystem:-
a Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans estuaries) **(6 lectures) .**

UNIT-III

Biodiversity and its Conservation
− Introduction- Definition: genetic, species and ecosystem diversity .
− Biogeographical classification of India.
− Value of biodiversity: consumptive use, productive use,social ethical, aesthetic and option values.
− Biodiversity at global, national and local levels.
− India as mega -diversity nation
− Hot -spots of biodiversity
− Threats of biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
− Endangered and endemic species of India.
− Conservation of bio-diversity : In-situ and Ex-situ conservation of bio-diversity (8 Lectures)

Environmental Pollution

Definition :

Causes, effects and control measures of :-

a. Air Pollution

b. Water Pollution;

c. Soil pollution;

d. Marine pollution;

 e. Noise pollution

f. Thermal Pollution

g. Nuclear Hazards

Solid Waste Management : Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies.

Disaster management : floods, earthquake, cyclone and landslides.

Social Issues and the Environment

− From Unsustainable to sustainable development. :
− Urban problems related to energy.
− Water conservation. rain water harvesting, watershed management.
− Resettlement and rehabilitation of people; its problem and concerns, Case studies.
− Environmental Ethics : Issues and possible solutions.
− Climatic change, global warming, acid rain; ozone layer, depletion, nuclear accidents and holocaust ,Case studies.
− Wasteland reclamation.
− Consumerism and waste products.
− Environment Protection Act. ,
− Air (Prevention and Control of Pollution) Act.
− Water (Prevention and Control of Pollution) Act.
− Wildlife Protection Act.
− Forest Conservation Act.
− Issues involved in enforcement of environment legislation..
− Public Awareness.
− Population explosion- Family Welfare Program.
− Environment and Human Health.
− Human Rights.
− Value Education
− HIV/AIDS
− Women and Child Welfare
− Role of Information Technology in Environment and Human Health.
− Case Studies. (13 Lectures)

Field Work (For Field experience and Training only.)

− Visit to all local area to document environmental assets- river/forest/grassland/hill/mountain.
− Visit to a local polluted site - Urban/Rural/Industrial/Agricultural
− Study of common plants, insects, birds.
− Study of Simple, ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5 Lecture hours).

BCA PAPER 1704
GENERAL ENGLISH

(Common for Science, Social Sciences and Humanities & Commerce Faculties) **MM: 50**

(1)   Texts:

The Many Worlds of Literature Edited by Jasbir Jain, Macmillan; India.
George Orwell   : *Animal Farm*
Or
R.K. Narayan   : *A Vendor of Sweets*

Distribution of marks: Marks

(1) Current English for Language skills: **15**
(a) Short- answer questions (5 out of 10)
Each carrying 1 mark = 5 marks
(b) General questions   (2 out of 4)
Each carrying 4 mark = 8 marks
(c) Questions on vocabulary = 2 marks

(2)   Animal Farm or A Vendor of Sweets: **10**
(a) Two questions out of 4
Each question carrying 5 marks = 10 marks

(2)   Grammar: 13

(a) Tenses	3
(b) Modal Auxiliaries	2
(c) Phrasal Verbs	3
(d) Clause (Nominal, Adjectival, Adverbial)	2
(e) Use of Non-finite verbs (Gerunds, Participles, and infinitives)	3

(3)   Comprehension and Composition :   12

(a) Précis writing	5
(b) Essay (about 300 words) on one topic out of four topics	7

Recommended Books

1.   *An Intermediate English Grammar,* Pit Corder
2.   A Practical English Grammar, Thompson and Martinet,(ELBS- Oxford University Press)