THE BHAWANIPUR EDUCATION SOCIETY COLLEGE

A MINORITY RUN COLLEGE. AFFILIATED TO UNIVERSITY OF CALCUTTA
RECOGNISED UNDER SECTION 2(F) & 12 (B) OF THE UGC ACT, 1956

Program Specific Outcome

B.Sc. (Honours) Computer Science 2019-2020

The **Program Specific Outcome** for B. Sc. in Computer Science is as follows:

PSO1: Students can apply mathematical and scientific reasoning to a variety of computational problems.

PSO2: Students can formulate, analyse and compare alternative solutions to computing problems.

PSO3: Students learn how to deal with criticism of their ideas in a professional manner, and also use it to improve their designs.

PSO4: Students can design and implement software systems that meet specified design and performance requirements.

PSO5: Students can acquire inquisitive attitude and skill to enable creating an original discovery or design related to computing.

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Program Outcome

B.Sc. (Honours) Computer Science 2019-2020

	Program Outcome	Description
PO1	**Subject Knowledge**	This course prepares students with the basic understandings in the theoretical and practical aspects of computer science discipline necessary for further study.
	Method of Measurement:	**Assessment (Internal & Final)**
PO2	**Problem Analysis**	Students are able to apply fundamental principles and methods of Computer Science to a wide range of applications. They can design and implement software systems that meet specified design and performance requirements.
	Method of Measurement:	**Continuous Practical Assignment**
PO3	**Critical Thinking**	Students can apply mathematical and scientific reasoning to a variety of computational problems. They can also formulate, analyze and compare alternative solutions to computing problems. They can acquire inquisitive attitude and skill to enable creating an original discovery or design related to computing.
	Method of Measurement:	**Assessment (Internal & Final)**
PO4	**Effective Communication**	Students are able to present their ideas flawlessly, not only in English, but also in Mathematical/Algorithmic Terms.
	Method of Measurement:	**Algorithm Writing and Explanation in Assignments and on Boards.**
PO5	**Social Interaction**	Students learn how to deal with criticism of their ideas in a professional manner, and also use it to improve their designs.
	Method of Measurement:	**Regular Presentation Seminars**

PO6	**Ethics**	Students can learn the ethical and social responsibilities required for a professional in this field.
	Method of Measurement:	**Regular Assignment Analysis by the Teachers**
PO7	**Self-Directed and life-long learning:**	Students can acquire a life-long interest in the field of Computer Science, which will motivate them to continue the process of learning even after the completion of this course.
	Method of Measurement:	**Student-Teacher Interaction on Research Topics**

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Course Outcome

B.Sc. (Honours) Computer Science 2019-2020

Subject: Computer Science (Honours) 2019-2020	
Paper	**Course Outcome**
Semester 1	
CMS-A-CC-1-1	
Theory: Digital Logic	**COCC1.1:** Develop an understanding about the various Number Systems used in Computer Science.
	COCC1.2: Learn about the building blocks of digital circuits, and use them to create bigger combinational and sequential circuits.
Practical: Digital Circuits	**COCC1.3:** Learn how to make basic digital circuits by hand.
CMS-A-CC-1-2	
Theory: Programming Fundamentals using C	**COCC2.1:** Learn the theoretical background of the C programming language.
Practical: Programming Fundamentals using C	**COCC2.2:** Develop the ability to write programs in C language.
Semester 2	
CMS-A-CC-2-3	
Theory: Data Structures	**COCC3.1:** Develop an understanding about the various data structures and its applications.
	COCC3.2: Learn about the various algorithm writing techniques and use them to express the ideas behind the programs.
Practical: Data Structures using C	**COCC3.3:** Learn how to implement the various Data Structures in C.
CMS-A-CC-2-4	
Theory: Basic Electronic Devices and Circuits	**COCC4.1:** Learn the theoretical background that enables the proper functioning of basic electronic devices
	COCC4.2: Develop an understanding about the various electronic technologies available that are integral to the design of computer circuits.
Practical: Basic Electronic Devices and Circuits	**COCC4.3:** Develop the ability to design electronic circuits by hand.

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Semester 3	
CMS-A-CC-3-5	
Theory: Computer Organization and Architecture	**COCC5.1:** Learn about the various components of a digital computer, and understand how they are integrated to create a Computer System
Theory: Computer Organization and Architecture	**COCC5.2:** Learn how to make advanced digital circuits by hand
CMS-A-CC-3-6	
Theory: Computational Mathematics	**COCC6.1:** Develop an ability to solve computational problems using the fundamental laws of Discrete Mathematics
	COCC6.2: Learn how to model real life problems by studying the structural properties of a Graph
	COCC6.3: Apply the knowledge of Numerical Methods to solve real life numerical problems;
Practical: Numerical Methods Lab	**COCC6.4:** Learn how to implement Numerical Algorithms in C Programming.
CMS-A-CC-3-7	
Theory: Operating Systems	**COCC7.1:** Develop a deep understanding of the design issues and working of an Operating System.
Practical: Shell Scripting	**COCC7.2:** Learn how to write programs using shell scripting.
CMS-A- SEC-A-3-1-TH	
Theory: Computer Graphics	**COSECA1.1:** Learn about the various display devices and the mathematical algorithms used to create Graphics based applications.
CMS-A- SEC-A-3-2-TH	
Theory: IOT	**COSECA2.1:** Study about the basic building blocks of IOT devices and see how they're interconnected to create real life systems.

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Semester 4	
CMS-A-CC-4-8	
Theory: Data Communication, Networking and Internet Technology	**COCC8.1:** Develop a deep understanding of Computer Networks, the various protocols in use today and the existing architectures used to create a network.
	COCC8.2: Understand the fundamentals of data communication.
Theory: Computer Networking and Web-Design Lab	**COCC8.3:** Learn how to design web-pages using HTML and CSS.
	COCC8.4: Learn how to make your web-pages more dynamic using JavaScript.
	COCC8.5: Learn about the fundamentals of working with networking cables and other networking hardware devices.
CMS-A-CC-4-9	
Theory: Introduction to Algorithms and its applications	**COCC9.1:** Develop an ability to write efficient algorithms.
	COCC9.2: Learn how to compare two or more algorithms by looking at their running time complexity and space requirements.
	COCC9.3: Understand the working of different graph algorithms.
Practical: Algorithm Labs	**COCC9.4:** Learn how to implement Graph Algorithms in C Programming.
CMS-A-CC-4-10	
Theory: Microprocessor & its Applications	**COCC10.1:** Learn about the architecture of the 8085 microprocessor, acquire the ability to interface it with various IO devices and develop problem solving skills related to 8085 microprocessors.
	COCC10.2: Learn about the architecture of the 8086 Microprocessor.
Practical: Programming with Microprocessor - 8085	**COCC10.3:** Learn how to program in 8085 microprocessors.
CMS-A- SEC-B-4-1-TH	
Theory: Information Security	**COSECB1.1:** Learn the mathematical foundation of cryptography.
	COSECB1.2: Learn about the different cryptography ciphers and algorithms.
	COSECB1.3: Develop a deep understanding of the principles of network security.
	COSECB1.4: Learn about the different Cyber Laws in India.
CMS-A- SEC-B-4-2-TH	
Theory: E-Commerce	**COSECB2.1:** Study about the basic building blocks of E-Commerce Systems
	COSECB2.2: Learn about the different cryptography ciphers and algorithms.

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Part III: Third Year	
Paper V	
Theory: Microprocessors, COA and Computer Networking	**CO5.1:** Learn about the architecture of the 8085 microprocessor, acquire the ability to interface it with various IO devices and develop problem solving skills related to 8085 microprocessors.
	CO5.2: Learn about the various components of a digital computer, understand how they are integrated to create a Computer System and compare the various types of Control units and Architectures.
	CO5.3: Understand the fundamentals of data communication.
	CO5.4: Develop a deep understanding of Computer Networks, the various protocols in use today and the existing architectures used to create a network.
Paper VI	
Theory: C++, Computer Graphics, Software Engineering, DBMS	**CO6.1:** Learn the theoretical concepts, features of object oriented programming paradigm.
	CO6.2: Develop an understanding of the various stages in the development cycle of Software.
	CO6.3: Learn about the various display devices and the mathematical algorithms used to create Graphics based applications.
	CO6.4: Develop a deep understanding of the various types of databases and the set of software used to maintain them.
Paper VII	
Practical: Microprocessors, SQL and VB	**CO7.1:** Learn how to program in 8085 microprocessors
	CO7.2: Learn how to create and maintain databases using the SQL language.
	CO7.3: Learn how to develop GUI for DBMS applications using Visual Basic 6.

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Paper VIII	
Practical: C++ and Shell Scripting	**CO8.1:** Learn how to write programs using C++ and use the various OOP features.
	CO8.2: Learn how to write programs in shell scripting.

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MAPPING OF PO AND CO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
COCC1.1	✓	✓					
COCC1.2	✓	✓	✓				✓
COCC1.3		✓	✓	✓			✓
COCC2.1	✓						✓
COCC2.2		✓	✓	✓	✓	✓	
COCC3.1	✓	✓					
COCC3.2	✓	✓	✓				✓
COCC3.3		✓	✓	✓		✓	✓
COCC4.1	✓	✓					
COCC4.2	✓	✓	✓				✓
COCC4.3		✓	✓	✓		✓	✓
COCC5.1	✓	✓					
COCC5.2		✓	✓	✓	✓	✓	✓
COCC6.1	✓	✓					✓
COCC6.2	✓	✓					✓
COCC6.3	✓	✓					✓
COCC6.4		✓	✓	✓	✓	✓	✓
COCC7.1	✓	✓					✓
COCC7.2		✓	✓	✓	✓	✓	✓
COSECA1.1	✓	✓					✓
COSECA2.1	✓	✓					✓
COCC8.1	✓						
COCC8.2	✓						
COCC8.3		✓	✓	✓	✓	✓	✓
COCC8.4		✓	✓	✓	✓	✓	✓
COCC8.5		✓	✓	✓	✓	✓	✓
COCC9.1	✓		✓				✓
COCC9.2	✓	✓	✓				✓
COCC9.3	✓	✓	✓				✓
COCC9.4		✓	✓	✓	✓	✓	✓
COCC10.1	✓	✓	✓				✓
COCC10.2	✓	✓	✓				✓
COCC10.3		✓	✓	✓	✓	✓	✓

COSECB1.1	✓	✓					
COSECB1.2	✓	✓					✓
COSECB1.3	✓	✓					
COSECB1.4	✓	✓					✓
COSECB2.1	✓	✓					
COSECB2.2	✓	✓					✓
CO5.1	✓	✓	✓				✓
CO5.2	✓	✓	✓				✓
CO5.3	✓		✓			✓	✓
CO5.4	✓		✓			✓	✓
CO6.1	✓	✓	✓				✓
CO6.2	✓	✓	✓				✓