

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**Semester: III**

**Year: 2022-2023**

<b>Course Title</b>	<b>Advanced C and Graphics</b>		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

**Course Learning Objectives:**

1. To Learn the concept of Dynamic memory allocation.
2. To Study File concepts and File handling.
3. To be able to learn graphics in C

**Course Content (Syllabus)**

<p align="center"><b>MODULE-1</b></p> <p><b>Files, Dynamic memory allocation ,C Graphics</b>                  Files: file Concepts, File Pointer, File Modes, file Opening, File Reading, File Writing ,File Closing, Dynamic Memory Allocation, command line Arguments, C Graphics : Graphics header file, Graphics Driver Initialization, cleardevice(), getpixel(), putpixel(), floodfill(),setcolor(),floodfill(),Drawing circle, ellipse ,line ,rectangles.</p>	10 Hrs
<p align="center"><b>MODULE-2</b></p> <p><b>Hands on activity</b>                  Code snippets on various programming features</p>	10 Hrs
<p align="center"><b>MODULE-3</b></p> <p><b>Solving Real world Problems(projects)</b>                  Customer Billing System, Bank Management System, Quiz Game, Typing Tutor,Library Management System, graphics Editor, Freehand drawing,</p>	10 Hrs

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**HOD**

## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### Syllabus

Semester: V

Year: 2022-2023

<b>Course Title</b>	<b>Graph Theory and Combinatorics</b>		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

**Course Learning Objectives:** This course will enable students to

1. To learn the fundamentals of graph theory and tree.
2. To learn various optimization and matching theory techniques.
3. To learn the principles of counting, inclusion and exclusion.

### Course Content (Syllabus)

<p style="text-align: center;"><b>MODULE-1</b></p> <p><b>Module – 1 : Introduction to Graph Theory</b></p> <p>Definitions and Examples, Subgraphs, Complements, and Graph Isomorphism, Vertex Degree, Euler Trails and Circuits, Planar Graphs, Hamilton Paths and Cycles, Graph Colouring, and Chromatic Polynomials.</p>	10 Hrs
<p style="text-align: center;"><b>MODULE-2</b></p> <p><b>Module-2 : Trees, Optimization and Matching</b></p> <p>Trees: Definitions, Properties, and Examples, Routed Trees, Trees and Sorting, Weighted Trees and Prefix Codes.</p> <p>Optimization and Matching: Dijkstra's Shortest Path Algorithm, Minimal Spanning Trees – The algorithms of Kruskal and Prim, Transport Networks – Max-flow, Min-cut Theorem, Matching Theory</p>	10Hrs
<p><b>Module-3 : Principles of counting, inclusion and exclusion</b></p> <p>Fundamental Principles of Counting: The Rules of Sum and Product, Permutations, Combinations – The Binomial Theorem, Combinations with Repetition, The Catalan Numbers</p> <p>The Principle of Inclusion and Exclusion: The Principle of Inclusion and Exclusion, Generalizations of the Principle, Derangements – Nothing is in its Right Place, Rook Polynomials</p>	10Hrs

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HOD

Computer Science & Engineering  
KLS Vishwanathrao Deshpande  
Institute of Technology, Haliyal.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

Semester: VII

Year: 2022-2023

<b>Course Title</b>	<b>Image Processing using SCILAB</b>		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

**Course Learning Objectives:**

- To understand image representation.
- To Apply knowledge of mathematics for image understanding and analysis.
- To implement image processing algorithms in SCILAB.

**Course Content (Syllabus)**

<b>MODULE-1 INTRODUCTION</b>	
A Digital Image and Its Processing, Information of Scilab Software, How to Obtain and Install Scilab, How to Install the Image Processing Toolbox in Scilab, Areas of Image Processing	10 Hrs
<b>MODULE-2 Image Enhancement in the Spatial Domain</b>	
Image Enhancement by Point Processing, Histogram, Spatial Domain Filters, Image Enhancement Using Arithmetic/Logical Operations.	10 Hrs
<b>Image Enhancement in the Frequency Domain</b>	
Fourier Transform, Low-Pass Frequency Domain Filter, High-Pass Frequency Domain Filter, Unsharp Masking.	
<b>MODULE-3 Image Restoration</b>	
Image Degradation and Restoration Process, Noise Models, Periodic Noise and Estimation of Noise Parameters, Image Restoration: Spatial Filtering, Wiener Filtering.	10 Hrs
<b>Morphological Image Processing</b>	
Fundamental Morphology Operations, Compound Morphology Operations, Hit or Miss Transform.	

