



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

CPE481 Introduction To Image Processing

Second Semester 2022-2023

**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

**Text Book**

<b>Title</b>	A COMPUTATIONAL INTRODUCTION TO DIGITAL IMAGE PROCESSING
<b>Author(s)</b>	Alasdair McAndrew
<b>Edition</b>	2nd Edition
<b>Short Name</b>	Textbook
<b>Other Information</b>	

**Instructor**

<b>Name</b>	<b>Dr. Mazen AlWadi</b>
<b>Office Location</b>	M2 L2, N2 L1
<b>Office Hours</b>	
<b>Email</b>	mgalwadi@just.edu.jo

**Class Schedule & Room**

Section 1:  
Lecture Time: Mon, Wed : 11:30 - 12:30  
Room: A3128

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
Week 11	Image coding and compression	CH14 From Textbook
Week 12	Color Processing	CH13 From Textbook
Weeks 13, 14, 15, 16	Deep Learning & Computer Vision	From Textbook

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the relevant aspects of digital image representation. [1SO1, 1SO2, 1SO6]	15%	
Ability to perform image processing tasks in the spatial and frequency domains. [1SO1, 1SO2, 1SO6]	30%	
Ability to apply standard image segmentation and restoration techniques. [1SO1, 1SO2, 1SO6]	17%	
Ability to apply morphological operators for image processing tasks. [1SO1, 1SO2, 1SO6]	10%	
Have an understanding of the underlying mechanisms of image compression. [1SO1, 1SO2, 1SO6]	8%	
Understanding of Neural Networks and the ability to use Deep Learning in Computer Vision applications. [1SO5, 1SO6, 1SO7]	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	
											26.67	26.67			6.67	33.33	6.67	

Evaluation	
Assessment Tool	Weight
Midterm	30%
Projects/Labworks	30%
Final	40%

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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