

**COURSE AND PROGRAM OUTCOMES OF**  
**COMPUTER SCIENCE HONOURS(B.Sc.)UNDER NEP-2020**  
**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

**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.

- To understand the modern computing environment and the use of various hardware & software components.
- To develop the skill set and analytical abilities to solve real-life problems using the evolving computing paradigms.
- To equip oneself with the professional competence to meet the requirements of the software industry.
- To be aware of the security and privacy issues while using network systems and foster ethical use of internet.
- To create interest in Research and development in Computer Science for the overall benefit of the society.

### **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	Introduction to Computer Science and Python Programming	<p>CO1- Demonstrate an understanding of computer programming language concepts.</p> <p>CO2- Ability to design and develop Computer programs in Python.</p> <p>CO3- Explain input, output statements in Python programming.</p> <p>CO4- Design, develop and test selection logic program using decision making and looping statements in Python Programming.</p> <p>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.</p>

			<p>CO7- Able to analyse and interpret the concept of function, declarations, initialization .</p> <p>CO9- Able to understand fundamental of computer and its working mechanism.</p>
	C-2	Problem solving with C programming	<p>CO1- Demonstrate an understanding of computer programming language concepts.</p> <p>CO2- Ability to design and develop Computer programs in C.</p> <p>CO3- Explain input, output statements in C programming.</p> <p>CO4- Design, develop and test selection logic program using decision making and looping statements in C Programming.</p> <p>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.</p> <p>CO7- Able to analyse and interpret the concept of pointer and function, declarations, initialization operations on pointers and their usage.</p> <p>CO9- Illustrate user defined data types including structures and unions to solve the problems.</p> <p>CO10- Illustrate file handling function in c program.</p>
SEM-2	C-3	Data Structure	<p>CO1- To learn how the choice of data structures impacts the performance of programs.</p> <p>CO2- To study specific data structures such as arrays, linear lists, stacks, queues, hash tables, binary trees, binary search trees, heaps and AVL trees.</p>

			<p>CO3- To learn efficient searching and sorting technique.</p> <p>CO4-Understand various techniques for representation of the data in the real world.</p>
	C-4	Database Management Systems	<p>CO1-To understand user requirements and frame it in data model.</p> <p>CO2-To understand creations, manipulation and querying of data in databases.</p> <p>CO3-Solve real world problems using appropriate set, function, and relational models.</p> <p>CO4-Design E-R Model for given requirements and convert the same into database tables.</p> <p>CO5-Illustrate the basics of Structured Query Language and construct queries using SQL.</p>
SEM-3	C-5	Discrete Mathematical Structures	<p>CO1-To learn the mathematical foundations for Computer Science.</p> <p>CO2- Topics covered essential for understanding various courses.</p> <p>CO3- Express a logic sentence in terms of predicates, quantifiers, and logical connectives.</p> <p>CO4-Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion.</p>
	C-6	Computer Organization	<p>CO1-To understand different methods used for the simplification of Boolean functions and binary arithmetic.</p> <p>CO2-To design and implement combinational circuits, synchronous &amp; asynchronous sequential circuits.</p> <p>CO3-To study in detail about Semiconductor Memory Systems.</p>

	C-7	Operating System	<p>CO1- To understand Operating system structure and services.</p> <p>CO2- Understand the basics of operating systems like kernel, shell, types and views of OS.</p> <p>CO3- Describe the various CPU scheduling algorithms and remove deadlocks.</p> <p>CO4- Explain various memory management techniques and concept of thrashing.</p> <p>CO5- Recognize file system interface, protection and security mechanisms.</p>
SEM-4	C-8	Web Technologies	<p>CO1-To learn the fundamentals of web designing.</p> <p>CO2-To design and develop standard and interactive web pages.</p> <p>CO3-To learn some popular web scripting languages.</p> <p>CO4-TO apply the described concepts, principles and methods to development of complex Web applications.</p>
	C-9	Object Oriented Programming Using C++	<p>CO1- Understand and Apply object oriented programming concepts in problem solving through C++.</p> <p>CO2-Describe the concepts of classes, objects, member function, constructors and destructor.</p> <p>CO3-Explain the need of operator overloading, inheritance, polymorphism, and virtual functions.</p> <p>CO4- To be able to develop logics to create programs/ applications in C++.</p>
	C-10	Computer Networks	<p>CO1-Identify and use various networking components Understand different transmission media and design cables for establishing a network.</p>

			<p>CO2 -Understand the TCP/IP configuration for Windows and Linux.</p> <p>CO3- Implement any topology using network devices.</p> <p>CO4 -Implement device sharing on network.</p>
SEM-5	C-11	Software Engineering	<p>CO1-To learn the way of developing software with high quality and the relevant techniques.</p> <p>CO2-To introduce software engineering principles for industry standard.</p> <p>CO3-To focus on Project management domain and Software risks management.</p>
	C-12	<p>A. Introduction to AI</p> <p>B. Computer Graphics</p>	<p>CO1-To study the concepts of Artificial Intelligence and Methods of solving problems using Artificial Intelligence.</p> <p>CO2- To understand the basic techniques of knowledge representation and their use and components of an intelligent agent.</p> <p>CO3 -To be able to implement basic decision making algorithms, including search based and problem solving techniques, and first-order logic.</p> <p>CO4 -To know the basic issues in machine learning.</p> <p>CO1 -Gain knowledge about graphics hardware devices and software used.</p> <p>CO2 -Understand the 2-dimensional graphics and their transformations</p> <p>CO3- Understand the 3-dimensional graphics and their transformations.</p> <p>CO4- Be able to create effective programs for solving graphics problems.</p>

	C-13	Programming in JAVA	<p>CO1- To learn the fundamentals of Object Oriented Programming in Java environment.</p> <p>CO2- To learn the use of Java language and the Java Virtual Machine.</p> <p>CO3- To write simple Java programming applications.</p>
SEM-6	C-14	Algorithm Design Techniques	<p>CO1- Able to analyse worst-case and best -case running times of algorithms using asymptotic analysis.</p> <p>CO2- Describe synthesize and utilize the divide-and-conquer paradigm.</p> <p>CO3- Describe synthesize and utilize the dynamic-programming paradigm.</p> <p>CO4- Describe synthesize and utilize the greedy paradigm.</p> <p>CO5- Knowledge about the major graph algorithms and their analysis.</p> <p>CO6-Describe the different methods of amortized analysis (aggregate analysis, accounting, potential method).</p>
	C-15	Project Work	<p>CO1- An ability to use current techniques, skills, and tools necessary for computing practice.</p> <p>CO2 -An ability to use current techniques, skills, and tools necessary for computing practice.</p> <p>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.</p>