

University of Cape Coast
Computer Science Department
Course: Image Processing (CSC 811)

Text Book

- “Digital Image Processing”, Rafael C. Gonzalez and Richard E. Woods, Pearson 4th edition, 2018.
- “Digital Image Processing”, William K. Pratt, PIKS Scientific inside, 4th edition, 2007

Course Objective

This course introduces students to the concepts, principles, practice, and formalism for expressing ideas in digital image processing. It equips students with the ability to:

- Have a broad overview of the historical under-pinnings of the field of digital image processing.
- Explains how images are acquired
- Be familiar with the basic processes involved in image processing
- Perform image enhancement techniques in spatial and frequency domain.
- Apply image processing methods to color images.
- Be familiar with the scope of the literature where image processing work is reported.

Projects / Research Assignments

Students will be required to take projects/assignments aimed at implementing the theories and/or concepts taught in class. All project assignments should be submitted on the required date. A student shall lose 10% of the score for each day after the required date of submission of the said assignment unless the late submission is substantiated with the tangible reason(s). Students will need to have access to Computers to be able to follow most of the concepts that will be discussed.

Evaluation

The final grade will be evaluated on the following basis:

	Points
Class participation*	5
Homework	15
Mid-semester Exam	15
End of Semester Project	30
Exams	40

The date for the quiz and midterm exam is not known yet but will be communicated to you

Grading Scale

The University grading scale will be used to grade students in the course. Students should consult the UCC Handbook for the grading policy.

Course Policies:

- Each student is expected to be in attendance in every class-period.
- The Assignment due dates must be adhered to.
- In case of illness, emergencies, etc., students are required to inform the instructor personally or through email. You are responsible for all material covered in lectures.

Academic Dishonesty/Cheating:

Any student who is found, or reported, cheating or exercising any form of dishonesty will receive an automatic F grade in the course. Such student(s) will also be subject to disciplinary action in accordance with the University and faculty policies.

Main Topics:

- **Introduction to digital Image processing**
- **Image formation, acquisition, resolution and basic mathematical operations**
- **Image filtering and Enhancement**
- **Image Restoration techniques (Image De-noising)**
- **Color Image Processing**
- **Image Compression**
- **Image Deconvolution (Deblurring)***
- **Segmentation***

End of Semester Project

Each student is expected to read a scientific paper in image processing and prepare a powerpoint presentation on the paper read. Highlighting the problem statement, main method used and optimization function, significance or practicality of the method and limitations of the paper. He/she is expected to replicate the solution in codes and present the results.