C. U. Shah University, Wadhwan City

Faculty of Computer Science

Name of Program: Bachelor of Science (Information Technology) Semester : IV

w.e.f. June-2014

Teaching & Evaluation Scheme

Sr. No	Subject Code	Subject Name	Teaching Hours/Week				Credits	Evaluation Scheme/Semester							
								Theory				Practical			Total Marks
								Sessional Exam		University Exam		Internal		Uni.	
			Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr	TW	Pr	
2	4CS04IIM1	Digital Image Processing & Multimedia	4	2	-	6	5	30	1.5	70	3	-	-	-	100

Objectives:

This course contains Introduction to concepts of digital image processing and their Applications, Digital Image Fundamentals; image sampling and quantization, Image Enhancement; histogram processing; image smoothing and sharpening, Image Transforms; spatial frequency concepts; Fourier transform and its fast implementation.

Pre-requisites: Basic knowledge of programming, graphics and mathematics.

Ch. No.	Chapter Name	Chapter Topics	Total Lectures
1	Digital Image fundaments and Image Transforms	Introduction, An image model, sampling & quantization sampling & quantization, imaging geometry Properties of 2 – D Fourier transform, FFT algorithm and other separable image transforms, Walsh transforms, Hadamard, Cosine, Haar, Slant transforms KL transforms and their properties	14
2	Image Enhancement and Image filtering	Enhancement by point processing, histogram processing, spatial filtering and enhancement in frequency domain, color image processing Image filtering and restoration: Algebraic approach to restoration, inverse filtering, least mean squares and interactive restoration, geometric transformations	12
3	Image compression and segmentation	Image compression modes error free compression lossy compression image Compression standards Detection of discontinuities edge linking and boundary detection thresholding Region – oriented segmentation use of motion in segmentation Representation and description: Various schemes for representation, boundary Descriptors and regional descriptors Image reconstruction from Projections Radon Transforms; Convolution/Filter back – Project Algorithms	16

4	Multimedia System	Project design: setting up, requirements, navigation, storage, delivery	10
		Authoring tools: history, comparison of different approaches, functionality and principles	
		Case study: Adobe Flash - Applications (eg. kiosks, distance learning, web based)	
5	Auditory input and output	Auditory input and output: standards and techniques - Quality of service and usability in sound	03
		TOTAL	55

Teaching Methodology:

Revision, Paper Solving, Seminar, Expert Talk, MCQ Quiz, Viva Test, Programming Test

Learning Outcomes:

- **Introduce fundamental principles and techniques for digital image processing;**
- **Provide hands-on experience in using software tools for processing digital images**
- **Implement image processing algorithms in software.**
- **Create their animation films using Multimedia tools and also by applying the Computer Graphics algorithm**

Books Recommended:

1.	Fundamental of Digital Image Processing	PHI	A.K.JAIN	9788120309296
2.	Digital Image Processing	Addison Wesley	C.GONZALEX & R.E WOODS	9780135052679

Reference Books:

1.	Fundamentals OfMultimedia	PHI	Ze-Nian Li, Mark S. Drew	9788120328174
2.	Digital Multimedia	WileyN. Chapman & J. Chapman		
3.	Digital Media Tools	Wiley	N. Chapman & J. Chapman	