Jordan University of Science and Technology
Faculty of Computer & Information Technology
Computer Engineering Department

CPE481 Introduction To Image Processing - JNQF Level: 7
First Semester 2024-2025

Course Catalog
3 Credit Hours. Review of digital signal processing, image sampling and quantization, human visual system, color, point operations, morphological image processing, linear image filtering and correlation, frequency image transforms, noise reduction and restoration, image compression. Emphasis is on the general principles of image processing. Students learn to apply material by implementing image-processing algorithms in Matlab
Teaching Method: Blended

Text Book	
Title	A COMPUTATIONAL INTRODUCTION TO DIGITAL IMAGE PROCESSING
Author(s)	Alasdair McAndrew
Edition	2nd Edition
Short Name	Textbook
Other Information	

Instructor	
Name	**Dr. Inad Aljarrah**
Office Location	C5L2
Office Hours	
Email	inad@just.edu.jo

Class Schedule & Room

Section 1:
  Lecture Time: Sun, Tue : 09:30 - 10:30
  Room: CPE07-M7L2

Section 2:
  Lecture Time: Sun, Tue : 11:30 - 12:30
  Room: A3129

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
1713112	CPE311 Object-Oriented Software Analysis & Design	Prerequisite / Study
1753010	NES301 Probability And Queuing Theory	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Introduction to image processing and MATLAB Tutorial	**CH1,CH2,CH3** From **Textbook**
Weeks 3, 4	Point Processing	**CH4** From **Textbook**
Weeks 5, 6	Neighbourhood Processing	**CH5** From **Textbook**
Week 7	The Fourier Transform	**CH7** From **Textbook**
Week 8	Image Restoration	**CH8** From **Textbook**
Week 9	Image Segmentation	**CH9** From **Textbook**
Week 10	Mathematical morphology	**CH10** From **Textbook**
Weeks 11, 12	Image coding and compression	**CH14** From **Textbook**
Week 13	Color Processing	**CH13** From **Textbook**
Weeks 14, 15	Computer Vision	From **Textbook**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the relevant aspects of digital image representation. [1SO1] [1L7K1]	15%	
Ability to perform image processing tasks in the spatial and frequency domains. [1SO2] [1L7S1]	30%	
Ability to apply standard image segmentation and restoration techniques. [1SO2] [1L7S2]	25%	
Ability to apply morphological operators for image processing tasks. [1SO6] [1L7S3]	10%	

Have an understanding of the underlying mechanisms of image compression. [1SO1] [1L7K1]	20%	

Relationship to Program Student Outcomes (Out of 100%)																	
A	B	C	D	E	F	G	H	I	J	K	SO1	SO2	SO3	SO4	SO5	SO6	SO7
											35	55				10	

Relationship to NQF Outcomes (Out of 100%)			
L7K1	L7S1	L7S2	L7S3
35	30	25	10

Evaluation	
Assessment Tool	**Weight**
First exam	20%
Second Exam	25%
Final Exam	40%
Labworks/hws/quizzes	15%

Policy	
Attendance	Excellent attendance is expected. In accordance with university regulations, students missing more than 20% of total classes are subject to failure. No excuses will be accepted. If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed. Attendance will be recorded at the beginning or end of each class.
Participation	You are expected to participate in class. Participation includes asking and answering questions, raising issues, and suggesting solutions to the discussed problems.
Exams	All exams will be CLOSED-BOOK.
Makeups	Makeup exams should not be given unless there is a valid excuse. Arrangements to take an exam at a time different than the one scheduled MUST be made prior to the scheduled exam time. In accordance with university regulations, students should bring a valid excuse authenticated through valid channels in JUST.
Workload	The average work-load student should expect to spend is 5 hours/week.

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