



Ministry of Higher Education and Scientific Research
Lebanese French University – Erbil
College of Engineering and Computer Science
Department of Information Technology



Image Processing

Third Stage – First Semester

Asst. Lect. Ara Zozan Miran

Academic Year: 2022-2023

Course Book



S. No.	Information	Details
1.	Course Name	Image Processing
2.	Course Code	IT301IP
3.	Lecturer In-charge	Ara Zozan Miran
4.	College/Department	Engineering and Computer Science/Information Technology
5.	Contact Information	E-mail:ara.zozan@lfu.edu.krd
6.	Time (in hours) per Week	Theory: 2 hours Practical: 2 hours
7.	Office Hours	Sunday to Thursday (8:30-3:00) P.M Office:3001
8.	Teacher's Academic Profile	I finished my BSc degree at the University of Kurdistan Hawler/ College of Computer Science and Engineering in 2016. I finished my MSc degree (Software Engineering) at the University of Kurdistan Hawler in 2018. In September 2018, I joined LFU then I completed Pedagogical Course. Currently, I am an Assistant lecturer.
9.	Academic Title	Assistant Lecturer
10.	Keywords	Pixels. Noise, Shadows, Histogram, RGB, JPG, PNG
11.		Course Overview: This course is designed primarily for students in computer science. This course introduces image processing and image analysis techniques and concepts. Areas examined include Imaging sensors and their principles, Image representation and storage, coding and compression techniques; loss versus lossless; Techniques for noise reduction. Image enhancement, including contrast manipulation, histogram equalization, edge highlighting, Filtering, and transform methods for image processing, including two-dimensional Fourier transforms, wavelets, and convolution.
12.		Aims & Objective: The objectives of this course are: <ul style="list-style-type: none"> ▪ Give the students a general understanding of the fundamentals of digital image processing. ▪ Introduce the student to analytical tools currently used in digital image processing as applied to image information for human viewing. ▪ Develop the student's ability to apply these tools in the laboratory in image restoration, enhancement, and compression.
13.		Course Requirement: All students should attend lectures and labs, participate in classroom quizzes and discussions, work on their projects, and attend midterm and final examinations.



14.	Teaching and Learning Method: <ul style="list-style-type: none"> ▪ Data Show ▪ Exams ▪ Group Work ▪ Practical Sessions ▪ Lab Sessions ▪ MATLAB Tool ▪ Assignments
15.	Assessment Scheme: <ul style="list-style-type: none"> ▪ 25 % Mid-term Examination ▪ 15 % Assignments and Quizzes ▪ 60 % Final Examination
16.	Students Learning Outcome: At the end of this course, the student will be able to: <ul style="list-style-type: none"> ▪ Understand the need for digital image processing, the confluence of different fields, and the emerging problems in this area. ▪ Understand the fundamental digital image processing techniques such as intensity transformation, filtering, enhancement, restoration, and compression. ▪ Understand the basic design of image processing algorithms for specific applications.
17.	Course Reading List and References: <ul style="list-style-type: none"> ▪ Book: MATLAB Primer Third Edition, Kermit Sigmon. ▪ Book: An Introduction to Digital Image Processing with Matlab, Alasdair McAndrew
18.	Course Content:

Course Content

S. No.	Lecture Week	No. of Hours	Topics
1.	Week-1	4	Introduction to Image Processing
2.	Week-2	4	Types of Image Processing
3.	Week-3	4	Introduction to MATLAB
4.	Week-4	4	Fundamental Commands of image processing in MATLAB



5.	Week-5	4	Image Processing: Basic Terminologies and Operations
6.	Week-6	4	Midterm Exam Review
7.	Week-7	4	Midterm Exam
8.	Week-8	4	Image representations
9.	Week-9	4	Image enhancement in a particular domain
10.	Week-10	4	Histogram Processing
11.	Week-11	4	Types of filters in image processing
12.	Week-12	4	Morphological image
13.	Week-13	4	Image Compression, Compression System Model
14.	Week-14	4	Final Exam Review
15.			Final Examination

19.	<p>Examinations:</p> <ul style="list-style-type: none"> ▪ Solving problems. ▪ Defining different terms. ▪ Discussing different topics. ▪ Writing Codes. ▪ Drawing Diagrams.
20.	<p>Course Policy:</p> <ul style="list-style-type: none"> ▪ Students are expected to attend all courses and course activities. If a student misses one third or more of a class session, the student will be counted absent. ▪ Per university policy and classroom etiquette, mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately to avoid disrupting the learning environment. ▪ Please arrive on time for all classes. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.
21.	<p>Note:</p> <ul style="list-style-type: none"> ▪