PROGRAMME NAME	BSc. HONOURS IN COMPUTER SCIENCE
PROGRAMME SPECIFIC OUTCOMES	THE OBJECTIVES OF THE PROGRAMME ARE – **PO-1 : Develop theoretical foundations and knowledge in Computer Science with the basics of computers and its different utilizations and methodologies.** **PO-2 : To explore and gain knowledge regarding the widespread applications of computers throughout our society and beyond.** **PO-2 : To build the requisite skill set and analytical abilities for developing computer based solutions for real world problems.** **PO-3 : To assist students to build software and hardware tools and applications.** **PO-4 : To create awareness, knowledge about process and product standards.** **PO-5 : To train students in professional skills according to the Industry requirements, so that it helps in job market placements.** **PO-6 : To prepare necessary knowledge base for future higher studies and Research & Development related activities.** **PO-7 : To help students build-up a successful career in the domain of Computer Science.**

HONOURS COURSE OUTCOMES			
SEMESTER	COURSE CODE	COURSE TITLE	COURSE OUTCOME
I	CC-1	PROGRAMMING FUNDAMENTALS USING C/ C++	Upon completion of this course, the students will be able to: 1. Use the fundamentals of C programming in trivial problem solving 2. Enhance skill on problem solving by constructing algorithms 3. Identify solutions to a problem and apply control structures and user defined functions for solving the problem. 4. Demonstrate the use of Strings and string handling functions 5. Apply skill of identifying appropriate programming constructs for problem solving
I	CC-2	Computer System Architecture	Upon completion of this course, the students will be able to know : 1. Number systems and its operation, fixed and floating point representation, Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexers, registers, counters and memory units 2. Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt, Interconnection Structures, Bus Interconnection design of basic computer. 3. Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming, RISC, CISC architectures, pipelining and parallel architecture. Cache

			memory, Associative memory, mapping. 4. I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels.
I	AECC-1	COMPULSORY ENVS	AECC-1 is a compulsory general paper of 1st year undergraduate student. In this paper We teaches the fundamentals of environmental studies.This paper introduces the fundamental principles and concept of environmental science , ecology and related interdisciplinary subject such as policy , law ,Economics, pollution control , resources management etc.
II	CC-3	PROGRAMMING IN JAVA	This course seeks to teach – 1. Basic JAVA, its programming constructs (loops etc), 2. The various OOP principles - Polymorphism, Inheritance, Encapsulation. 3. Multithreading 4. Applet programming 5. Exception handling
II	CC-4	DISCRETE STRUCTURE	This course seeks to teach basic Discrete Structures.In this course they will able to know about set theory and its application,graph theory and its application.Propositional Logic,Recurrences are also taught
II	AECC-2	COMMUNICATIVE ENGLISH/ MIL (BENGALI/ FRENCH)	COURSE OUTCOME GIVEN SHEET CONTAINING IN ENGLISH , BENGALI , FRENCH AECC-2 (SEMESTER-2)
III	CC-5	DATA STRUCTURES	Upon completion of this course Students will be able to: 1. Analyze algorithms 2. Understand and Implement different Data Structures 3. Understand where and when to use different Data Structures

III	CC-6	OPERATING SYSTEMS	This course seeks to teach – 1. Basic fundamentals and functions of OS, 2. Process basics, process scheduling, 3. Synchronization, 4. Deadlocks and management 5. Memory management, 6. Storage management, 7. Security. Programming related to them is also in the scope of the course.
III	CC-7	Computer Networking	The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.
III	SEC-1	PROGRAMMING IN PYTHON	The course objectives include learning about basic python language.In this course they are able to know following 1. Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation 2. Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators(Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator)

IV	CC-8	ALGORITHMS	Upon completion of this course Students will be able to: 1. Analyze and Compare different Algorithms 2. Prove the correctness of algorithms using inductive proofs and Analyze worst-case running times of algorithms using asymptotic analysis 3. Understand and Implement different Algorithm techniques or learn various approaches to solve a problem 4. Describe the classes P, NP, and NPComplete
IV	CC-9	SOFTWARE ENGINEERING	Upon completion of the course students are able to- 1. Basic knowledge and understanding of the analysis and design of complex systems. 2. Ability to apply software engineering principles and techniques. 3. Ability to develop, maintain and evaluate large-scale software systems. 4. To produce efficient, reliable, robust and cost-effective software solutions. 5. Ability to perform independent research and analysis. 6. To communicate and coordinate competently by listening, speaking, reading and writing english for technical and general purposes. 7. Ability to work as an effective member or leader of software engineering teams. 8. To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain. 9. Ability to understand and meet ethical standards and legal responsibilities.
IV	CC-10	Database Management System	Every real-world application needs a persistence layer for storing and manipulating related data. Database management systems provide the most efficient way of performing these tasks. After completion of this program the

			student will learn the fundamentals of DBMS. How data is stored, and ways of manipulation of data.
IV	SEC-2	UNIX	On completion of this course the student should be able to: Identify and use UNIX/Linux utilities to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks.
V	CC-11	INTERNET TECHNOLOGIES	The reaction of a web-based application in response to the user's actions can be achieved by the use of server-side scripting, client-side scripting, content holder structures and presentation layer designs. In this program Java with JSP Servlet, JavaScript, HTML and CSS are taught so that the students have the essence of the four pillars of Web Development.
V	CC-12	THEORY OF COMPUTATION	Upon completion of this course Students will be able to: 1. Understand the relation between these formal languages, machines, and grammars 2. Understand different types of Grammar 3. Design Finite Automata, Push-Down Automata and Turing Machines 4. Understand the complexity for P and NP completeness for the given problem
V	DSE-1	MICROPROCESSORS	Upon completion of the course students are able to- 1. Recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer systems. 2. Identify a detailed s/w & h/w structure of the Microprocessor. 3. Illustrate how the different

			peripherals (8255, 8253 etc.) are interfaced with Microprocessors.
			4. Distinguish and analyze the properties of Microprocessors & Microcontrollers.
			5. Analyze the data transfer information through serial & parallel ports.
			6. Train their practical knowledge through laboratory experiments.
V	DSE-2	SYSTEM PROGRAMMING	This course seeks to teach – 1. Basic system programming fundamentals like Assembler, loader, linker 2. The various phases of Compiler design in detail. 3. The various phases - lexical analysis, syntax analysis, semantic analysis etc are taught in detail to enable the students to understand the functioning and design of compilers.
VI	CC-13	ARTIFICIAL INTELLIGENCE	Upon successful completion of this course, the student shall be able to: 1) Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations. 2) Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. 3) Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. 4) Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool. 5) Demonstrate proficiency in applying scientific methods to models of machine learning. 6) Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.

VI	CC-14	COMPUTER GRAPHICS	This course seeks to teach the – 1. Basics of computer graphics . Basics like raster scan, random scan etc are taught. 2. Various graphics algorithms. Algorithms like DDA, Bresenham's line drawing, Midpoint lin drawing, circle drawing algorithms are taught. 3. Basic transformations and composite transformations are taught. 4. Clipping and Colouring Algorithms are also taught.
VI	DSE-3	SOFT COMPUTING	Upon completion of this course Students will be able to: 1. Understand the basic mathematics behind the concepts of Fuzzy Systems, Neural Network and Genetic Algorithms 2. Understand different Soft Computing Techniques 3. Understand and Implement different Neural Network Architectures 4. Understand and Implement a basic Fuzzy System 5. Understand and Implement basic Genetic Algorithm
VI	DSE-4	PROJECT WORK/ DISSERTATION	All the faculty members work with various student teams to develop projects based on the various courses, concepts taught during the length of the programme. Project report, presentation and a viva-voce based on the undertaken project are used for evaluation purposes.