

SE 494 (953494) : Selected Topics in Software Engineering 1  
Digital Image Processing

**Credit:** 3 (3-0-6)  
**Lecturers:** Dr. Pikul Vejjanugraha  
Email: pikul.v@cmu.ac.th  
**Classrooms:** B-206  
**Section:** 701  
Lectures: Tu/F 14:30-16:00

**Course objectives:**

- Understand image representation, acquisition, and fundamental processing concepts.
- Apply enhancement, restoration, and transformation techniques to improve image quality.
- Perform segmentation and feature extraction for image analysis and interpretation.
- Develop and evaluate practical image processing applications using modern tools.

**1. Course Content:**

Topics	Lecture	Date	Assignments
1	- Course policy announcement - Introduction to DIP	1 July 2025	
2	- Image Enhancement	4 & 8 July 2025 (no class on 11 July)	
3	- Geometric Transformation	15 & 18 July 2025	Assignment 1
4	- Image Filtering in the Spatial Domain	22 & 25 July 2025	
5	- Image Filtering in the Frequency Domain	29 & 1 Aug 2025	
6	- Color Image Processing	5 & 8 Aug 2025	
7	- Image Fusion	15 Aug 2025	Assignment 2
	- Reading Week	-	
	- Midterm Exam	TBA	
7	- Morphological Image Processing	2 & 5 Sep 2025	
8	- Image Processing and its Applications (1)	9 & 12 Sep 2025 **	
9	- Shape Analysis	16 & 19 Sep 2025	Assignment 3
10	- Image Compression	23 & 26 Sep 2025	
11	- Pattern Recognition	30 Sep & 3 Oct 2025	
12	- Image Processing and its Applications (2)	7 Oct & 10 Oct 2025	Assignment 4
	- Term Project Week (Pattern Recognition)	No Class on 14 & 17 Oct 2025	Term Project
	- Final Exam	TBA	

## **2. Course requirements**

- Lectures in class
- Quizzes
- Assignments
- Midterm and Final exams
- Project assignment

## **3. Grading system:**

- |                         |             |
|-------------------------|-------------|
| ○ Lecture attendance    | 10 %        |
| ○ <b>4</b> Assignments  | 20 %        |
| ○ Midterm Examination   | 20 %        |
| ○ Final Examination     | 30 %        |
| ○ <b>1</b> Term Project | 20 %        |
| Total                   | <b>100%</b> |

## **4. Grade policy:**

- Any late assignment submissions will either be penalized (at least 50% reduction) or NOT be accepted.
- If a student is late more than 15 minutes in either lab or lecture, you will be regarded as absence.
- If a student needs to be absent with legitimate causes, please notify the lecturer before the date of absence.
- The student who has come to class less than 80% will NOT allow to take the FINAL EXAM.
- The student who does not take the final exam gets “F” for this course.
- The work that does not strictly follow the instruction is not accepted.

## **5. Course Texts and resources:**

- Gonzalez, R. C., & Woods, R. E. (2018). *Digital image processing* (4th ed.). Pearson.

## **6. Course communication:**

- CMU mango