'C' Programming (BCA-17-106)

Lec. no.	Course Coverage	No. of Lectures	Content available in the Book	
			Book and Author's Name	Page No.
1	**SECTION -A** **Overview of C:** Introduction to C	15	Fundamentals of Computers and Programming in C /A.K. Sharma	9.1-9.21
2	History of C			
3	Importance of C			
4	Elements of C			
5	C character set			
6	Identifiers and Keywords, Data types			
7	Constants and Variables, Assignment statement			
8	Symbolic constant, Structure of a C Program			
9	printf(), scanf() Functions			10.1-10.24
10	**Operators & Expression:** Arithmetic, Relational			
11	Logical, bitwise, unary, assignment, shorthand assignment operators			
12	Conditional operators and increment and decrement operators			
13	Arithmetic expressions, evaluation of arithmetic expression			
14	Type casting and conversion			
15	Operator hierarchy & associativity			
16	**SECTION -B** Decision making & branching	15	Fundamentals of Computers and Programming in C /A.K. Sharma	13.1-13.6
17	Decision making with IF statement			
18	IF-ELSE statement			
19	Nested IF statement			
20	ELSE-IF ladder			

21	'switch' statement			
22	'goto' statement			
23	Decision making & looping			
24	'for' loop			
25	'while' loop			
26	'do-while' loop			
27	Jumps in loops			
28	'break' statement			
29	'continue' statement			
30	Nested loops			
	SECTION -C **Functions:**	15	Fundamentals of Computers and Programming in C /A.K. Sharma	14.1-14.8
31	Introduction			
32	Standard Mathematical functions			
33	Input/output			
34	Unformatted &formatted I/O function in C			
35	Input functions			
36	getch(), getche()			
37	getchar(), gets()			
38	Output functions viz., putch()			
39	putchar(), puts()			
40	String manipulation functions			
41	User defined functions			
42	Introduction/Definition, prototype			18.1-18.60
43	Local and global variables			
44	Passing parameters			
45	Recursion			
	SECTION -D	15	Fundamentals of Computers and Programming in C /A.K. Sharma	15.1-15.36
46	Arrays			
47	Strings and pointers: Definition, types			
48	Initialization			

49	Processing an array			
50	Passing arrays to functions			
51	Array of Strings			
52	String constant and variables			
53	Declaration and initialization of string			
54	Input/ Output of string data			
55	Introduction to pointers			
56	Storage classes in C: auto, extern			
57	Register and static storage class			
58	Scope, storage & lifetime			18.22
59	Algorithm development			
60	Flowcharting and Development of efficient program in C			12.1-12.18

Logical Organization of Computers-II (BCA-17-107)

Lec. no.	Course Coverage	No. of Lectures	Content available in the Book	
			Book and Author's Name	**Page No.**
1	**SECTION -A** **Sequential logic:** Introduction & Characteristics	15	Digital Logic and System Design (Morris Mano)	179-218
2	Introduction of Boolean functions			
3	Clocked RS Flip-Flops			
4	State table, state diagram & state equation of RS flip-flop			
5	D Flip-Flops			
6	State table, state diagram & state equation of D flip-flop			
7	JK Flip-Flops			
8	State table, state diagram & state equation of JK flip-flop			
9	T Flip-Flops			
10	State table, state diagram & state equation of T flip-flop			
11	Master-Slave Flip-Flops			
12	State table, state diagram & state equation of Master Slave flip-flop			
13	Excitation Table: Clocked RS &D flip flops			
14	Excitation Table: T & JK flip flops			
15	Question paper discussion			
16	**SECTION -B** **Sequential Circuits:** Serial Input Serial Output (SISO)	17	Digital Logic and System Design /Morris Mano	229-257
17	Serial Input Serial Output (SISO) cont.			
18	Serial Input Parallel Output (SIPO)			
19	Serial Input Parallel Output (SIPO) cont.			

20	Parallel Input Serial Output (PISO)			
21	Parallel Input Serial Output (PISO) cont.			
22	Parallel Input Parallel Output (PIPO)			
23	Parallel Input Parallel Output (PIPO) cont.			
24	Shift Register			
25	Designing counters – Asynchronous Binary Counters Introduction			
26	Modulo-N counter (Asynchronous Binary Counters)			
27	Modulo-N counter (Asynchronous Binary Counters) cont.			
28	Designing counters – Synchronous Binary Counters Introduction			
29	Modulo-N counter (Synchronous Binary Counters)			
30	Modulo-N counter (Synchronous Binary Counters) cont.			
31	Up-Down Counters			
32	Question paper discussion			
SECTION -C **Memory & I/O Devices:** 33 Introduction,Memory Parameters		12	Digital Logic and System Design /Morris Mano	258-262
34	Semiconductor devices: RAM			
35	Semiconductor devices: ROM			
36	Optical Storage devices			
37	Optical Storage devices cont.			
38	Magnetic Storage devices			
39	Magnetic Storage devices cont.			
40	Memory (Cache & Virtual memory) &Flash memory			PPT
41	I/O Devices			
42	I/O Devices cont.			

43	I/O Controllers			
44	Question paper discussion			
	SECTION -D	16	Digital Logic and System Design/ Morris Mano	407-484
45	**Instruction Design:** Machine instruction			
46	Instruction set selection			
47	Instruction cycle			
48	Instruction Format			
49	Instruction Format cont.			
50	Addressing Modes			
51	Addressing Modes cont.			
52	**I/O Organization:** I/O Interface			
53	Interrupt structure			
54	Interrupt structure cont.			
55	Program-controlled transfer			
56	DMA transfer			
57	DMA transfer cont.			
58	IOP			
59	I/O Channels			
60	Question paper discussion			

Mathematical Foundation of Computer Science (BCA-17-108)

Lec. no.	Course Coverage	No. of Lectures	Content available in the Book	
			Book and Author's Name	**Page No.**
1	**SECTION –A** **Basic Statistics:** Measure of Central Tendency	12	Fundamental of Mathematical Statistics/Gupta S. P. and Kapoor V. K,	2.1-2.44
2	Preparing frequency distribution table			
3	Mean			
4	Median, Mode			
5	Numerical based on mean, mode and median			
6	Measure of Dispersion: Range			
7	Variance			
8	Standard deviations			
9	Correlation			
10	Regression			
11	Numerical based on Correlation and Regression			
12	Revision			
13	**SECTION –B** **Algorithm:** Introduction to Algorithms	21	Discrete Mathematics/ Seymour Lipschutz, Marc Lars Lipson	3.1-3.10 PPT
14	Merits & Demerits			
15	Exponentiation			
16	Linear Search			
17	Complexity of Linear Search			
18	Binary Search			
19	Complexity of Binary Search			

20	"Big Oh" notation			
21	Advantage of logarithmic algorithms over linear algorithms			
22	**Graph Theory:** Introduction to Graphs			8.4-8.22
23	Applications of graph			
24	Types of graphs			
25	Degree of vertex			
26	Sub graph			
27	Isomorphic graphs			
28	Homeomorphic graphs			
29	Adjacency Matrix Representation of graph			
30	Incidence Matrix Representation of graph			
31	Path Circuit,Eulerian, Hamiltonian path circuit			
32	Presentation on graph theory			
33	Revision			
34	**SECTION –C** **Tree**: Introduction to Trees	11	Discrete Mathematics/ Seymour Lipschutz, Marc Lars Lipson	8.12
35	Minimum distance trees			
36	Minimum weight and Minimum distance spanning trees			
37	Introduction to Recursion			
38	Recursively defined function			
39	Bubble sort			
40	Complexity of Bubble sort			
41	Insertion sort, Complexity of insertion sort			
42	Merge sort, Complexity of Merge sort			

43	Decimal to Binary			
44	Binary to Decimal			
45	**SECTION -D** **Recurrence Relations:** Introduction to Recurrence Relations	16	Discrete Mathematics/ Seymour Lipschutz, Marc Lars Lipson	16.1-16.4
46	LHRR			
47	LHRRWCCs			
48	DCRR			
49	Recursive procedures			PPT
50	Number Theory			11.8
51	Principle of Mathematical induction			11.8
52	GCD			3.14
53	Euclidean algorithm			PPT
54	Fibonacci numbers			11.13
55	Introduction to modular arithmetic			PPT
56	Congruences			2.15
57	Introduction to Relations			PPT
58	Equivalence relations			
59	Introduction to Encryption			
60	Public Key Encryption Schemes			

Structured System Analysis and Design (BCA-17-109)

Lec. no.	Course Coverage	No. of Lectures	Content available in the Book	
			Book and Author's Name	Page No.
1	**SECTION -A** Introduction to System, Characteristics	18	System Analysis and Design/ Elias Awad	2-65
2	Elements of System, Types of System			
3	System Development Life Cycle			
4	Phases of SDLC			
5	Phases of SDLC cont.			
6	Role of System Analyst			
7	Analyst/User interface			
8	System planning			
9	Bases of planning in system analysis			
10	Sources of project requests			
11	Project Selection			126-164
12	Initial investigation			
13	Fact finding			
14	Information-gathering,Information gathering tools			
15	Fact analysis			
16	Determination of feasibility			
17	Cost and benefit analysis			
18	Question paper discussion			
19	**SECTION -B** Structured Analysis	16	System Analysis and Design/ Elias Awad	92-126
20	Tools of Structured Analysis: DFD			
21	DFD, Data Dictionary			164-256
22	Flow Charts , Gantt Charts			

23	Decision Table, Decision Tree			
24	Structured English, Pros and Cons of Each tool			
25	Feasibility Study			
26	Types of Feasibility Study			
27	Steps in Feasibility Analysis			
28	Feasibility Report			
29	Oral Presentation			
30	Cost/Benefit Analysis, Identification of costs and benefits			
31	Classification of costs, Benefits of Costs			
32	Methods of determining costs and benefits			
33	How to analysis results and take final action			
34	Question paper discussion			
35	**SECTION -C** System Design	14	System Analysis and Design/Elias Awad	260-340
36	Types of System Design			
37	Logical Design/Physical Design			
38	Structured Design Methodologies			
39	Form Design Methodologies			
40	Structured Charts, HIPO, IPO			
41	Structured Walkthrough			
42	Input Design, Objectives of Input Design			
43	Output Design, Objectives of Output Design			
44	Form Design, Classification of Forms			
45	Requirements of Form Design, Types of Forms			
46	Layout Considerations			

47	Form Layout, Form Control			
48	Question paper discussion			
49	**SECTION -D** System Testing	12	System Analysis and Design/ Elias Awad	356-386
50	Objectives of Testing			
51	Test Plan, Activities involved in Test Plan			
52	Testing Techniques/Types of System Tests			
53	Quality Assurance: Introduction			
54	Quality Assurance Goals in System Life Cycle			
55	System Implementation: Introduction, Process of Implementation			
56	Conversion/Installation, User Training, System Evaluation			
57	System Documentation			
58	Forms of Documentation			
59	System Maintenance and its types			
60	Question paper discussion			