Course Syllabus

1. Course code and title: 976-531 IMAGE  PROCESSING   
  
2. Number of credits: 3(3-0-6)   
  
3. Program: Master of Science in Information Technology

4. lecturer(s) Dr.Kwankamon Dittakan

**5. Course Description**

Digital image processing in the context of real-world applications; histogram transformation; noise reduction; edge detection; image enhancement; image segmentation; image coding; data compression

**6. Contents**

**Chapter 1: Fundamental to Image Processing**

* What is Digital Image?
* Pixel Elements
* Light and the Electromagnetic Spectrum
* Components of an Image Processing System
* Digital Image Applications

**Chapter 2: Image Enhancement**

* Basic of Image Enhancement
* Basic Gray Level Transformations
* Histogram Processing
* Enhancement Using Arithmetic/Logic Operations
* Smoothing and Sharpening Filtering
* Advanced Image Enhancement Algorithms

**Chapter 3: Image Restoration**

* Noise Models
* Noise Reduction

**Chapter 4: Colour Image Processing**

* Colour Models
* Colour Model Transformations
* Smoothing and Sharpening in Colour Image

**Chapter 5: Morphological Image Processing**

* Erosion and Dilation
* Basic Morphological Algorithms

**Chapter 6: Image Segmentation**

* Point, Line and Edge Detection
* Thresholding
* Region-Based Segmentation

**Chapter 7: Image Representation and Feature Extraction**

* Colour
* Shape
* Texture

**Chapter 8: Image Compression**

* Image Compression
* Image Compression Methods