Course Title: Practical Signal and Image Processing: Theory & Applications **Course Code: EEA 176**

Course Background / Summary:

This course introduces participants to the theory and practical applications of signal and image processing. It covers theory, algorithms, and real-world applications for generating, transforming, and interpreting information in various formats, known as signals. Participants will gain hands-on experience in image processing tasks using programming, focusing on real-world applications like defect detection and dimensional measurement.

Course Objectives:

- Use programming language to define and manipulate scalars, vectors, and matrices.
- Use programming language to represent signals and systems.
- Write programming language to perform time-domain and frequency-domain. analysis, use a programming language to design linear filters.
- Use programming language codes to read and process digital images.
- Write programming language codes to extract features and other information from digital images.
- Develop algorithms for specialized applications.

Target Audience:

- Technical managers, scientists, engineers, technicians, teaching staffs (vocational & technical teachers)
- Lecturers, and research students who wish to learn about signal and image processing and review their implementation and applications for industry use.

Course Duration: 3 Days

Course Contents

1.0 Introduction Signal and Image Processing

2.0 Representation of Signals and Systems

3.0 Time-Domain and Frequency Domain Analysis

4.0 Filter Design etc.

5.0 Images and Spatial Transformation

6.0 Images and Spatial Transformation

7.0 Analyzing and Enhancing Images etc.