

**As Per NEP 2020**

AC –  
Item No. –

**Tolani College of  
Commerce  
(Autonomous)**



Knowledge is Supreme

**Title of the Course: Principles of Programming and Flowchart**

**Program: Bachelor of Science (Information Technology) Semester I**

**Syllabus for 2 credit Course**

**From the academic year-2024-2025**

## Name of the Course: Principles of Programming and Flowchart

Sr. No.	Heading	Particulars
1	<b>Description of the course : :</b>	<p>A <b>flowchart</b> is a visual representation of a process or algorithm, using various shapes and arrows to depict the sequence of steps. It provides a clear and concise way to illustrate the flow of information, decision points, and the order of operations within a system. Here are the key components and characteristics of a flowchart:</p> <p><b>Introduction to programming</b> is a fundamental exploration of the principles, concepts, and practices involved in computer programming. Programming is the process of designing and building executable computer code to accomplish a specific task or solve a problem. It involves creating a set of instructions that a computer can understand and execute. Here are key components and concepts in the introduction to programming:</p>
2	<b>Vertical :</b>	Major
3	<b>Type :</b>	Theory
4	<b>Credit:</b>	2 credits (1 Credit = Theory and 1 Credit = Project Work)
5	<b>Hours Allotted :</b>	30 Hours
6	<b>Marks Allotted:</b>	50 Marks Continuous Evaluation: 20 Marks Semester-End: 30 Marks
7	<b>Course Objectives:</b>	<ol style="list-style-type: none"> <li>1. To visually represent the flow of a process, algorithm, or system using standardized symbols and connectors</li> <li>2. To guide the development of high-quality software that is efficient, maintainable, understandable, and scalable</li> </ol>
8	<b>Course Outcomes:</b>	<ol style="list-style-type: none"> <li>1. Clarify the process understanding, problem solving and decision making</li> <li>2. Code quality improvement, reduce complexity and scalability</li> </ol>

9	<p><b>Module 1: Introduction to Flowcharts, its symbols and constructs , types (15 Hours)</b></p> <ul style="list-style-type: none"> <li>• Definition and purpose of flowcharts, Importance of flowcharts in programming and process design, Overview of symbols and conventions used in flowcharting</li> <li>• Start and End symbols, Process symbols, Input/output symbols, Decision symbols, Connector symbols, Database design and ER Model: Constraints, ER Diagrams, Codd's rules, Relational Schemas</li> <li>• Linear sequence flowcharts, Multi-directional flowcharts, Data flow diagrams (DFDs) Program flowcharts</li> <li>• Problem-solving and algorithm design, Program development and debugging, Process analysis and optimization</li> </ul> <p><b>Module 2: Introduction to Programming, Variables , Algorithm Design (15 Hours)</b></p> <ul style="list-style-type: none"> <li>• Definition of programming, Importance and applications of programming</li> <li>• Overview of programming languages and paradigms, Basic Concepts</li> <li>• Operators and expressions, Input and output operations, Basic control structures (e.g., sequence, selection, iteration)</li> <li>• Introduction to algorithms and problem-solving techniques Analysis of algorithms (e.g., time complexity, space complexity) Basic algorithm design paradigms (e.g., brute force, divide and conquer, dynamic programming)</li> </ul>
10	<p><b>Reference Books:</b></p> <ul style="list-style-type: none"> <li>• <b>Author:</b> A. B. Chaudhur, <b>Title:</b> The Art of Programming through Flowcharts &amp; Algorithms, <b>Publisher:</b> David Pallai, <b>Year:</b> 2020</li> </ul>

11	Internal Continuous Assessment: 40%	Semester End Examination : 60%																																									
12	Continuous Evaluation through:	CE assessment																																									
13	<p><b>Format of Question Paper:</b></p> <p style="text-align: center;"><b>Scheme of Evaluation Pattern</b>  <b>Table 1A: Scheme of Continuous Evaluation (CE/Practical)</b>  <b>Scheme of Evaluation Pattern</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Sub-components</th> <th>Maximum Marks</th> <th>Conditions for passing</th> </tr> </thead> <tbody> <tr> <td>1) Presentation/assignment</td> <td>10</td> <td rowspan="3">A learner must be present for each of the sub-components.</td> </tr> <tr> <td>2) MCQ based test</td> <td>10</td> </tr> <tr> <td>Total</td> <td>20</td> </tr> </tbody> </table> <p style="text-align: center;"><b>Table 1B: Scheme of Semester End Examination (SEE) Evaluation</b>  <b>Question Paper Pattern for Semester End Examination (SEE)</b>  <b>Maximum Marks: 30</b> <span style="float: right;"><b>Duration: I Hrs.</b></span>  Note: All questions are compulsory. Each question has an internal choice.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Question Number</th> <th>Nature of Questions</th> <th>Maximum Marks</th> </tr> </thead> <tbody> <tr> <td>1)</td> <td><b>Attempt any 3</b></td> <td></td> </tr> <tr> <td></td> <td>a)</td> <td rowspan="5">15</td> </tr> <tr> <td></td> <td>b)</td> </tr> <tr> <td></td> <td>c)</td> </tr> <tr> <td></td> <td>d)</td> </tr> <tr> <td></td> <td>e)</td> </tr> <tr> <td>2)</td> <td><b>Attempt any 3</b></td> <td></td> </tr> <tr> <td></td> <td>a)</td> <td rowspan="5">15</td> </tr> <tr> <td></td> <td>b)</td> </tr> <tr> <td></td> <td>c)</td> </tr> <tr> <td></td> <td>d)</td> </tr> <tr> <td></td> <td>e)</td> </tr> </tbody> </table>		Sub-components	Maximum Marks	Conditions for passing	1) Presentation/assignment	10	A learner must be present for each of the sub-components.	2) MCQ based test	10	Total	20	Question Number	Nature of Questions	Maximum Marks	1)	<b>Attempt any 3</b>			a)	15		b)		c)		d)		e)	2)	<b>Attempt any 3</b>			a)	15		b)		c)		d)		e)
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