| *SEMESTER* | *DEPARTMENT* | *COURSE TITLE* |
|---|---|---|
| *Eighth* | *Telecommunication Engineering* | *Digital Signal Processing Lab.* |
| *COURSE CODE* | *HOURS:* 3 | *COURSE SPECIFICATIONS* |
| *ET802* | *UNITS:* 1 | *Practical Content* |

*1. Introduction:*

➤ Introduction to the simulation program* or/ to the Digital signal processor that is used to fulfill the course requirements.

*2. Basics of Digital Processing:*

➤ Spectral Analysis of Signals.

   o Fast Fourier Transform.

   o Discrete Fourier Transform.

➤ Multirate Signal Processing:

   o Up sampling.

   o Down sampling.

   o Resampling Filters.

➤ Finite Impulse Response (FIR) Filter Design.

➤ Infinite Impulse Response (IIR) Filter Design.

*3. Some Applications of Digital Signal Processing such as:*

➤ BPSK Optimization.

➤ Low Pass Filter Design.

➤ Echo canceller.

➤ Noise Canceller in Communication Channels.

➤ Channel Equalization Using Digital Filters.

➤ Filtering of Noisy Audio Signals.

➤ Extracting a Desired Signal from Two Combined Signals.

* Recommended Simulation Programs can be either MATLAB or LABVIEW.

*References:*

1.  Sanjit K. Mitra, *Digital Signal Processing - Computer Based Approach* **,** McGraw-Hill, 2$^{nd}$ ed.

2.  V. K. Ingle and J. G. Proakis, *Digital Signal Processing Using MATLAB V. 4.* , PWS Publishing Company, 1997.

3.  B. Preetham Kumar, *Digital Signal Processing Laboratory*, CRC Press 2005.

4.  Cory L. Clark, *LABVIEW Digital Signal Processing and Digital Communications*, McGraw-Hill, 2005.