HSC ICT Advance Full Course
[Online/Combo]

Syllabus (Regular Live Class)

Serial no	Subject	Chapter	Lecture
01	Information and Communication Technology	01	02
		02	04
		03	16
		04	08
		05	16
		06	08
		Total Chapter – 06	**Total Lecture - 54**

ICT (Reference Book: UDVASH Parallel Text)

Chapter	Lecture	Syllabus
Chapter-3 Number System and Digital Device	ICT-01	Number System- History of Invention of Numbers, Egyptian / Hieroglyphics Number System, Babylonian Number System, Roman Number System, Mayan Number System, Hindu-Arabic Number System, Types of Number Systems, Decimal, Binary Number System, Octal Number System, Hexadecimal Number System.
	ICT-02	Number System Conversion - Convert decimal to any other number system.
	ICT-03	Convert any other number system to decimal.
	ICT-04	Reciprocal conversion of any number system other than decimal, conversion with calculator, binary addition.
	ICT-05	Binary subtraction, Signed numbers, 1's complement, 2's complement.
	ICT-06	Code, BCD Code, Alpha Numeric Code, ASCII Code, EBCDIC Code, Unicode.
	ICT-07	Boolean Algebra- Boolean variables and constants, Boolean fundamental theorem, truth table.
	ICT-08	Boolean Functions, Boolean Equations, Duality, Logic Gates, Basic Logic Gates.
	ICT-09	Compound gate, universal gate, special logic gate, implement any circuit using NAND gate.
	ICT-10	implement any circuit using NOR gate. Circuits and Equations (Drawing Logic Circuits from Boolean Equations, Writing Equations from Logic Circuits).
	ICT-11	Logic Functions simplification, Generating Functions from Truth Tables, Digital Devices.
	ICT-12	Half Adder, Full adder
	ICT-13	Implementation of full adder using half adder, Parallel Binary Adder
	ICT-14	Latch, Clock/Clock Pulse, Flipflop (SR Flipflop, JK Flipflop, D Flipflop, T Flipflop
	ICT-15	Register, counter.
	ICT-16	Creative questions + Revision
Chapter-5 Programming Language	ICT-17	Programming- different generations of programming languages, first generation, second generation, third generation, fourth generation, fifth generation, level of programming language (low, middle, high)
	ICT-18	Translator program, compiler, interpreter, assembler.
	ICT-19	Steps of program creation, program organization, algorithm, flowchart (flow diagram), flowchart symbols, basic pattern of flowchart formation, rules for creating a flowchart.
	ICT-20	Examples of algorithms and flowchart
	ICT-21	C-Programming- History of programming language, structure of C program, constants, variables, data types, operators and their applications.
	ICT-22	Unary Operators, Binary Operators, Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Assignment Operators, Precedence of Operators.
	ICT-23	Ternary operators, keywords, library functions and header files.
	ICT-24	Input/output, format specifiers, escape sequences.
	ICT-25	Control Statement- Branching & Looping, Conditional Control Statement (if, if - else, if - else if - else).
	ICT-26	Conditional control statement (switch - case - default), loop with goto statement.
	ICT-27	Loop (for loop, while loop, do while loop), entry control and exit control loop.
	ICT-28	Array- Concept of array, array declaration and array element access.
	ICT-29	Dimensions, one dimensional array, two-dimensional array, three-dimensional array.
	ICT-30	string (character array)

	ICT-31	function or user defined function.
	ICT-32	Area and Boundary of Variables, Creative Questions.
Chapter-4 Introduction to web design and HTML	ICT-33	Internet and Web Introduction- Internet Introduction, Web Introduction, Web Design Concept, Web Page and Web Site, Static Website, Dynamic Website, Network Protocol, Domain Name, URL.
	ICT-34	Website structure, tree or hierarchical structure, web-linked or network structure, sequence or linear structure, hybrid or combination structure, web publishing and hosting.
	ICT-35	HTML- Introduction and versions of HTML, sample HTML code, element and tag, different types of tags, HEAD section tags.
	ICT-36	Body section tags, heading tags, text formatting tags.
	ICT-37	Style Attributes & CSS.
	ICT-38	Hyperlink, Add Image, Add Image in Background, List (Ordered & Unordered List)
	ICT-39	Table, border attribute, cells pacing and cellpadding attribute, border manipulation, pot (text box, radio button, check box, file input, submit)
	ICT-40	Semantic Elements, Some Special Terminology, Creative Questions.
Chapter-1 Information and Communication Technology: World and Bangladesh Perspective	ICT-41	Information and Communication Technology and Our Bangladesh- Data and Information, Technology, Information and Communication Technology: Bangladesh Perspective, Digital Bangladesh Initiative Software Industry, Concept of Global Village- Elements of Establishing Global Village, Communication, Housing, Education, Medical, Employment, Office, Business, Trade, Research, news, entertainment, social media, cultural exchange, VR- History, Constituents of Virtual Reality, Application and Impact of Virtual Reality, Uses and Benefits of Virtual Reality, Recent Trends in Information and Communication Technology- Defense, ICT in Defense Industry, Space Expedition, Application of ICT in Space Research, Space Expedition: Bangladesh perspective , Robotics, Features of Robot, Some Important Robot Introduction in Technology World, Use of Robot, Artificial Intelligence, How Artificial Intelligence Works, Applications of AI, Uses of AI, Disadvantages of Artificial Intelligence.
	ICT-42	Biometrics, Areas of Application of Biometric Technology, Steps of Individual Identification in Biometrics Technology, Bioinformatics, Gene Engineering, Methods of Genetic Engineering, Application of ICT in Genetic Engineering, Uses of Genetic Engineering, Genetic Engineering in the Context of Bangladesh, Nanotechnology methods, advantages and applications of nanotechnology, ICT-based production systems, information and communication technology and economic development, ethics in the use of information and communication technology, different types of cybercrime, laws to suppress cybercrime, information and communication technology in social life Effects- Positive Effects of Information Technology, Negative Effects of Information Technology, Creative Questions.
Chapter-2 Communication Systems and Networking	ICT-43	Data Communication and Data Transmission- Concept of Data Communication, Signals (Analog and Digital), Fundamentals of Data Communication, Bandwidth, Calculation of Bandwidth, Data Transmission Methods, Parallel and Serial Transmission, Synchronous, Asynchronous and Isochronous Transmission, Modes of Data Transmission, simplex, half duplex and duplex transmission, unicast, broadcast and multicast.
	ICT-44	Data Communication Media, Wireless Media- Electro-Magnetic Spectrum and Reasons to Use Radio Waves, Microwaves and Infrared, Radio Waves, Microwaves, Terrestrial Microwave, Satellite Microwave, Infrared, Wireless Communication Systems, Wireless Internet Access Points, Hotspot, Bluetooth, Wi-Fi, WiMAX, mobile communications, different generations of mobiles.
	ICT-45	Wired medium – twisted pair cable, coaxial cable, connectors of coaxial cable, fiber optic cable, laser and LED, computer networking – concept of networking, purpose of computer network, types of networks, classification of network according to geographical spread, service delivery and control.
	ICT-46	NIC, Modem, Hub, Switch, Router, Gateway, Repeater, Bridge, Network Topology, Cloud Computing- Characteristics of Cloud Computing, Positive and Negative Effects of Cloud Computing, Creative Questions.
Chapter-6 Database Management system	ICT-47	Database- Difference between data and information, concept of database, spreadsheet vs database, computer memory and file
	ICT-48	Database storage, Advantage of using the database, area of use of the database (corporate, office, bank etc.).
	ICT-49	Table, Field, Record, Entity, Attribute, Value, Datatype
	ICT-50	Relational Database- General Database vs Relational Database, Features and uses of RDBMS, Key.
	ICT-51	Primary Key, Composite Primary Key, Foreign Key
	ICT-52	Relationship (One to one, One to Many, Many to Many), Entity Relationship Diagram (ERD).
	ICT-53	Structured Query Language- CRUD, DML/DDL, Database Creation, Table Create Read Update Delete, Record Create Read Update Delete.
	ICT-54	Data Security- Data Encryption, Creative Questions.