



ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY

COURSE STRUCTURE AND SYLLABUS

BACHELOR OF COMPUTER APPLICATION (BCA) PROGRAMME

BCA 1ST SEMESTER SYLLABUS STRUCTURE

Sl.No	Subject Code	Subject Name	L	T	P	C
Theory Subjects						
1	BCA171101	Computer Fundamental and ICT Hardware	3	2	0	4
2	BCA171102	Communicative English	3	2	0	4
3	BCA171103	Introduction to C Programming	3	2	0	4
4	BCA171104	Mathematics – I	3	2	0	4
Practical Subjects						
5	BCA171113	Laboratory I (C Programming)	0	0	10	5
TOTAL			12	8	10	21
Total Contact Hrs : 30 ; Total Credits : 21						

BCA 1ST SEMESTER SYLLABUS

Paper : BCA171101
Subject Name : Computer Fundamental and ICT Hardware
Marks : (Theory-70, Internal Evaluation – 30)
Pre-requisite : NIL

UNIT	PARA	Content	Weeks
1		Evolution of Computer system, Classification of Computer, Modern Computer, Hardware and Software. Major components of a Digital Computer (A brief introduction of CPU, Main memory, Secondary memory devices and I/O devices) Keyboard, monitor, mouse, printers, Secondary storage devices (floppy disks, hard disks and optical disks), backup system and why it is needed.	2
2		Number System: Representation of numbers (only a brief introduction to be given) and characters in computer. Binary, Hexadecimal, Octal, BCD, ASCII. EDCDIC and Gray codes. Conversion of bases. Representation of signed integers, Sign and magnitude, 1's complement and 2's complement representation. Arithmetic operations using 2's complement representation and conditions for overflow/underflow and its detection.	2
3		Assembler, Compiler, Interpreter, Linker and Loader. Definition and concepts of algorithm and its different implementations-pseudo code, flowchart and Computer programs.	2
4		Hard Disk Drive: logical structure and file system, FAT, NTFS. Hard disk tools: Disk cleanup, error checking, de fragmentation, scanning for virus, formatting, installing additional HDD.	2
5		Optical Media, CDROM, theory of operation, drive speed, buffer, cache, CD-r, CD-RW, DVD ROM, DVD technology, preventive maintenance for DVD and CD drives, New Technologies. Driver installation, Writing and cleaning CD and DVD.	2
6		Processor: Intel processor family. Latest trends in processor, Motherboard, Sockets and slots, power connectors. Peripheral connectors. Bus slots, USB, pin connectors. Different kinds of motherboards. RAM, different kinds of RAM. RAM up gradation. Cache and Virtual Memory concept.	2
7		SMPS. BIOS. Network Interface Card, network cabling, I/O Box, Switches, RJ 45 connectors, Patch panel, Patch cord, racks, IP address.	1
Books	1.	Anita Goel, Computer Fundamentals , Pearson, 2010.	
	2.	Complex: Hardware and Networking Course Kit ., DreamTech press.	
	3.	V. Rajaraman, Neeharika Adabala, Fundamentals of Computers , PHI, EEE 6th Edition	
	4.	Ron Gilster, PC hardware: A beginners Guide , Tata McGraw Hill.	
	5.	E. Balaguruswamy, Computer Fundamentals and C Programming , Tata McGraw Hill.	

Paper : BCA171102
 Subject Name : Communicative English
 Marks : (Theory-70, Internal Evaluation – 30)
 Pre – requisite : NIL

UNIT	PARA	Content	Weeks
1		Concept and fundamentals of communication skills Scope and Meaning of communication; essentials of good communication- listening and reading skills, verbal and non verbal communications, gestures and body language, formal	3
2		Oral Communication Mechanisms of effective oral communication-how to speak a language clearly, fluently and naturally; pronunciation – stress and intonation; everyday conversation and chat; group discussion and interviews; public speaking.	2
3		Written communication Mechanisms of effective written communication – punctuation, sequencing of ideas, building paragraph/body, a good introduction and conclusion; word buildings; writing letters for different occasions; report/ summary/ gist writing etc..	2
4		Business communication in English Extensive oral and written examples of various kind of Business communication English in the field of science & technology Marks: 15 Extensive oral and written examples of various kinds of English used in the field of science and technology	3
5		Personal Interview Marks An external expert appointed by the University, the head of the concerned department and the course in-charge of the institution will constitute an expert panel and students will be required to appear before them for viva voce to give evidence of their acquired communicative skills.	2
6		Home assignment and group discussion Home assignments and group discussion will have to be arranged by the teacher in charge of the course and from properly maintained records of such assignments and group discussion, one internal committee formed by the HOD of the CS/IT/CA department of the College concerned will finalize the marks..	1
Books:	1.	Strengthen your Writing: V. R. Narayanaswami (Orient Longman)	
	2.	Everyday Dialogues in English: Robert J. Dixon (Prentice Hall of India)	
	3.	Spoken English: V. Sasikumar & P. V. Dhamija (Tata McGraw-Hill Publishing Ltd.)	
	4.	C. S. Communication: Rayudu (Himalaya Publishing House)	
	5.	Oxford Advanced Learner's Dictionary Or Cambridge Advanced Learner's	

Paper : BCA171103
 Subject Name : Introduction to C programming
 Marks : (Theory-70, Internal Evaluation – 30)
 Pre – requisite : NIL

UNIT	PARA	Content	Weeks
1		Overview of C Importance of C, sample C program, C program structure, executing C program. Variables, Data Types, Constants: integer constant, real constant, character constant, string constant; Character set, C tokens, keywords and identifiers, variables declaration, Assigning values to variables---Assignment statement, declaring a variable as	2
2		Operators and Expression Categories of operator- Arithmetic, Relational, logical, assignment, increment, decrement, conditional, bitwise and special operators; arithmetic expressions, precedence and associativity of operators,	2
3		Managing Input and Output Operators Reading and writing a character, formatted input, formatted output.	2
4		Decision Making and Branching Statement <i>if</i> statement, <i>if....else</i> statement, nested <i>if... else</i> statement , <i>switch....case</i> statement, <i>goto</i> statement. Decision Making and Looping Definition of loop, categories of loops, <i>for</i> loop <i>while</i> loop, <i>do-while</i> loop, <i>break</i> statement, <i>continue</i> statement	2
5		Arrays Declaration and accessing of one & two-dimensional arrays, initializing two-dimensional arrays, multidimensional arrays.. Functions The form of C functions. Return values and types.return statement.	2
6		Structures and Unions & Preprocessors Defining, giving values to members, initialization and comparison of structure variables, array of structure, array within structure, structure within structure, structures and functions, unions. Macro substitution, file inclusion.	1
7		Pointers and File Management in C Definition of pointer, declaring and initializing pointers, accessing a variable through address and through pointer, pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures. Opening, closing and I/O operations on files, random access to files, command line arguments.	2
Books:	1.	Yashavant Kanetkar, Let Us C , Eighth Edition, BPB Publications.	
	2.	Kernighan and Ritchie, The C Programming Language , Second Edition, Prentice Hall, 1998.	

Paper : BCA171104
 Subject Name : MATHEMATICS-I
 Marks : (Theory-70, Internal Evaluation – 30)
 Pre – requisite : NIL

UNIT	PARA	Content	Weeks
1		<p>Determinants and Matrices Definition and different types (such as identity matrix, diagonal matrix etc) of matrices, vectors and matrices. Addition, subtraction and multiplication of matrices. Properties of matrix operations. Existence of additive and multiplicative identity and additive inverse matrices. Transpose of a matrix and its properties. Symmetric and skew symmetric matrices. Elementary transformation of a matrix. Invertible matrices. Determinant of a square matrix, minor, cofactor. Adjoint of a matrix and matrix inversion. Determination of rank of a matrix. Eigen values and Eigen vectors of a matrix (Stressing on symmetric matrices). Cayley-Hamilton theorem - Cramer's rule.</p>	4
2		<p>Complex Numbers Definition and Algebra of complex numbers. Modulus and conjugate of a complex number. Representation of complex numbers - Argand diagram and polar representation. Roots of linear and quadratic equations in one variable, real roots, irrational roots, complex roots, Relation between the roots and the coefficients. and Balance Sheet for Proprietary concerns,</p>	3
3		<p>Limits and Derivatives Intuitive idea of limits and derivatives. Limits of polynomials, rational functions and Indeterminate forms. Derivatives, Algebra of derivative of a function. Derivative of polynomials and trigonometric functions.</p>	3
4		<p>Calculus Roll's theorem, Lagrange's Mean Value theorem. Meaning of the sign of derivative., maxima and minima (single variable).</p>	3
Books	1.	Narayanan S. and Manickavachagam , Allied Mathematics Vol.1& Vol.2.	
	2.	M.K. Venkataraman, NPC, Engineering Mathematics Vol.1 & Vol.2,	

Paper : BCA171113
Subject Name : LABORATORY-I
Marks : (Theory-70, Internal Evaluation – 30)

LAB PART	PARA	Laboratory Content	Total Weeks
1 (75%)	1.1	Computer Basics, Operating Systems basics and commands	4
	1.2	Simple Programs, Conditional statements, arrays	2
	1.3	Complex programs using functions and subroutines	3
	1.4	Pointers, structures, Unions and Files	4
Books:		As given in BCA171103	
