AMCO-15 DIGITAL IMAGE PROCESSING

UNIT-1 CONTINUOUS IMAGE MATHEMATICAL CHARACTERIZATION

1.1 Image Representation, Two-Dimensional Systems, Two-Dimensional Fourier Transform, Image Stochastic Characterization

UNIT-2 PSYCHOPHYSICAL VISION PROPERTIES

2.1 Light Perception, Eye Physiology, Visual Phenomena, Monochrome Vision Model, Color Vision Model

UNIT-3 PHOTOMETRY AND COLORIMETRY

3.1 Photometry, Color Matching, Colorimetry Concepts, Tristimulus Value Transformation

UNIT-4 IMAGE SAMPLING AND RECONSTRUCTION

4.1 Image Sampling And Reconstruction Concepts, Image Sampling Systems, Image Reconstruction Systems

UNIT-5 DISCRETE IMAGE MATHEMATICALCHARACTERIZATION

5.1 Vector-Space Image Representation, Generalized Two-Dimensional Linear Operator, Image Statistical Characterization,

5.2 Image Probability Density Models, Linear Operator Statistical Representation

UNIT-6 IMAGE QUANTIZATION

6.1 Scalar Quantization, Processing Quantized Variables, Monochrome And Color Image Quantization

UNIT-7 SUPERPOSITION AND CONVOLUTION

7.1 Finite-Area Superposition and Convolution, Sampled Image Superposition And Convolution, Circulant Superposition And Convolution,

7.2 Superposition And Convolution Operator Relationship

UNIT-8. UNITARY TRANSFORMS

6.1 General unitary transforms, Fourier transform, cosine, sine, and Hartley transforms, hadamard, haar, and daubechies transforms, karhunen-loeve transform

UNIT-9 IMAGE ENHANCEMENT

9.1 Contrast Manipulation, Histogram Modification, Noise Cleaning, Edge Crispening,

9.2 Color Image Enhancement, Multispectral Image Enhancement

UNIT-10 IMAGE RESTORATION MODELS

10.1 General Image Restoration Models, Optical Systems Models, Photographic Process Models, Discrete Image Restoration Models

UNIT-11 MORPHOLOGICAL IMAGE PROCESSING

11.1 Binary Image Connectivity, Binary Image Hit Or Miss Transformations, Binary Image Shrinking, Thinning, Skeletonizing, And Thickening,

11.2 Binary Image Generalized Dilation And Erosion, Binary Image Close And Open Operations, Gray Scale Image Morphological Operations

UNIT-12 EDGE DETECTION

12.1 Edge, line, and spot models, first-order derivative edge detection, second-order derivative edge detection, edge-fitting edge detection,

12.2 Luminance edge detector performance, color edge detection, line and spot detection

UNIT-13 IMAGE FEATURE EXTRACTION

13.1 Image feature evaluation, amplitude features, transform coefficient features, texture definition, and visual texture discrimination

Reference books:

1. Digital Image Processing by Gonzalez and Woods
2. Digital Image Processing"by William K Pratt