



National University of Sciences and Technology

Course Description

Course Title	Course Code	Credit Hours
Signals and Images in Medicine	BMES-811	3 – 0

TEXT BOOK:

- Gonzales, R. C.: Digital Image Processing, Prentice Hall, New Jersey, 2008.
- Eugene N. Bruce, Biomedical Signal Processing and Signal Modeling, John Wiley & Sons, 2000
- Geoff Dougherty: Digital Image Processing for Medical Applications 2009 (latest edition).

REFERENCE BOOK

- N/a

COURSE OBJECTIVES:

Medical signal and image processing is an active area of research. This course presents the fundamentals of digital signal processing with particular emphasis on problems in biomedical research and clinical medicine. It covers principles and algorithms for processing both deterministic and random signals. Topics include data acquisition, imaging, filtering, coding, feature extraction, and modeling. The focus of the course is a series of labs that provide practical experience in processing physiological data, with examples from cardiology, speech processing, and medical imaging. The students shall learn to apply research methods.

COURSE OUTLINES

- Biomedical Signals and Images
- Fundamentals of Deterministic Signal and Image Processing
- Probability and Random Signals
- Image Segmentation and Registration

ASSESSMENTS

Description	Percentage Weightage (%)
Assignments	05-10%
Quizzes	10-15%
Mid Semester Exams	30-40%
End Semester Exam	40-50%