

# TEMPLATE FOR COURSE SPECIFICATION FOR DIGITAL IMAGE PROCESSING

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

## COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Al-Nahrain University- College of Science
2. University Department/Centre	Computer Science
3. Course title/code	Digital Image Processing
4. Modes of Attendance offered	
5. Semester/Year	Semester-1 2022
6. Number of hours tuition (total)	2 Hours / week
7. Date of production/revision of this specification	8/10/2022
8. Aims of the Course	
	<ul style="list-style-type: none"><li>• This unit delivers an understanding the concepts in theoretical and practical aspects of digital images and the skills required to manipulate images to enhance features and extract quantitative and qualitative information.</li><li>• We focus on specific areas of study include the structure of digital images; applications of image processing in medical, astronomy and remote sensing; image display techniques; image processing analysis, enhancement and restoration; grey scale, colour perception, colour models, image formats, Fourier transforms; convolutions; spatial filtering; Fourier space filtering; methods of image reconstruction.</li><li>• Examples and exercises demonstrate the use Visual basic and image processing Toolbox TM and functionality</li></ul>

## 9. Learning Outcomes, Teaching ,Learning and Assessment Method

### A- Cognitive goals

- A1. Application - The ability to use information of algorithms and apply on images
- A2. Analysis - The ability to break information into parts to understand it better for methods

### B. The skills goals special to the course.

- B1. Develop specialized skills and a critical understanding of advanced principles of image analysis and processing, using the Visual Basics platform
- B2. Gain critical insight into challenges underpinning image analysis, including image enhancement and compensating for artefacts.

### Teaching and Learning Methods

Students will apply theory explored in the lectures to laboratory practical exercises and are encouraged to think about the utility of digital imaging processing in a wide variety of fields.

Lectures: 2 hours / week

Practical: 2 hours / week

### Assessment methods

<b>Modes of Assessment</b>	<b>Score</b>
First Mid-Term Exam.	8%
Second Mid-Term Exam.	7%
Quizzes.	5%
Assignments.	5%
Laboratory (15% for Evaluation, and 10% Mid Term Exam).	25%
Final Exam	50%

### C. Affective and value goals

- C1. Develop and demonstrate a basic knowledge and understanding of digital images
- C2. Understand and apply various methods of generating, storing, transmitting and manipulating digital images.

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

- D1.
- D2.
- D3.
- D4.

### 10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
W1	2		introduction		
W2	2		Image representation		
W3	2		Aspects of image processing		
W4	2		Image converting		
W5	2		Image enhancement		
W6	2		Image filtering		
W7	2		Edge detection		

### 11. Infrastructure

1. Books Required reading:	
2. Main references (sources)	Digital Image Processing, 3rd edition by Rafael C. Gonzalez a
A- Recommended books and references (scientific journals, reports...).	
B-Electronic references, Internet sites...	<p>1-What is Digital Image Processing (DIP) ? Types and Application .... (ssla.co.uk)  <a href="https://www.ssla.co.uk/digitalimageprocessing/#:~:text=Applications%3A%20Image%20processing%20is%20serving%20a%20key%20role,carried%20out%20around%20the%20world%20for%20research%20purposes.">https://www.ssla.co.uk/digitalimageprocessing/#:~:text=Applications%3A%20Image%20processing%20is%20serving%20a%20key%20role,carried%20out%20around%20the%20world%20for%20research%20purposes.</a></p> <p>2-Image Processing Toolbox - MATLAB (mathworks.com)  <a href="https://au.">https://au.</a></p>

### 12. The development of the curriculum plan

