Gour Mohan Sachin Mandal Mahavidyalaya

Department of Computer Science
Evaluative Report

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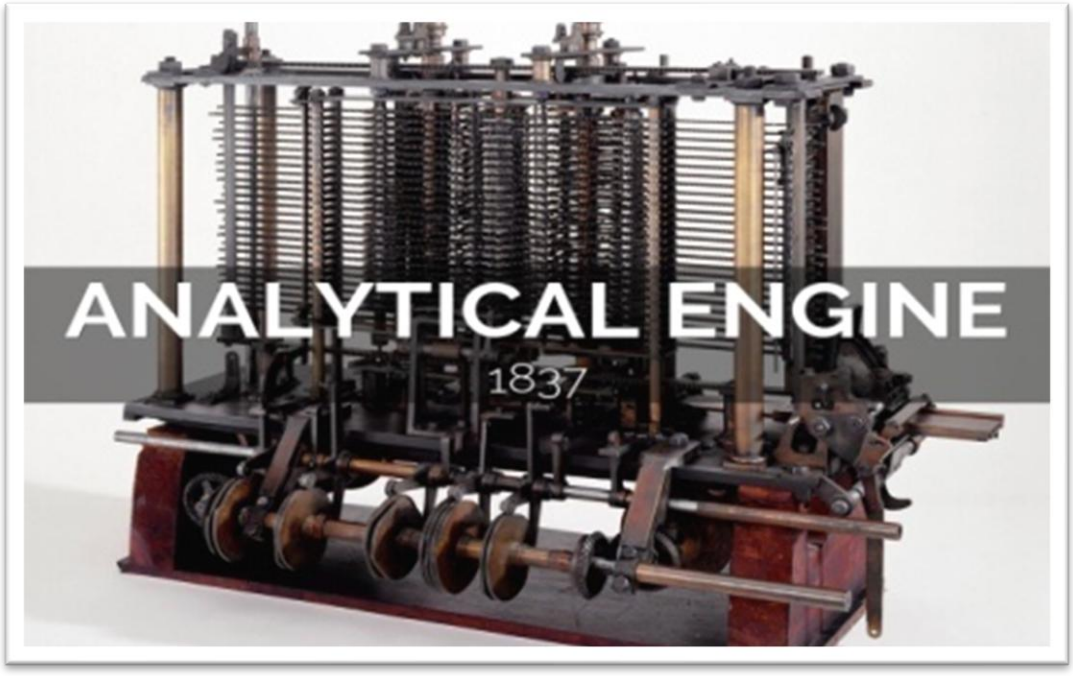


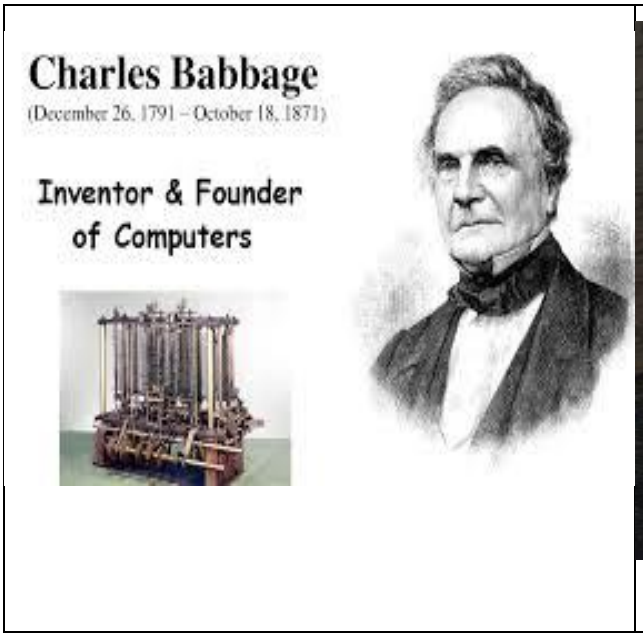
Analytical Engine

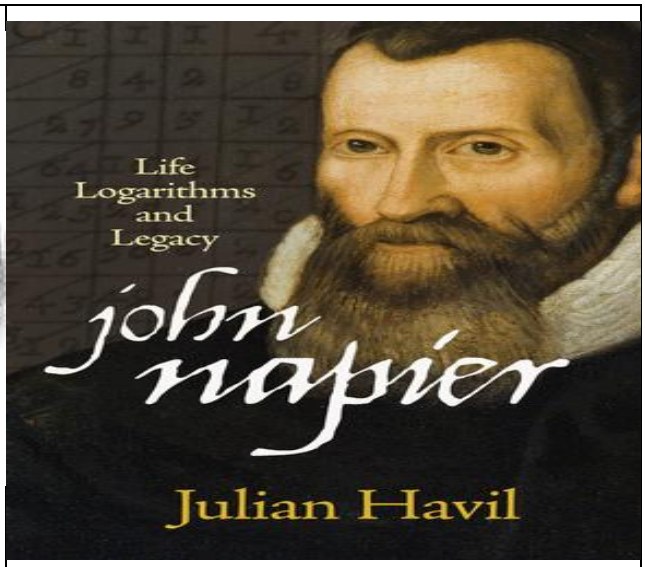
Contents

1. Introduction

The undergraduate course in Computer Science blends traditional values with cutting-edge technology. Our program is designed to provide students with a strong foundation in computer science principles, programming, and problem-solving skills. Students will have the opportunity to work with the latest software tools, engage in hands-on projects, and develop the expertise needed to excel in a digital world. In addition to technical knowledge, we focus on cultivating creativity, critical thinking, and collaborative learning. Students who choose to study Computer Science embark on an exciting journey, preparing for a successful career in the ever-evolving tech industry.

The 21st century is the era of information technology. Our lives today fully depend on computer-based technology, so it is essential for students and society, even more so in rural areas.





2. History Of the Department

The Department of Computer Science was established in the academic year 2009-2010 as an institution offering an undergraduate course Computer Science (General), as a combination subject of Mathematics Honours or as a general paper for BSc general students. Dr Abdulaha Jamadar Hassan, the Honorable principal of this college, first introduced this subject here to spread the knowledge of computer science among the science students.
Ms Nilanjana Sahu was the first faculty in this department. She joined in this department in August 2009. She completed her M.Sc. degree in Calcutta University. She taught Computer Science in this college till April 2014.

Course offered:

At present, the department of Computer Science provides a CBCS 3-year general degree course and CCF a 3-year Minor course only.

3. Faculty Profile

Samaresh Pramanik joined this department as a Contractual Lecturer. Subsequently, the Govt. of West Bengal designated him as a State Aided College Teacher.

Name of The Teacher	Designation	Qualification	Experience
Samaresh Pramanik	State Aided College Teacher -I	M.Sc., B.Ed., M.A(Edu)	10Years

Samaresh Pramanik

He became a graduate in Computer Science from the University of Calcutta and completed his M.Sc. from the University of Burdwan. He also completed his B.Ed. from the Kashmir University. He also completed M.A. in Education in the year 2020.

He served as a Contractual Lecturer at GMSM Mahavidyalaya from 04.05.2015 to 31.12.2019. From 01.01.2020 he works here as a SACT (State Aided College Teacher) till date.

He took the responsibility of both the practical and theory paper of computer science general paper and the SEC paper of Mathematics.

Area of Interest

It will be a very interesting field of study to investigate the broad spectrum field of Network Security and Cryptography.

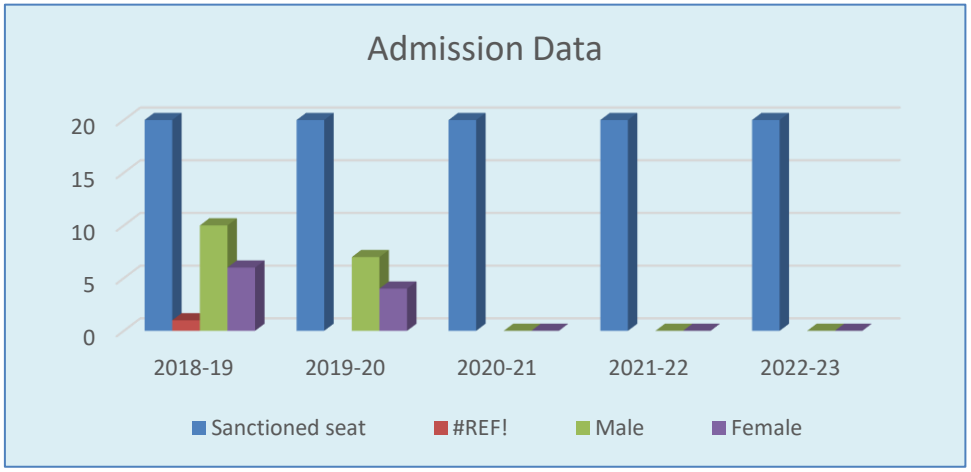
Responsibilities

1. Invigilation duties in the examination conducted by the college and the university.
2. In the academic session 2016-2017,2017-2018, became a member of the Admission Committee.
3. Every year he has been a member of any university examination committee.
4. He has been a member of Banglar Uchyasiksha Portal Committee since 2017.
5. He is also a member of the Audit committee of this college.

4. Students Profile

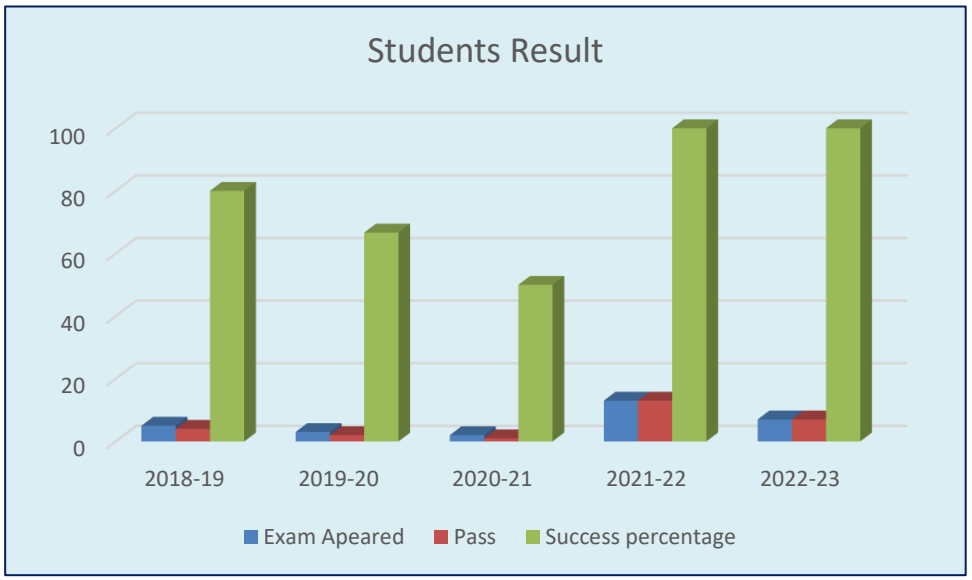
Admission Data

Student Admission Last Five Years					
Sl No	**Year**	**Admitted**	**Male**	**Female**	**Sanctioned seat**
1	2018-19	16	10	6	20
2	2019-20	11	7	4	20
3	2020-21	0	0	0	20
4	2021-22	0	0	0	20
5	2022-23	0	0	0	20



Students' Result

Sl. No	Year	No. of students appeared in the Final Examination	Pass	Success percentage
1	2018-19	5	4	80.00
2	2019-20	3	2	66.67
3	2020-21	2	1	50.00
4	2021-22	13	13	100.00
5	2022-23	7	7	100.00



5. Programme Specific Outcome (PSO) & Course Outcome (CO)

Name of the Programme: B.Sc. Computer Science(G) (Under CBCS)

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: Demonstrate the aptitude of Computer Programming and Computer based problem-solving skills.

PSO2: Display the knowledge of appropriate theory, practices and tools for the specification, design, and implementation.

PSO3: Ability to link knowledge of Computer Science with other two chosen auxiliary disciplines of study.

PSO4: Ability to formulate, to model, to design solutions, procedure, and to use software tools to solve real world problems and evaluate.

PSO5: Ability to appreciate emerging technologies and tools.

PSO6: Apply standard Software Engineering practices and strategies in real-time software project development.

COURSE OUTCOMES (CO)

Semester-1

CMSG-CC-1-Th (Computer Fundamentals and Digital Logic Design)

CO1: To familiarize students about the fundamental design and building blocks of the computer system.

CO2: Learn the Boolean logic and circuit design.

CO3: Learn about different Combinational and Sequential Logic circuits and their functionalities.

CMSG-CC-1-Pr (Word Processing, Spreadsheet, Presentation and Web Design by HTML)

CO1: To familiarize students with the office package (Word, Excel, and PowerPoint Presentation in an open-source environment.)

CO2: Learn the webpage design using HTML

CO3: To be familiar with fundamental data structures and with how these data structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles.

CO4: Ability to choose a data structure to suitably model any data used in computer applications.

Semester-2

CMSG-CC-2-Pr (Programming with C)

CO1: Learn about the strategies of writing efficient and well-structured computer programs.

CO2: Develop the skills for formulating iterative solutions to a problem.

Semester-3:

CMSG-CC- 3-Th (Computer Organization)
CO1: To familiarize the students with arithmetic and logic unit as well as the concept of pipelining.
CO2: To familiarize the students with the hierarchical memory system including cache memories and virtual memory.
CO3: To make students know the different ways of communicating with I/O devices and standard I/O interfaces.

CMSG-CC-3-Pr (Programming using Python)
CO1: To familiarize the students with object-oriented programming and procedure-oriented programming.
CO2: To familiarize the students with the nowadays very much popularity of the software, especially in IT-based companies for web application, database handling, etc.

Semester-4:

CMSG-CC-4-Th (Operating System)
CO1: Describe the important computer system resources and the role of the operating system in their management policies and algorithms.
CO2: Understanding of design issues associated with operating systems.

CMSG-CC-4-Pr (Shell Programming)
CO1: To learn the command substitution to capture program output.
CO2: To learn the conditional statements to control the execution of shell scripts

Name of the Programme: B.Sc. Computer Science(H) (Under CCF)

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1: Demonstrate the aptitude of Computer digital Programming and Computer-based problem-solving skills.
PSO2: Display the knowledge of appropriate theory, the specification, design, and implementation.
PSO3: Ability to link knowledge of Computer Science with other two chosen auxiliary disciplines of study.
PSO4: Ability to formulate, to model, to design solutions, procedure, and to use software tools to solve real world problems and evaluate.
PSO5: Ability to appreciate emerging technologies and tools.
PSO6: Apply standard Software Engineering practices and strategies in real-time software project development.

COURSE OUTCOMES (CO)

SEM-1:

CC-1(Computer fundamentals and Digital Logic)
CO1: To know about the basic building blocks of the computer system.
CO2: Boolean algebra and Boolean function representation.
CO3: Learn about different logic families.

SEC-1(Data visualization using spread sheet)

CO1: To know about the essential concepts and practical skills.
CO2: To know about the widely used open-source spreadsheet software such as OpenOffice, LibreOffice, or Google Spreadsheets.
CO3: Students will acquire the ability to proficiently create, format, manipulate, and analyze data within a spreadsheet.

SEMESTER -2

CC-2 (Problem Solving Using C)
CO1: Develop problem-solving skills coupled with top-down design principles.
CO2: Learn about the strategies of writing efficient and well-structured computer programs.

SEC-2(Web Development)

CO1: To know about the essential concepts about HTML and CSS.
CO2: create well-structured HTML documents using proper tags and elements
CO3: Apply CSS to style webpages, including layout, typography, colors and images.
CO4: Develop and deploy a basic website using HTML and CSS.

SEMESTER -3

CC-3 (Data Structure)
CO1: To be familiar with fundamental data structures and with how these data structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles
CO2: Ability to choose a data structure to suitably model any data used in computer applications.
CO3: Ability to assess efficiency tradeoffs among different data structure implementations.

SEMESTER-4

CC-4(Computer Architecture & Organization)
CO1: To make students understand the basic structure, operation, and characteristics of a digital computer.
CO2: To familiarize the students with the hierarchical memory system, including cache memories and virtual memory.

CO3: To make students know the different ways of communicating with I/O devices and standard I/O interfaces.

INTERDISCIPLINARY COURSE
Fundamentals of Computer Science and its applications
Course Outcome:

- Demonstrate the basic concepts of Computer science, such as Computer Architecture, Data representation, Algorithms, and Data structures.
- Write basic programs in a high-level programming language, such as Python.
- Explain how computers communicate with each other over a network.
- Explain how artificial intelligence is used in real-world applications.
- Use ICT tools to create documents, spreadsheets, and presentations.

6. Departmental Activities

A. Departmental Meeting

Departmental meetings (including Mathematics and Chemistry) are held from time to time to evaluate academic progress and to formulate the policies for betterment. However, in a small department like our department, faculty members are always in the process of interaction and settle day-to-day affairs.

B. Students Week Celebration:

Every year, the first week of January, we celebrate Students' Week to encourage students to participate in various events like quiz competition, Alpana, and Science Exhibition.

C. Webinar / Seminar

Three Webinars Conducted by the Department

*I. **Webinar on Cyber security:***

Topic: Cyber security challenges, and solution in a post pandemic hyper digital world.

Date: 5th September,2020.

Organized by Dept. of computer science in collaboration with Dept. of Economics and IQAC.

II. Webinar on Digital Marketing.

In this digital era how, students can make carrier in nontraditional ways and they can establish themselves in cloud computing and digital marketing sector. We organized This Webinar is especially for above mention purpose.

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III. Webinar on Natural Language Processing.

D. Add-on Course on: Office Automation

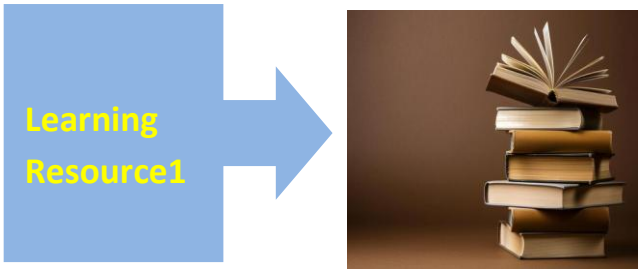
Objective of the course:

Apply skills and concepts for basic use of computer Windows, Word, Excel, PowerPoint, and the Internet in the workplace and future coursework.

E. Wall Magazine:

A Wall magazine from the Computer Science Department has already been displayed in the academic session 2015-16 with some substances to manifest the potentiality of students.

F. Learning Resources:



Session	Number of books in Stock
2018-19	20
2019-20	35
2020-21	35
2021-22	35
2022-23	40
2023-24	45

Session	Number of Desktop	No of Printer	Number of Projectors
2018-19	22	1	1
2019-20	22	1	1
2020-21	20	1	1
2021-22	20	0	1
2022-23	19	0	1
2023-24	17	0	1

G. ICT Tools For Teaching Learning

- Regular class through projectors.
- Chalk and talk methods.
- Online class through Google Meet.
- Sharing study materials and important updates via WhatsApp group
- Using advanced software like Python, etc.

H. Departmental Library

There are some reference books to enrich the knowledge of the students as well as the teachers.

The list of books is as follows:

1. Programming in ANSI C
2. Computer Organization
3. Computer Networking
4. Unix Shell Programming
5. Ms Word Learning
6. Ms Excel Learning
7. Operating System
8. Python
10. Data Structure
11. Networking
12. Java
13. Computer organization.
14. Database Management System.

I. Student Progression

List of students who enrolled for higher education

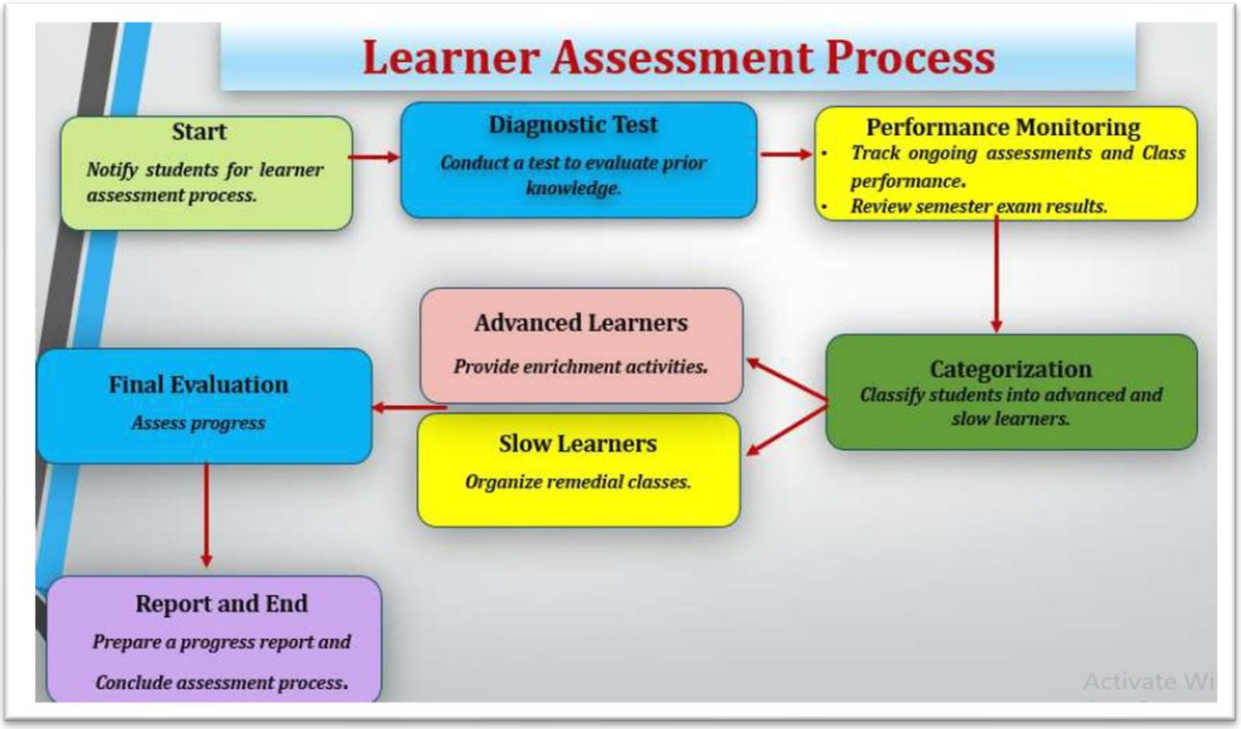
Sl. no	Student Name	Selected Degree	Institute
1	Kaushik Halder	B. Ed	Mass Education Teachers Training Institute (Mathurapur)
2	Banani Kapat	B. Ed	Sundarban Ashutosh B.Ed. college for women (Kakdwip)

List of the students who have been placed

Sl. no	Student Name	Current Status	Organization / Designation
1	Rani Mukherjee	Employed	PNB Met life (Team Leader)
2	Amit Kumar Naskar	Employed	Kolkata Metro (Technician- contractual)
3	Lab Kumar Mondal	Employed	Electro Allied company

J. Mentor Mentee Programme

Samaresh Pramanik has 25-30 mentees per semester or per year.



Lesson Plan

Lesson Plan for Computer Science (CMSG) Choice Base Credit System (CBCS) 2018

Semester-I				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Computer Fundamentals and Digital Logic Design	CMS-G-CC-1	Computer Fundamentals	July	15
		Computer Fundamentals	August	05
		Number Systems and Codes	August	08
		Boolean Algebra	September	08
		Digital Electronics	September	08
			November	16
Word Processing, Spreadsheet, Presentation and Web design by HTML	CMS-G-CC-1-P Sem-1-Core Course-1 Practical	Word Processing, Presentation	August	06
		Spreadsheet,	September	04
		Web Design	November	10
			December	10

Semester-II				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Algorithm and Data Structure	CMS-G-CC-2-2-TH	Introduction	February	8
		Arrays	February	4
		Linked List	March	10
		Stacks and Queues	March	14
		Searching	April	4
		Sorting	April	10
		Tree	May	10
Programming with C	CMS-G-CC-2-2-P	Basic Structure	February	5
		Operators	February	5
		Branching and Looping	February	3
		Arrays	March	5
		User defined functions	March	7
		Structures	April	5
		Pointers	April	3
		File handling	May	7

Semester-III				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Computer Organization	CMS-G-CC-3-3-TH	Basic Computer Organization	July	15
		Instruction	July	02
		Control Unit	July	05
		ALU	July	10
		Memory	August	15
		I/O	August	08
		Computer Peripherals	August	05
Programming using PYTHON	CMS-G-CC-3-3-P	Introduction to Python	September	2
		Ordered Data types - Strings, Lists and Tuples	September	6
		Conditionals and Iterators	September	12
		User-defined Functions and Recursion	November	10
		File Handling and Exception Handling	November	5
		Unordered data types - Sets and Dictionaries	December	5

Semester-IV				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Operating System	CMS-G-CC-4-4-TH	System Software	January	3
		Introduction to Operating Systems	February	12
		Concepts of Synchronization	February	8
		Processor Management	March	7
		I/O Management	March	6
		Memory Management	March	8
		File Systems	April	6
Shell Programming (Unix/ Linux)	CMS-G-CC-4-4-P	Shell Programming	April	6
		Shell Programming	April	10
		Shell Programming	May	15

Semester-V				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Communication, Computer Network, and Internet	CMS-G-SEC-A-X-1-TH:	Introduction: Components, Uses, Application Network Hierarchy: LAN, MAN, WAN; Topology; Network Software: Layered, Interface, Protocol, Connection Less and Connection Oriented Service. Reference Model: ISO-OSI and TCP/IP; Functionalities of each layer, Comparison between two models.	July	10
		Data and Signals (Analog and Digital): Periodic & Non-periodic signals, FDM, TDM, Bandwidth, Bit Rate, Baud Rate, Bit Length, and Composite Signal. Transmission Media: Transmission Spectrum, Guided (Twisted Pair, Coaxial, Optical Fiber) and Unguided (Radio Wave, Microwave, Infrared, and Satellite Communication: Geostationary, Low Orbit and VSAT).	August	8
		Transmission Impairments: Noise, Distortion and Attenuation. Digital Transmission: Line Coding (NRZ, NRZ-L, NRZ-I, RZ, Manchester, Differential Manchester); Block Coding (Basic Idea); Code Modulation (PCM, DM), Concepts of ADSL Modem. Analog Transmission: Shift Keying (ASK, FSK, PSK, QPSK, QAM); Multiplexing: FDM, TDM, WDM.	September	8
		Internet:(10 hours) Bridges, Routers, Modem, Connectivity concept, DNS, URL, ISDN, WWW, Browser, IP Address, E-mail: Architecture and services, Voice and Video conferencing, Internet service providers, ADSL.		5
Database Management System	CMS-G-DSE-A-5-1-TH	Drawbacks of Legacy System; Advantages of DBMS; Layered Architecture of Database, Data Independence; Data Models; Schemas and Instances; Database Languages; Database	July	5
		Entity, Attributes and Relationship; Structural Constraints; Keys; ER Diagram of Some Example Database; Weak Entity Set; Symbolic Conventions; Specialization and Generalization; Constraints of Specialization and Generalization; Aggregation.	August	10
		Basic Concepts of Relational Model; Relational Algebra; Tuple Relational Calculus; Domain Relational Calculus	August	2
		Problems of Un-Normalized Database; Functional Dependencies, Derivation Rules, Closure of FD Set, Membership of A Dependency, Canonical Cover; Decomposition to 1NF, 2NF, 3NF Or BCNF Using FD; Lossless Join Decomposition Algorithm; Dependency preservation.	September	8

Semester-VI				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Object-Oriented Programming by Java	CMS-G-	Input/ Output, Function and Operator Overloading, Constructors and.	March	10
		Destructors, Copy Constructors Assignment Operator, Overloading, Single and Multiple Inheritance, Polymorphism and Virtual Functions	April	10
	CMS-G-	Object-Oriented Programming Lab, by using C++ / Java	March	10
			April	10
			May	15

Lesson Plan for a 3-Year Computer Science Multidisciplinary Course

Semester- I				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Computer fundamentals & Digital Logic	**CC-1-Th**	Computer Fundamentals	August	2
		Number Systems	August	3
		Boolean Algebra	August	4
		Adder & Subtractor	August	5
		Data Selector/Multiplexer	September	5
		Data Distributor	September	2
		Encoders	September	2
		Chip Selector/Minterm Generator	September	3
		Parity bit, Code Converters and magnitude comparators	November	2
		Latch& Flip-Flops	November	5
		Registers	November	3
		Asynchronous Counter	November	4
		Synchronous Counter	November	3
		Integrated Circuits (Qualitative Study)	December	2
Computer fundamentals & Digital Logic	**CC-1-Pr**	**Practical**	September	15
			November	15
Web Development	**SEC – 1**	Introduction to Web development	July	2
		HTML Fundamentals	July	2
		CSS basics	July	2
		CSS Layout and box model	August	2
		Typography and colors	August	3
		Images and multimedia	September	3
		CSS Selectors and specificity	September	3
		Responsive Web design	September	3
		CSS Frameworks and libraries	November	2
		Web development best practices	November	2
		Building and deploying a website	November	6

Semester- II				
Unit name	**Paper**	**Sub unit name**	**Month**	**No. of Classes**
Computer fundamentals & Digital Logic	**CC-2-Th**	Introduction to Programming	February	3
		Algorithm/ Flowchart for Problem Solving	February	6
		Introduction to 'C' Language	February	2
		Adder & Subtractor	March	5
		Conditional Statements and Loops	March	5
		Arrays	March	6
		Functions	April	2
		Storage Classes	April	5
		Structures and Unions	April	6
		Pointers	April	3
		File Processing	May	2
		Organizing C Projects	May	4
Computer fundamentals & Digital l Logic	**CC-2-Pr**	Practical	February	8
			March	7
			April	10
			May	5
Web Development	**SEC – 1**	Introduction to Web development	February	2
		HTML Fundamentals	February	2
		CSS basics	February	2
		CSS Layout and box model	February	2
		Typography and colors	March	3
		Images and multimedia	March	3
		CSS Selectors and specificity	March	3
		Responsive Web design	March	3
		CSS Frameworks and libraries	April	2
		Web development best practices	April	2
		Building and deploying a website	April	6

Semester - III				
Unit name	**Paper**	**Sub unit name**	**Month**	**Class hours**
Data Structure	**CC-3-Th**	Introduction to Data Structure	May	2
		Arrays	May	2
		Linked Lists	May	8
		Stacks	may	4
		Queues	July	4
		Recursion	July	4
		Trees	July	12
		Searching and Sorting	July	2
		Hashing	July	4
Data Structure	**CC-3-Pr**	Practical	February	30
Web Development	**SEC – 1**	Introduction to Web development	February	2
		HTML Fundamentals	March	2
		CSS basics	March	2
		CSS Layout and box model	March	2
		Typography and colors	March	3
		Images and multimedia	April	3
		CSS Selectors and specificity	April	3
		Responsive Web design	April	3
		CSS Frameworks and libraries	May	2
		Web development best practices	May	2
		Building and deploying a website	May	6

Lesson Plan for CCF Student IDC System (NEP-2020)

Fundamentals of Computer Science and its applications

		Month	Duration (HR)
Introduction to computers and computing	History of computing and the different types of computers that are available today, Generations of computers, Basic Building blocks (CPU, Memory, I/O Devices), types of computers (Mainframe, Desktop, Laptop, System on Chip). Classification of Software – System and Application Software, Basic Security Anti-Virus	July	8hrs.
Data representation and number systems	Concept of binary code, ASCII, and how it is used to represent data in computers, how different number systems work	August	6 hrs.
Algorithms and data structures	Basic concepts of algorithms and data structures: Common algorithms and data structures, such as sorting algorithms and linked lists.	September	6 hrs.
Office suite	Word processors, Spreadsheets, and Presentations	September	8 hrs.
Programming languages	Basic concepts of programming languages: types of programming languages, machine language, assembly language, high-level language, Introduction to writing basic programs in Python (Finding prime numbers, finding GCD of two numbers, etc.,)	November	8 hrs.
Networking	Basic concept of networking and how computers communicate with each other, LAN, WAN, Introduction to the concept of the internet and how it works. Mobile communication	November	5 hrs.
Artificial intelligence	Basic concept of artificial intelligence and how it is used in computers. Introduction to Machine Learning, Preliminary concept of Big Data, Recommendation System, Conversation Agents like ChatGPT, Prompt Engineering	December	5 hrs.
Information and Communications (ICT) Tools	Importance of ICT tools, different types of ICT tools, and their uses	January	1 hrs.

SWOC Analysis

Strength: • Good reputation of the department. • Good teacher student relationship. • Good discipline.	Weakness: • No permanent faculty.
Opportunity: • Revised syllabus enables the students to remain updated. • Increasing digitization enhances departmental efficiency and performance.	Challenges: • Lack of an advanced laboratory.

Future Plans:

We wish to offer an Honours course very soon. To increase students' interest in science, especially in Computer Science, we plan to organize more seminars, project works, student-teacher interactive sessions, etc., to attract more academically sound students in this subject. The department is eager to get involved in the minor research project to enhance the knowledge of the concerned teachers.