2020-21

Title	Syllabus Distributions
Session	2020-21 (Even Semester)
Department	B.Sc General in Computer Science
Institution Name	Hiralal Bhakat College, Nalhati, Birbhum, W.B.
Coordinator	Sk Abdul Hanif, SACT in Computer Science

Details of Courses of B.Sc. General under CBCS

Sl.	Course	Credit		Marks
1.	Core Course (12 Papers) 4 core papers each in 3 disciplines of choice	Theory+Practical 12×(4+2)=72	Theory+Tuitorial 12×(5+1)=72	12×75=900
2.	Elective Course DSE (6 Papers)	6×(4+2)=36	6×(5+1)=36	6×75=450
3	Ability Enhancement Core Course (AECC) AECC-1 (ENVS) AECC-2 (English/MIL)	 4×1=4 2×1=2	 4×1=4 2×1=2	 100 50
4.	SEC (4 Papers)	4×2=8	4×2=8	4×50=200
	Total Credit:	122	122	1700

B.Sc. Computer Science General Course Structure

Semester	Course Course (CC)	Discipline Specific Elective (DSE)	Ability Enhancement Course	
			AECC (2)	SEC (4)
I	CC1A (Mathematics) CC2A (Physics) CC3A (Computer Sc.)		AECC-1	
II	CC1B (Mathematics) CC2B (Physics) CC3B (Computer Sc.)		AECC-2	
III	CC1C (Mathematics) CC2C (Physics) CC3C (Computer Sc.)			SEC-1 (Mathematics) or SEC-1 (Computer Sc.)
IV	CC1D (Mathematics) CC2D (Physics) CC3D (Computer Sc.)			SEC-2 (Mathematics) or SEC-2 (Computer Sc.)
V		DSE1A (Mathematics) DSE2A (Physics) DSE3A (Computer Sc.)		SEC-3 (Computer Science) or SEC-3 (Physics)
VI		DSE1B (Mathematics) DSE2B (Physics) DSE3B (Computer Sc.)		SEC-4 (Computer Science) or SEC-4 (Physics)

Semester-II

Core Course (CC 3B): Database Management Systems

SEMESTER – II

Course code	Course title	Credit	No of Hours		
			L	T	P
CC-1B	Database Management Systems	4-0-2=6	4	0	4
	Discipline 2	6			
	Discipline 3	6			
	AECC 2: ENG/MIL	2			
		20			

Syllabus	Number of Lecture	Course	Name of Teacher
Introduction to Database Management Systems: Characteristics of database approach, data models, DBMS architecture and data independence.	**10 L**	CC	Sk Abdul Hanif
Entity Relationship and Enhanced ER Modeling: Entity types, relationships, SQL- 99: Schema Definition, constraints, and object modeling.	**15 L**		
Relational Data Model: Basic concepts, relational constraints, relational algebra, SQL queries.	**15 L**		
Database design: ER and EER to relational mapping, functional dependencies, normal forms up to third normal form. .	**20L**		
DDL Commands • Create table, alter table, drop table DML Commands • Select , update, delete, insert statements • Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=) • Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max) • Multiple table queries (join on different and same tables) • Nested select statements • Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists, union, intersect, minus, etc.) • Categorization using group by……..having • Arranging using order by		**Practical**	Sk Abdul Hanif

Reference Books:

1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2010.
2. Database System Concepts - Henry F. Korth
3. R. Ramakrishnan, J. Gehrke, Database Management Systems 3rd Edition, McGraw-Hill, 2002.
4. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2010.
5. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6th Edition, Pearson Education,2013.

Semester-IV

Core Course (CC 3D) : Computer System Architectur

SEMESTER – IV

Course code	Course title	Credit	No of Hours		
			L	T	P
CC-1D	Computer System Architecture	4-0-2=6	4	0	4
	Discipline 2	6			
	Discipline 3	6			
SEC-2 (Computer Science)	HTML Programming **OR** XML Programming	1-0-1=2	1	0	2
		20			

Syllabus	Number of Lecture	Course	Name of Teacher
Introduction: Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units. Data Representation and basic Computer Arithmetic: Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.	**20 L**	CC	Sk Abdul Hanif
Basic Computer Organization and Design: Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt.	**18 L**		
Central Processing Unit: Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.	**10 L**		
Programming the Basic Computer: Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming. **Input-output Organization:** Peripheral devices, I/O interface, Modes of data transfer, direct memory access.	**12 L**		
Computer System Architecture Lab		**Practical**	Sk Abdul Hanif

Books Recommended:

1. M. Mano, Computer System Architecture, Pearson Education 1992.
2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004
3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009
4. Digital Design, M.M. Mano, Pearson Education Asia, 1979

Skill Enhancement Course (SEC-2) : HTML Programming

Syllabus	Number of Lecture	Course	Name of Teacher
Unit-I: Introduction **Unit-II: The Basics** **Unit-III: Links** **Unit-IV: Images**	**11 L**	SEC	Sk Abdul Hanif
Unit V: – Tables **Unit VI – Forms**	**9 L**		
Software Lab Based on HTML		**Practical**	Sk Abdul Hanif

Book Recommended:

1. Introduction to **HTML** and CSS -- O'Reilly , 2010
2. Jon Duckett, HTML and CSS, John Wiely, 2012

Semester-VI

DSE-3B : Computer Networks

SEMESTER – VI

Course code	Course title	Credit	No of Hours		
			L	T	P
DSE 1B	Computer Networks **OR** Internet Technologies	4-0-2=6	4	0	4
DSE 2B	Discipline 2	6			
DSE 3B	Discipline 3	6			
SEC-4 (Computer Science)	PHP Programming **OR** Programming in Visual Basic	1-0-1=2	1	0	2
		20			

Syllabus	Number of Lecture	Course	Name of Teacher
Basic concepts : Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; Overview of OSI reference model; overview of TCP/IP protocol suite.	**16 L**	DSE	Sk Abdul Hanif
Physical Layer : Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway. Data Link Layer : Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.	**14 L**		
Network Layer : Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive). Transport Layer: Transport services, Transport Layer protocol of TCP and UDP	**14 L**		
Application Layer : Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP. Network Security : Common Terms, Firewalls, Virtual Private Networks.	**16 L**		
Software Lab based on Computer Networks: ***All programs should be developed in C/ C++ / Java*** Implement the concepts of Computer Networks such as: 1. Simulate Checksum Algorithm. 2. Simulate CRC Algorithm 3. Simulate Stop & Wait Protocol. 4. Simulate Go-Back-N Protocol. 5. Simulate Selective Repeat Protocol.		**Practical**	Sk Abdul Hanif

Books Recommended:

1. B.A. Forouzan: Data Communication and Networking, 4th Edition, Tata McGraw Hill, 2007.
2. D.E. Comer, Internetworking with TCP/IP, Vol. I, Prentice Hall of India, 1998.
3. W. Stalling, Data & Computer Communication, 8th edition, Prentice Hall of India, 2006.
4. D. Bertsekas, R. Gallager, Data Networks, 2nd edition, Prentice Hall of India, 1992.

Skill Enhancement Course (SEC-4) : Programming in Visual Basic

SEC – 4 : Programming in Visual Basic

Theory: 20 Lectures Credit: 2

GUI Environment: Introduction to graphical user interface (GUI), programming language (procedural, object oriented, event driven), the GUI environment, compiling, debugging, and running the programs. **(2L)**

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties. designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls **(5L)**

Operations: Data types, constants, named & intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data. **(3L)**

Decision Making : If statement, comparing strings, compound conditions (and, or, not), nested if statements, case structure, using if statements with option buttons & check boxes, displaying message in message box, testing whether input is valid or not. **(5L)**

Forms Handling : Multiple forms creating, adding, removing forms in project, hide, show method, load, unload statement, me keyword, referring to objects on a different forms. **(2L)**

Iteration Handling: Do/loops, for/next loops, using msgbox function, using string function. **(3L)**

Book Recommended:

a. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata Mcgraw Hill Edition 2000 (Fourteenth Reprint 2004)

Coordinator
Science Wing
Hiralal Bhakat College

Head
Department of Comp. Science
Hiralal Bhakat College
Nalhati, Birbhum

Signature
Teacher-in-Charge
Hiralal Bhakat College
Nalhati, Birbhum.

Teacher- in- Charge
Hiralal Bhakat College
Nalhati, Birbhum

HIRALAL BHAKAT COLLEGE * NALHATI, BIRBHUM * Estd-1986 W.B