

Philadelphia University-Faculty of IT
Course Outline

| Course Syllabus | |
|------------------------|---|
| Course Title | Digital Image Processing |
| Course Number | 750474 |
| Course Level | 4 th year |
| Class Time | 09:45-11:15 (M-W) |
| Instructor | Dr. Qadri Hamarsheh |
| email | ghamarsheh@philadelphia.edu.jo |
| website | www.philadelphia.edu.jo/academics/ghamarsheh |
| Prerequisites | 750322 |
| Office Hours | Hours: 10:00-11:00(Sun-Tue-Thu) Office 712, 11 :15-12:15 (Mon-Wed) Computer Center |
| Text Book | “Digital Image Processing”, R. C. Gonzalez and R. E. Woods, Pearson-Prentice-Hall, 2008, 3d edition. “Digital Image Processing using Matlab”, R. C. Gonzalez, R. E. Woods, S. L. Eddins, Pearson-Prentice-Hall, 2004, 2 nd edition. |

Course Goals:

This course is designed to give undergraduate students all the fundamentals in 2-D digital image processing with emphasis in image processing techniques, image filtering design and applications.

Time Schedule:

Duration: 16 weeks
Tutorial: 11 hours

Lectures: 3 hours /week
Seminar: 3 h, (last week)
Assignments: 4
Project: One Digital Image Processing Application

Objectives:

At Completing this module the student should be able to:

- 1- Develop a theoretical foundation of fundamental Digital Image Processing concepts.
- 2- Provide mathematical foundations for digital manipulation of images; image acquisition; preprocessing; segmentation; Fourier domain processing; and compression.
- 3- Gain experience and practical techniques to write programs using MATLAB language for digital manipulation of images; image acquisition; preprocessing; segmentation; Fourier domain processing; and compression.

| Course Contents | | <u>Week</u> |
|------------------------|--|-------------|
| ❖ | Introduction and Digital Image Fundamentals | 2 |
| ❖ | Digital image Representation | 1 |
| ❖ | Image Enhancement in the Spatial Domain | 3 |
| ❖ | Image Enhancement in the Frequency Domain | 3 |
| ❖ | Image Restoration | 4 |
| ❖ | Image Compression | 1 |
| ❖ | Image Segmentation | 1 |
| ❖ | Object Recognition | 1 |

| Mode of Assessment | |
|---------------------------|--|
| 1- | First Exam 20% |
| 2- | Second Exam 20% |
| 3- | Reports\Home works\ and or Projects 20% |
| 4- | Final Exam 40% |

| References | |
|-------------------|---|
| 1- | Al Bovik (ed.), “Handbook of Image and Video Processing”, Academic Press, 2000. |
| 2- | A.K. Jain, “Fundamentals of Digital Image Processing”, Prentice-Hall, Addison-Wesley, 1989 |
| 3- | J. S. Lim, “Two-dimensional Signal and Image Processing” Prentice-Hall, 1990. |
| 4 | www.imageprocessingplace.com (required). Text book website) |