COURSE AND PROGRAM OUTCOMES OF COMPUTER SCIENCE HONOURS(B.Sc.) UNDER CBCS

GOVT. WOMEN'S COLLEGE , BALANGIR

Information and Communication Technology (ICT) has today become integral part of all industry domains as well as fields of academics and research. The industry requirements and technologies have been steadily and rapidly advancing. Organizations are increasingly opting for opensource systems. The students too these days are thinking beyond career in the industry and aiming for research opportunities. A genuine attempt has been made while designing the new syllabus for this 3- year B. Sc. Computer Science (H) course. Not only does it prepare the students for a career in Software industry, it also motivates them towards further studies and research opportunities. The core philosophy of overall syllabus is to:

A. Form strong foundation of Computer science
B. Introduce emerging trends to the students in gradual way
C. Groom the students for the challenges of ICT industry

Course Objectives and Course Outcomes

Dept. of Computer science, Govt. Women's College, Balangir

SEMESTER	COURSE CODE	COURSE NAME	COURSE OUTCOMES
SEM-1	C-1	Programming Using C	CO1- Demonstrate an understanding of computer programming language concepts. CO2- Ability to design and develop Computer programs in C. CO3- Explain input, output statements in C programming. CO4- Design, develop and test selection logic program using decision making and looping statements in C Programming. CO6- Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures. CO7- Able to analyse and interpret the concept of pointer and function, declarations, initialization operations on pointers and their usage. CO9- Illustrate user defined data types including structures and unions to solve the problems. CO10- Illustrate file handling function in c program.
	C-2	Digital Logic Design	CO1-To understand different methods used for the simplification of Boolean functions and binary arithmetic. CO2-To design and implement combinational circuits, synchronous & asynchronous sequential circuits. CO3-To study in detail about Semiconductor Memory Systems.

SEM-2	C-3	Programming Using C++	CO1- Understand and Apply object oriented programming concepts in problem solving through C++. CO2-Describe the concepts of classes, objects, member function, constructors and destructor. CO3-Explain the need of operator overloading, inheritance, polymorphism, and virtual functions. CO4- To be able to develop logics to create programs/ applications in C++.
	C-4	Data Structure	CO1- To learn how the choice of data structures impacts the performance of programs. CO2- To study specific data structures such as arrays, linear lists, stacks, queues, hash tables, binary trees, binary search trees, heaps and AVL trees. CO3- To learn efficient searching and sorting technique. CO4-Understand various techniques for representation of the data in the real world.
SEM-3	C-5	JAVA Programming	CO1- To learn the fundamentals of Object Oriented Programming in Java environment. CO2- To learn the use of Java language and the Java Virtual Machine. CO3- To write simple Java programming applications.
	C-6	Database Systems	CO1-To understand user requirements and frame it in data model. CO2-To understand creations, manipulation and querying of data in databases. CO3-Solve real world problems using appropriate set, function, and relational models.

			CO4-Design E-R Model for given requirements and convert the same into database tables. CO5-Illustrate the basics of Structured Query Language and construct queries using SQL.
	C-7	Discrete Mathematical Structures	CO1-To learn the mathematical foundations for Computer Science. CO2- Topics covered essential for understanding various courses. CO3- Express a logic sentence in terms of predicates, quantifiers, and logical connectives. CO4-Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion.
SEM-4	C-8	Operating System	CO1- To understand Operating system structure and services. CO2- Understand the basics of operating systems like kernel, shell, types and views of OS. CO3- Describe the various CPU scheduling algorithms and remove deadlocks. CO4- Explain various memory management techniques and concept of thrashing. CO5- Recognize file system interface, protection and security mechanisms.
	C-9	Computer Networks	CO1-Identify and use various networking components Understand different transmission media and design cables for establishing a network. CO2 -Understand the TCP/IP configuration for Windows and Linux. CO3- Implement any topology using network devices. CO4 -Implement device sharing on network.
	C-10	Computer Graphics	CO1 -Gain knowledge about graphics hardware devices and software used. CO2 -Understand

			the 2-dimensional graphics and their transformations CO3- Understand the 3-dimensional graphics and their transformations. CO4- Be able to create effective programs for solving graphics problems.
SEM-5	C-11	Web Technology	CO1-To learn the fundamentals of web designing. CO2-To design and develop standard and interactive web pages. CO3-To learn some popular web scripting languages. CO4-TO apply the described concepts, principles and methods to development of complex Web applications.
	C-12	Software Engineering	CO1-To learn the way of developing software with high quality and the relevant techniques. CO2-To introduce software engineering principles for industry standard. CO3-To focus on Project management domain and Software risks management.
	DSE-1	Numerical Technique	CO1- Evaluation of integrals using numerical techniques. CO2- Solving ordinary differential equations using numerical techniques. CO3- Representation of floating point number. CO4- Different methods of solving nonlinear systems. CO5- Knowledge about Numerical integration.
	DSE-2	Unix Cell Programming	CO1- Learn the basics of UNIX OS, UNIX commands and File system. CO2- Familiarize students with the Linux environment. CO3- Learn fundamentals of shell scripting and shell programming.

			CO4- Able to write simple programs using UNIX. CO5- Understand multiprogramming environment.
SEM-6	C-13	Artificial Intelligence	CO1-To study the concepts of Artificial Intelligence and Methods of solving problems using Artificial Intelligence. CO2- To understand the basic techniques of knowledge representation and their use and components of an intelligent agent. CO3 -To be able to implement basic decision making algorithms, including search based and problem solving techniques, and first-order logic. CO4 -To know the basic issues in machine learning.
	C-14	Algorithm Design Techniques	CO1- Able to analyse worst-case and best -case running times of algorithms using asymptotic analysis. CO2- Describe synthesize and utilize the divide-and-conquer paradigm. CO3- Describe synthesize and utilize the dynamic-programming paradigm. CO4- Describe synthesize and utilize the greedy paradigm. CO5- Knowledge about the major graph algorithms and their analysis. CO6-Describe the different methods of amortized analysis (aggregate analysis, accounting, potential method).
	DSE-3	Data Science	CO1-To learn emerging issues related to various fields of data science. CO2-To understand the underlying principles of data science, exploring data analysis. CO3-To learn the basics of R Programming.

	DSE-4	Project Work	CO1- An ability to use current techniques, skills, and tools necessary for computing practice. CO2 -An ability to use current techniques, skills, and tools necessary for computing practice. CO3 -An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer-based systems in a way that demonstrates comprehension of the trade offs involved in design choices.

PROGRAMME SPECIFIC OUTCOMES

> Develop ability to analyse a problem, identify and define the computing requirements, which may be appropriate to its solution.
> To prepare students to undertake careers involving problem solving using computer science and technologies.
> Develop ability to pursue advanced studies and research in computer science.
> To produce entrepreneurs who can innovate and develop software product.
> Design the application using programming languages as per the needs of Industry and society.
> Adopt new and fast emerging technologies in computer science.

> To prepare the students ready for industry usage by providing required training in cutting edge technologies.

> An Ability to use the core concepts of computing and optimization techniques to develop more efficient and effective computing mechanisms.

> An Ability to use inculcate professional, social, ethical, effective communication skills and entrepreneurial practice among their holistic growth.