

## **LIST OF PROJECTS FOR ELE 436 COURSE:**

- 1) **Armstrong's phase modulator and FM demodulation with PLL:**
  - Modeling Armstrong's modulator, quadrature phase adjustment, deviation calibration, introduction to the amplitude limiter, introduction to the PLL as an FM demodulator.
- 2) **The Costas Loop:**
  - Using the Costas loop for carrier acquisition from and demodulation of a DSBSC signal.
- 3) **AM modulation of speech:**
  - To modulate and demodulate speech using Amplitude Modulation technique.
- 4) **FM modulation of speech:**
  - To modulate and demodulate speech using Frequency Modulation technique.
- 5) **Bit Error Rate measurement in the noisy channel:**
  - Ability to setup a digital communications system over a noisy channel, bandlimited channel, with provision for line-coding, instrumentation for Bit Error Rate measurements.
- 6) **PCM TDM:**
  - Creation of a time division multiplexed pulse code modulated – PCM – TDM signal by interlacing two PCM signals. Demultiplexing of same.
- 7) **QAM and QPSK:**
  - Understanding QAM in digital communications as a generator of a quadrature phase shift keyed signal. Demodulation of QPSK.
- 8) **Spread spectrum – DSSS and CDMA:**
  - Demonstration of some of the principles of a direct sequence spread spectrum (DSSS) system.
- 9) **Weaver's SSB generator and Weaver's demodulator:**
  - Exposure to weaver's SSB generator, and its alignment procedure. Alignment of weaver's SSB receiver.

## **Project Guidelines:**

- 1) 2-3 students in one group.
- 2) Select a project from the above list and report it to the TA's
- 3) Each group must complete the project in 2-3 lab sessions and hand in the reports to the TA's before 5<sup>th</sup> December
- 4) Student's can refer to the TIMS experiment manual to get an idea about the project.
- 5) Each student has to hand in a final project report to Dr.Kumaresan. The report should contain,

a) Aim

b) Theory behind the project.

The student has to show enough evidence that he/she completely understood the theory behind the project.

c) Experimental Procedure

d) Conclusion